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ELECRICAL-AND-THERMOELECTRIC LAWS, RELATIONS, AND COEFFICIENTS IN n(p)- TYPE DEGENERATE GaP(1-x)As(x)-CRYSTALLINE ALLOY, ENHANCED BY OUR STATIC DIELECTRIC CONSTANT LAW AND ELECRICAL CONDUCTIVITY (VI)

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ABSTRACT

In the $n^+(p^+) - p(n)$ **GaP**_{1-x}**As**_x - crystalline alloy, $0 \le x \le 1$, the electrical-and-thermoelectric laws, relations, and various coefficients, enhanced by our static dielectric constant law given in Equations (1a, 1b) and new electrical conductivity in Eq. (14), and by our accurate Fermi energy given in Eq. (11), are now investigated, by basing on the same physical model and mathematical treatment method, as those used in our recent works (Van Cong, 2024, 2025). It should be noted here that, for x=0, these obtained numerical results may be reduced to those given in n (p)-type degenerate GaP-crystal. Then, some remarkable results could be cited in the following. In Tables 5n (5p) given Appendix 1, for a given impurity density N and with increasing temperature T, and then in Tables 6n (6p) given Appendix 1, for a

given T and with decreasing N, the reduced Fermi-energy $\xi_{n(p)}$ decreases, and other thermoelectric coefficients are in variations, as indicated by the arrows by: (increase: \nearrow , decrease: \searrow). Further, one notes in these Tables that with increasing T (or with decreasing N) one obtains: (i) for $\xi_{n(p)} \approx 1.8138$, while the numerical results of the Seebeck coefficient S present a same minimum $(S)_{min.} \left(\simeq -1.563 \times 10^{-4} \frac{V}{K} \right)$ those of the figure of merit ZT show a same maximum $(ZT)_{max.} = 1$ (ii) for $\xi_{n(p)} = 1$ the numerical results of S, ZT, the Mott figure of merit (ZT)_{Mott}, the first Van-Cong coefficient VC1, and the Thomson coefficient

Ts, present the same results $-1.322 \times 10^{-4} \frac{v}{\kappa}$, 0.715, 3.290, $1.105 \times 10^{-4} \frac{v}{\kappa}$ and $1.657 \times 10^{-4} \frac{v}{\kappa}$ respectively, and finally (iii) for $\xi_n \simeq 1.8138$, (ZT)_{Mott} = 1. It seems that these same results could represent a new law in the thermoelectric properties, obtained in the degenerate case.

KEYWORDS: Electrical conductivity, Seebeck coefficient (S), Figure of merit (ZT), First Van-Cong coefficient (VC1), Second Van-Cong coefficient (VC2), Thomson coefficient (Ts), Peltier coefficient (Pt)

INTRODUCTION

In the $\mathbf{n}^+(\mathbf{p}^+) - \mathbf{p}(\mathbf{n}) \mathbf{X}(\mathbf{x}) \equiv \mathbf{GaP}_{1-\mathbf{x}}\mathbf{As}_{\mathbf{x}^-}$ crystalline alloy, $0 \le x \le 1$, the electrical-andthermoelectric laws, relations, and various coefficients, enhanced by our static dielectric constant law, $\varepsilon(\mathbf{r}_{d(a)}, \mathbf{x})$, $\mathbf{r}_{d(a)}$ being the donor (acceptor) d(a) - radius, given in Equations (1a, 1b) and new electrical conductivity, in Eq. (14), and also by our accurate Fermi energy, $\mathbf{E}_{\mathrm{Fn}(\mathrm{Fp})}$, given in Eq. (11), are now investigated, by basing on the same physical model and mathematical treatment method, as those used in our recent works (Van Cong, 2024, 2025). It should be noted here that for x=0, these obtained numerical results may be reduced to those given in the n (p)-type degenerate GaP-crystal (Van Cong, and Van Cong et al., 1980-2023; Hyun et al. 1998; Kim et al., 2015). Then, some remarkable results could be noted in the following.

(1). The generalized Mott criterium in the metal-insulator transition (**MIT**) is expressed in Equations (3,5,6), stating that the critical impurity density $N_{CDn(CDp)}$ is just the density of electrons (holes), localized in the exponential conduction (valence)-band tail (**EBT**), $N_{CDn(CDp)}^{EBT}$ obtained with a precision of the order of 2.92×10^{-7} , as given in our recent work (Van Cong, 2024), and the effective electron (hole)-density can be defined by: $N^* \equiv N - N_{CDn(CDp)} \simeq N - N_{CDn(CDp)}^{EBT}$ N being the total impurity density, as that observed in the compensated crystals.

(2). The ratio of the inverse effective screening length $k_{sn(sp)}$ to Fermi wave number $k_{Fn(kp)}$ at 0 K, $R_{sn(sp)}(N^*)$, defined in Eq. (7), is valid at any N*.

(3). The Fermi energy for any N and T, $E_{Fn(Fp)}$, determined in Eq. (11) with a precision of the order of 2.11×10^{-4} (Van Cong and Debiais, 1993), and it is present in all the expressions of electrical-and-thermoelectric coefficients.

(4). our expressions for the electrical conductivity, σ , and for the Seebeck coefficient, S, determined respectively in Equations (14,19) are the basic expressions, used to determine all the following electrical- and-thermoelectric coefficients.

(5). In Tables 5n(5p) given Appendix 1, for a given impurity density N and with increasing temperature T, and further in Tables 6n(6p) given Appendix 1, for a given T and with decreasing N, the reduced Fermi- energy $\xi_{n(p)}$ decreases, and other thermoelectric coefficients are in variations, as indicated by the arrows by: (increase: \nearrow , decrease: \searrow). Furtherore, one notes in these Tables that with increasing T (or with decreasing N) one obtains: (i) for $\xi_{n(p)}$ \simeq 1.8138, while the numerical results of the Seebeck coefficient S present a same minimum $(S)_{min.} (\simeq -1.563 \times 10^{-4} \frac{V}{K})$, those of the figure of merit ZT show a same maximum $(ZT)_{max} = 1$, (ii) for $\xi_{n(p)} = 1$, the numerical results of S, ZT, the Mott figure of merit (ZT)_{Mott}, the first Van-Cong coefficient VC1, and the Thomson coefficient Ts, results: $-1.322 \times 10^{-4} \frac{V}{K} = 0.715$, 3.290, $1.105 \times 10^{-4} \frac{V}{K}$ same present the and $1.657 \times 10^{-4} \frac{V}{\kappa}$, respectively, and finally (iii) for $\xi \simeq 1.8138$, (ZT)_{Mott} = 1. It seems that these same results could represent a new law in the thermoelectric properties, obtained in the degenerate case.

Our static dielectric constant law and generalized mott criterium in the metalinsulator transition

First of all, in the $\mathbf{n}^+(\mathbf{p}^+) - \mathbf{p}(\mathbf{n}) \mathbf{X}(\mathbf{x})$ - crystalline alloy at T=0 K, we denote the donor (acceptor) d(a)- radius by $\mathbf{r}_{d(a)}$, the corresponding intrinsic one by: $\mathbf{r}_{do(ao)} = \mathbf{r}_{Sb(Ga)}$, the unperturbed relative effective electron (hole) mass in conduction (valence) bands by: $\mathbf{m}_{c(v)}(\mathbf{x})'\mathbf{m}_{o}$, the unperturbed relative static dielectric constant by: $\mathbf{\epsilon}_{o}(\mathbf{x})$, and the intrinsic band gap by: $\mathbf{E}_{gO}(\mathbf{x})$. Then, their values are reported in Table 1 in Appendix 1. Therefore, we can define the effective donor (acceptor)-ionization energy in absolute values as: $\mathbf{E}_{do(ao)}(\mathbf{x}) = \frac{\mathbf{13600} \times [\mathbf{m}_{c(v)}(\mathbf{x})/\mathbf{m}_{O}]}{[\mathbf{\epsilon}_{o}(\mathbf{x})]^2} \mathbf{meV}$, and then, the isothermal bulk modulus, by: $\mathbf{B}_{do(ao)}(\mathbf{x}) \equiv \frac{\mathbf{E}_{do(ao)}(\mathbf{x})}{(\frac{4\pi}{a}) \times (\mathbf{r}_{do(ao)})^3}$

Our Static Dielectric Constant Law

Here, the changes in all the energy-band-structure parameters, expressed in terms of the effective relative dielectric constant $\epsilon(r_{d(a)}, x)$, developed as follows. Atr_{d(a)} = $r_{do(ao)}$, the needed boundary conditions are found to be, for the impurity-atom volume

 $\underline{V} == (4\pi/3) \times (r_{d(a)})^3, V_{do(ao)} = (4\pi/3) \times (r_{do(ao)})^3 \text{ for the pressure } p, p_o = 0, \text{ and for the deformation potential energy (or the strain energy) } \alpha, \alpha_o = 0.$ Further, the two important equations, used to determine the α -variation, $\Delta \alpha \equiv \alpha - \alpha_o = \alpha$, are defined $by: \frac{dp}{dv} = -\frac{B}{v}$ and $p = -\frac{d\alpha}{dv}$ giving rise to: $\frac{d}{dv} (\frac{d\alpha}{dv}) = \frac{B}{v}$. Then, by an integration, one gets: $[\Delta \alpha(r_{d(a)}, x)]_{n(p)} = B_{do(ao)}(x) \times (V - V_{do(ao)}) \times \ln(\frac{v}{v_{do(ao)}}) = E_{do(ao)}(x) \times \left[\left(\frac{r_{d(a)}}{r_{do(ao)}}\right)^3 - 1\right] \times \ln\left(\frac{r_{d(a)}}{r_{do(ao)}}\right)^3 \ge 0.$

Furthermore, we also showed that_{d(a)} $r_{d(a)} > r_{do(ao)} (r_{d(a)} < r_{do(ao)})$, the compression (dilatation) gives rise to the increase (the decrease) in the energy gap $E_{gn(gp)}(r_{d(a)}, x)$, and the effective donor (acceptor)-ionization energy $E_{d(a)}(r_{d(a)}, x)$ in absolute values, obtained in the effective Bohr model, which is represented respectively by: $\pm [\Delta \alpha(r_{d(a)}, x)]_{n(n)}$

$$\begin{split} & E_{gno(gpo)}(r_{d(a)},x) - E_{go}(x) = E_{d(a)}(r_{d(a)},x) - E_{do(ao)}(x) = E_{do(ao)}(x) \times \left[\left(\frac{\varepsilon_0(x)}{\varepsilon(r_{d(a)})} \right)^2 - 1 \right] = + \left[\Delta \alpha(r_{d(a)},x) \right]_{n(p)}, \\ & \text{for } r_{d(a)} \ge r_{do(ao)}, \text{ and for } r_{d(a)} \le r_{do(ao)}, \\ & E_{gno(gpo)}(r_{d(a)},x) - E_{go}(x) = E_{d(a)}(r_{d(a)},x) - E_{do(ao)}(x) = E_{do(ao)}(x) \times \left[\left(\frac{\varepsilon_0(x)}{\varepsilon(r_{d(a)})} \right)^2 - 1 \right] = - \left[\Delta \alpha(r_{d(a)},x) \right]_{n(p)}. \end{split}$$

Therefore, one obtains the expressions for relative dielectric constant ϵ ($r_{d(a)}$, x) and energy band gap $E_{gn}(gp)(rd(a), x)$, as:

(i)- for
$$r_{d(a)} \ge r_{do(ao)}$$
, since $\varepsilon(r_{d(a)}, x) = \frac{\varepsilon_o(x)}{\sqrt{1 + \left[\left(\frac{r_{d(a)}}{r_{do(ao)}}\right)^3 - 1\right] \times \ln\left(\frac{r_{d(a)}}{r_{do(ao)}}\right)^3}} \le \varepsilon_o(x)$, being a **new** $\varepsilon(\mathbf{r}_{d(a)}, x)$ -**law**,
 $E_{gno(gpo)}(\mathbf{r}_{d(a)}, x) - E_{go}(x) = E_{d(a)}(\mathbf{r}_{d(a)}, x) - E_{do(ao)}(x) = E_{do(ao)}(x) \times \left[\left(\frac{r_{d(a)}}{r_{do(ao)}}\right)^3 - 1\right] \times \ln\left(\frac{r_{d(a)}}{r_{do(ao)}}\right)^3 \ge 0$, (1a)

According to the increase in both $E_{gn}(gp)$ (rd(a), x) and Ed(a)(rd(a), x), with increasing rd(a) and for a given x, and corresponding to the decrease in both $E_{gno}(gpo)$ (rd(a), x) and Ed(a)(rd(a), x), with decreasing rd(a) and for a given x.

(ii)-for
$$r_{d(a)} \leq r_{do(ao)}$$
, since $\varepsilon(r_{d(a)}, x) = \frac{\varepsilon_0(x)}{\sqrt{1 - \left[\left(\frac{r_{d(a)}}{r_{do(ao)}}\right)^3 - 1\right] \times \ln\left(\frac{r_{d(a)}}{r_{do(ao)}}\right)^3}} \geq \varepsilon_0(x)$, with a condition, given by:
 $\left[\left(\frac{r_{d(a)}}{r_{do(ao)}}\right)^3 - 1\right] \times \ln\left(\frac{r_{d(a)}}{r_{do(ao)}}\right)^3 < 1$, being a **new** $\varepsilon(\mathbf{r}_{d(a)}, x)$ -law,
 $E_{gno(gpo)}(r_{d(a)}, x) - E_{go}(x) = E_{d(a)}(r_{d(a)}, x) - E_{do(ao)}(x) = -E_{do(ao)}(x) \times \left[\left(\frac{r_{d(a)}}{r_{do(ao)}}\right)^3 - 1\right] \times \ln\left(\frac{r_{d(a)}}{r_{do(ao)}}\right)^3 \leq 0$, (1b)

It should be noted that, in the following, all the electrical-and-thermoelectric properties strongly depend on this **new** $\varepsilon(\mathbf{r}_{d(a)}, \mathbf{x})$ -law. Furthermore, the effective Bohr radius $a_{Bn(Bp)}(\mathbf{r}_{d(a)}, \mathbf{x})$ is defined by: $a_{Bn(Bp)}(\mathbf{r}_{d(a)}, \mathbf{x}) \equiv \frac{\varepsilon(\mathbf{r}_{d(a)}, \mathbf{x}) \times \hbar^2}{m_{c(v)}(\mathbf{x}) \times m_0 \times q^2} = 0.53 \times 10^{-8} \text{ cm} \times \frac{\varepsilon(\mathbf{r}_{d(a)}, \mathbf{x})}{m_{c(v)}(\mathbf{x})}$ (2)

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Generalized Mott Criterium in the MIT

Now, it is interesting to remark that the critical total donor (acceptor)-density in the MIT at T=0 K, $N_{CDn(NDp)}(\mathbf{r}_{d(a)}, \mathbf{x})$, was given by the Mott's criterium, with an empirical

parameter, $M_{n(p)}$, as: $N_{CDn(CDp)}(r_{d(a)},x)^{1/3} \times a_{Bn(Bp)}(r_{d(a)},x) = M_{n(p)}, M_{n(p)} = 0.25$, (3)

Depending thus on our new $\epsilon(\mathbf{r}_{d(a)}, \mathbf{x})$ -law.

This excellent one can be explained from the definition of the reduced effective Wigner-Seitz (**WS**) radius $r_{sn(sp)}$, characteristic of interactions, by.

$$r_{sn(sp)}(N, r_{d(a)}, x) \equiv \left(\frac{3}{4\pi N}\right)^{1/3} \times \frac{1}{a_{Bn(Bp)}(r_{d(a)}, x)} = 1.1723 \times 10^{8} \times \left(\frac{1}{N}\right)^{1/3} \times \frac{m_{c(v)}(x) \times m_{o}}{\epsilon(r_{d(a)}, x)}$$
(4)

being equal to, in particular, at $N=N_{CDn(CDp)}(r_{d(a)}, x)$: $r_{sn(sp)}(N_{CDn(CDp)}(r_{d(a)}, x), r_{d(a)}, x)=$ **2.4813963**, for any $(r_{d(a)}, x)$ -values. Then, from Eq. (4), one also has:

$$N_{CDn(CDp)}(r_{d(a)'}x)^{1/3} \times a_{Bn(Bp)}(r_{d(a)'}x) = \left(\frac{3}{4\pi}\right)^{\frac{1}{3}} \times \frac{1}{2.4813963} = 0.25 = (WS)_{n(p)} = M_{n(p)}$$
(5)

Explaining thus the existence of the Mott's criterium

Furthermore, by using $M_{n(p)} = 0.25$, according to the empirical Heisenberg parameter $\mathcal{H}_{n(p)} = 0.47137$, as those given in our previous work (Van Cong, 2024), we have also showed that $N_{CDn(CDp)}$ is just the density of electrons (holes) localized in the exponential conduction (valence)-band tail, $N_{CDn(CDp)}^{EBT}$, with a precision of the order of 2.92×10^{-7} . It shoud be noted that the values of $M_{n(p)}$ and $\mathcal{H}_{n(p)}$ could be chosen so that those of $N_{CDn(CDp)}$ and $N_{CDn(CDp)}^{EBT}$ are found to be in good agreement with their experimental results. Therefore, the density of electrons (holes) given in parabolic conduction (valence) bands can be defined, as that given in compensated materials:

 $N^{*}(N, r_{d(a)}, x) \equiv N - N_{CDn(NDp)}(r_{d(a)}, x) = N^{*}$, for a presentation simplicity. (6)

In summary, as observed in Table 4 of our previous paper (Van Cong, 2024), one remarks that, for a given x and an increasing $r_{d(a)}$, $\varepsilon(r_{d(a)}, x)$ decreases, while $E_{gno(gpo)}(r_{d(a)}, x)$, $N_{CDn(NDp)}(r_{d(a)}, x)$ and $N_{CDn(CDp)}^{EBT}(r_{d(a)}, x)$ increase, affecting strongly all electrical-and-thermoelectric properties, as those observed in following Sections.

PHYSICAL MODEL

In the $n^+(p^+) - p(n) \mathbf{X}(\mathbf{x})$ - crystalline alloy, if denoting the Fermi wave number

by: $k_{Fn(Fp)}(N^*) \equiv \left(\frac{3\pi^2 N^*}{g_{c(v)}}\right)^{\frac{1}{2}}$ the reduced effective Wigner-Seitz (WS) radius $r_{sn(sp)}$, characteristic of interactions, being given in Eq. (4), in which N is replaced by N*, is now defined by: $\gamma \times r_{sn(sp)}(N^*) \equiv \frac{k_{Fn(Fp)}^{-1}}{a_{Bn(Bp)}} < 1$

being proportional to N^{*^{-1/3}}. Here, $\gamma = (4/9\pi)^{1/3}$, $k_{Fn(Fp)}^{-1}$ means the averaged distance between ionized donors (acceptors), and $a_{Bn(Bp)}(r_{d(a)}, x)$ is determined in Eq. (2).

Then, the ratio of the inverse effective screening length $k_{sn(sp)}$ to Fermi wave number $k_{Fn(kp)}$ at 0 K is defined by:

$$R_{sn(sp)}(N^{*}) \equiv \frac{k_{sn(sp)}}{k_{Fn(Fp)}} = \frac{k_{Fn(Fp)}^{-1}}{k_{sn(sp)}^{-1}} = R_{snWS(spWS)} + \left[R_{snTF(spTF)} - R_{snWS(spWS)}\right]e^{-r_{sn(sp)}} < 1,$$
(7)

Being valid at any N*

Here, these ratios, $R_{snTF(spTF)}$ and $R_{snWS(spWS)}$, can be determined as follows.

First, for $N \gg N_{CDn(NDp)}(r_{d(a)},x)$, according to the **Thomas-Fermi** (**TF**) **approximation**, the ratio $R_{snTF(spTF)}(N^*)$ is reduced to

$$R_{snTF(spTF)}(N^*) \equiv \frac{k_{snTF(spTF)}}{k_{Fn(Fp)}} = \frac{k_{Fn(Fp)}^{-1}}{k_{snTF(spTF)}^{-1}} = \sqrt{\frac{4\gamma r_{sn(sp)}}{\pi}} \ll 1$$
(8)

Being proportional to N*^{-1/6}

Secondly, for N \ll N_{CDn(NDp)}($r_{d(a)}$), according to the Wigner-Seitz (WS)approximation, the ratio R_{snWS(snWS)} is respectively reduced to

$$R_{\mathrm{sn}(\mathrm{sp})\mathrm{WS}}(\mathrm{N}^*) \equiv \frac{\mathrm{k}_{\mathrm{sn}(\mathrm{sp})\mathrm{WS}}}{\mathrm{k}_{\mathrm{Fn}}} = 0.5 \times \left(\frac{3}{2\pi} - \gamma \frac{\mathrm{d}[r_{\mathrm{sn}(\mathrm{sp})}^2 \times E_{\mathrm{CE}}(\mathrm{N}^*)]}{\mathrm{d}r_{\mathrm{sn}(\mathrm{sp})}}\right)$$
(9)

where $E_{CE}(N^*)$ is the majority-carrier correlation energy (CE), being determined by:

$$E_{CE}(N^*) = \frac{-0.87553}{0.0908 + r_{sn(sp)}} + \frac{\frac{0.87553}{0.0908 + r_{sn(sp)}} + \left(\frac{2[1 - \ln(2)]}{\pi^2}\right) \times \ln(r_{sn(sp)}) - 0.093288}{1 + 0.03847728 \times r_{sn(sp)}^{1.67378876}}$$

Furthermore, in the highly degenerate case, the physical conditions are found to be given by:

$$\frac{k_{Fn(Fp)}^{-1}}{a_{Bn(Bp)}} < \frac{\eta_{n(p)}}{E_{Fno(Fpo)}} \equiv \frac{1}{A_{n(p)}} < \frac{k_{Fn(Fp)}^{-1}}{k_{sn(sp)}^{-1}} \equiv R_{sn(sp)} < 1, \ \eta_{n(p)}(N^*) \equiv \frac{\sqrt{2\pi N^*}}{\epsilon(r_{d(a)})} \times q^2 k_{sn(sp)}^{-1/2},$$
which gives: $A_{n(p)}(N^*) = \frac{E_{Fno(Fpo)}(N^*)}{\eta_{n(p)}(N^*)}.$
(10)

FERMI ENERGY AND FERMI-DIRAC DISTRIBUTION FUNCTION

Fermi Energy and generalized Einstein relation

Here, for a presentation simplicity, we change all the sign of various parameters, given in the $p^+ - X(x)$ - crystalline alloy in order to obtain the same one, as given in the $n^+ - X(x)$ - crystalline alloy, according to the reduced Fermi energy,

 $\xi_{n(p)}(N, r_{d(a)}, x, T) \equiv \frac{E_{Fn(Fp)}(N, r_{d(a)}, x, T)}{k_B T} > 0 (<0), \text{ obtained respectively in the degenerate (non-degenerate) case.}$

For any (N, $r_d(a)$, x, T), the reduced Fermi energy $\xi_n(p)(N, r_d(a), x, T)$ or the Fermi energy $E_{Fn(Fp)}(N, r_d(a), x, T)$, obtained in our previous paper (Van Cong, Debiais, and Doan Khanh, 1991-1993), obtained with a precision of the order of 2.11×10^{-4} , is found to be given by:

$$\xi_{n(p)}(u) \equiv \frac{E_{Fn(Fp)}(u)}{k_B T} = \frac{G(u) + Au^B F(u)}{1 + Au^B} \equiv \frac{V(u)}{W(u)}, A = 0.0005372 \text{ and } B = 4.82842262,$$
(11)

Where u is the reduced electron density,

$$\begin{split} u(N,r_{d(a)},x,T) &\equiv \frac{N^*}{N_{c(v)}(T,x)} \;,\; N_{c(v)}(T,x) = 2g_{c(v)} \times \left(\frac{m_{c(v)}(x) \times m_0 \times k_B T}{2\pi\hbar^2}\right)^{\frac{3}{2}} \; (cm^{-3} \;,\; g_{c(v)} = 1, \quad F(u) = au^{\frac{2}{3}} \Big(1 + bu^{-\frac{4}{3}} + cu^{-\frac{8}{3}}\Big)^{-\frac{2}{3}},\; a = \Big[3\sqrt{\pi}/4\Big]^{2/3},\; b = \frac{1}{8} \Big(\frac{\pi}{a}\Big)^2 \;,\; c = \frac{62.3739855}{1920} \Big(\frac{\pi}{a}\Big)^4 \;, \quad \text{and} \;\; G(u) \simeq Ln(u) + 2^{-\frac{3}{2}} \times u \times e^{-du};\; d = 2^{3/2} \Big[\frac{1}{\sqrt{27}} - \frac{3}{16}\Big] > 0. \end{split}$$

So, in the non-degenerate case (u \ll 1), one has: $E_{Fn(Fp)}(u) = k_BT \times G(u) \simeq k_BT \times Ln(u)$ as $u \rightarrow 0$, the limiting non-degenerate condition, and in the very degenerate case (u \gg 1), one gets: $E_{Fn(Fp)}(u \gg 1) = k_BT \times F(u) = k_BT \times au^{\frac{2}{3}} \left(1 + bu^{-\frac{4}{3}} + cu^{-\frac{8}{3}}\right)^{-\frac{2}{3}} \simeq \frac{\hbar^2 \times k_{Fn(Fp)}(N^*)}{2 \times m_{c(v)}(x) \times m_0}$ as $u \rightarrow \infty$, the limiting degenerate condition. In other words, $\xi_{n(p)} \equiv \frac{E_{Fn(Fp)}}{k_BT}$ is accurate, and it also verifies the correct limiting conditions. In particular, at T=0K, since $u^{-1} = 0$, Eq. (11) is reduced to: $E_{Fno(Fpo)}(N^*) \equiv \frac{\hbar^2 \times k_{Fn(Fp)}(N^*)}{2 \times m_{c(v)}(x) \times m_0}$ being proportional to $(N^*)^{2/3}$, and also equal to 0 at $N^* = 0$, according to the MIT. In the following, it should be noted that all the electrical-and-thermoelectric properties strongly depend on such the accurate expression of $\xi_n(p)(N, rd(a), x, T)$.

Fermi-Dirac Distribution Function (FDDF): The Fermi-Dirac distribution function (FDDF) is given by: $f(E) \equiv (1 + e^{\gamma})^{-1}$, $\gamma \equiv (E - E_{Fn(Fp)})/(k_BT)$. So, the average of E^p , calculated using the FDDF-method, as developed in our previous work (Van Cong, 2018,

2025) is found to be given by:

$$\label{eq:FDDF} \begin{split} \langle E^p \rangle_{FDDF} &\equiv G_p(E_{Fn(Fp)}) \times E_{Fn(Fp)}^p \equiv \int_{-\infty}^{\infty} E^p \times \left(-\frac{\partial f}{\partial E}\right) dE, \ -\frac{\partial f}{\partial E} = \frac{1}{k_B T} \times \frac{e^{\gamma}}{(1+e^{\gamma})^2}. \end{split}$$

Further, one notes that, at 0 K, $-\frac{\partial f}{\partial E} = \delta(E - E_{Fno(Fpo)})$, $\delta(E - E_{Fno(Fpo)})$ being the Dirac delta (δ) - function. Therefore, $G_p(E_{Fno(Fpo)}) = 1$.

Then, at low T, by a variable change $\gamma \equiv (E - E_{Fn(Fp)})/(k_BT)$, one has: $G_p(E_{Fn(Fp)}) \equiv 1 + E_{Fn(Fp)}^{-p} \times \int_{-\infty}^{\infty} \frac{e^{\gamma}}{(1+e^{\gamma})^2} \times (k_B T \gamma + E_{Fn(Fp)})^p d\gamma = 1 + \sum_{\mu=1,2,...}^{p} C_p^{\beta} \times (k_B T)^{\beta} \times E_{Fn(Fp)}^{-\beta} \times I_{\beta}$ Where $C_p^{\beta} \equiv p(p-1) \dots (p-\beta+1)/\beta!$ and the integral I_{β} is given by: $I_{\beta} = \int_{-\infty}^{\infty} \frac{\gamma^{\beta} \times e^{\gamma}}{(1+e^{\gamma})^2} d\gamma = \int_{-\infty}^{\infty} \frac{\gamma^{\beta}}{(e^{\gamma/2}+e^{-\gamma/2})^2} d\gamma$ Vanishing for old values of β . Then, for even values of $\beta = 2n$, with n=1, 2, one obtains: $I_{2n} = 2 \int_0^{\infty} \frac{\gamma^{2n} \times e^{\gamma}}{(1+e^{\gamma})^2} d\gamma$

Now, using an identity $(1 + e^{\gamma})^{-2} \equiv \sum_{s=1}^{\infty} (-1)^{s+1} s \times e^{\gamma(s-1)}$, a variable change: $s\gamma = -t$, the Gamma function $\int_0^{\infty} t^{2n} e^{-t} dt \equiv \Gamma(2n + 1) = (2n)!$, and also the definition of the Riemann's zeta function: $\zeta(2n) \equiv 2^{2n-1} \pi^{2n} |B_{2n}|/(2n)! B_{2n}$ being the Bernoulli numbers, one finally gets: $I_{2n} = (2^{2n} - 2) \times \pi^{2n} \times |B_{2n}|$ So, from above Eq. of $\langle E^p \rangle_{FDDF}$, we get in the degenerate case the following ratio:

$$G_{p}(E_{Fn(Fp)}) \equiv \frac{\langle E^{p} \rangle_{FDDF}}{E_{Fn(Fp)}^{p}} = 1 + \sum_{n=1}^{p} \frac{p(p-1)\dots(p-2n+1)}{(2n)!} \times (2^{2n}-2) \times |B_{2n}| \times y^{2n} \equiv G_{p \ge 1}(y)$$
(12)
$$y \equiv \frac{\pi}{\xi_{n(p)}(N^{*},T)} = \frac{\pi k_{B}T}{E_{Fn(Fp)}(N^{*},T)}$$

Then, some usual results of $G_{p\geq 1}(y)$ are given in Table 2 in Appendix 1, being needed to determine all the following electrical-and-thermoelectric properties.

ELECTRICAL-AND-THERMOELECTRIC PROPERTIES

Here, if denoting, for majority electrons (holes), the electrical conductivity by $\sigma(N, r_{d(a)}, x, T)$ T) expressed in ohm⁻¹ × cm⁻¹, the thermal conductivity by $\kappa(N, r_{d(a)}, x, T)$ in $\frac{W}{cm \times K}$, and the Lorenz number L defined by:

$$L = \frac{\pi^2}{3} \times \left(\frac{k_B}{q}\right)^2 = 2.4429637 \ \left(\frac{W \times ohm}{K^2}\right) = 2.4429637 \times 10^{-8} \ (V^2 \times K^{-2})$$

Then the well-known Wiedemann-Frank law states that the ratio, $\frac{\kappa}{\sigma}$, is proportional to the temperature T(K), as: $\frac{\kappa(N, r_{d(a)}, x, T)}{\sigma(N, r_{d(a)}, x, T)} = L \times T$ (13)

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We now determine the general form of σ in the following.

First of all, it is expressed in terms of the kinetic energy of the electron (hole), $E_k \equiv \frac{\hbar^2 \times k^2}{2 \times m_{Cn(Cp)} \times m_o}$ or the wave number k, as:

$$\sigma(\mathbf{k}) \equiv \frac{\mathbf{q}^2 \times \mathbf{k}}{\pi \times \hbar} \times \frac{\mathbf{k}}{\mathbf{k}_{\mathrm{sn}(\mathrm{sp})}} \times \left[\mathbf{k} \times \mathbf{a}_{\mathrm{Bn}(\mathrm{Bp})}\right] \times \left(\frac{\mathbf{E}_{\mathbf{k}}}{\eta_{\mathrm{n}(\mathrm{p})}}\right)^{1/2}$$

which is thus proportional to E_k^2 .

Then, for $\underline{E} \ge 0$ we obtain: $\langle E^2 \rangle_{FDDF} \equiv G_2 (y = \frac{\pi k_B T}{E_{Fn(Fp)}}) \times E_{Fn(Fp)}^2$ and $G_2 (y) = \left(1 + \frac{y^2}{3}\right) \equiv G_2 (N, r_{d(a)}, x, T)$, With $y \equiv \frac{\pi}{\xi_{n(p)}}, \xi_{n(p)} = \xi_{n(p)} (N, r_{d(a)}, x, T)$ for a presentation simplicity. Therefore, one obtains (Van Cong, 2025): $\sigma(N, r_{d(a)}, x, T) \equiv \left[\frac{q^2}{\pi x \hbar} \times \frac{k_{Fn(Fp)}(N^*)}{R_{Sn(Sp)}(N^*)} \times [k_{Fn(Fp)}(N^*) \times a_{Bn(Bp)}(r_{d(a)})] \times \sqrt{A_{n(p)}(N^*)}\right] \times \left[G_2(N, r_{d(a)}, x, T) \times \left(\frac{E_{Fn(Fp)}(N, r_{d(a)}, x, T)}{E_{Fn(Fp)}(N^*)}\right)^2\right] \left(\frac{1}{ohm \times cm}\right), \frac{q^2}{\pi \times \hbar} = 7.7480735 \times 10^{-5} \text{ ohm}^{-1}$, $A_{n(p)}(N^*) = \frac{E_{Fn0}(Fpo)(N^*)}{\eta_{n(p)}(N^*)}$, $R_{sn(sp)}(N^*) \equiv 0$

$$\frac{k_{sn(sp)}}{k_{Fn(Fp)}}$$

*Fn(Fp)

which can be used to define the resistivity as: $\rho(N, r_{d(a)}, x, T) \equiv 1/\sigma(N, r_{d(a)}, x, T)$ noting again that $N^* \equiv N - N_{\text{CDn}(NDp)}(r_{d(a)}, x)$ This $\sigma(N, r_{d(a)}, x, T)$ result is an essential one in this paper, being used to determine other electrical-and-thermoelectric properties.

In Eq. (14), one notes that at T= 0 K, $\sigma(N, r_{d(a)}, x, T = 0K)$ is proportional to $E_{Fno(Fpo)}^2$ or to $(N^*)^{\frac{4}{3}}$. Thus $\sigma(N = N_{CDn(NDp)}, r_{d(a)}, x, T = 0K) = 0$ at $N^* = 0$, at which the metal-insulator transition (MIT) occurs.

Electrical Coefficients

The relaxation time τ is related to σ by (Van Cong, 2025)

$$\tau(N, r_{d(a)}, x, T) \equiv \sigma(N, r_{d(a)}, x, T) \times \frac{m_{c(v)}(x) \times m_{o}}{q^{2} \times N^{*}}$$
Therefore, the mobility μ is given by:

$$\mu(N, r_{d(a)}, x, T) \equiv \mu(N^{*}, r_{d(a)}, T) = \frac{q \times \tau(N, r_{d(a)}, x, T)}{m_{c(v)}(x) \times m_{o}} = \frac{\sigma(N, r_{d(a)}, x, T)}{q \times N^{*}} \left(\frac{cm^{2}}{V \times s}\right)$$
(15)

Here, at T= 0K, $\mu(N^*, r_{d(a)}, T)$ is thus proportional to $(N^*)^{1/3}$, since $\sigma(N^*, r_{d(a)}, T = 0K)$ is proportional to $(N^*)^{4/3}$. Thus, $\mu(N^* = 0, r_{d(a)}, T = 0K) = 0$ at $N^* = 0$, at which the metal-insulator transition (MIT) occurs.

(14)

Then, since τ and σ are both proportional to $E_{Fn(Fp)}(N^*, T)^2$, as given above, the Hall factor is defined by: $r_H(N, r_{d(a)}, x, T) \equiv \frac{\langle \tau^2 \rangle_{FDDF}}{[\langle \tau \rangle_{FDDF}]^2} = \frac{G_4(y)}{[G_2(y)]^2}$, $y \equiv \frac{\pi}{\xi_{n(p)}(N, r_{d(a)}, x, T)} = \frac{\pi k_B T}{E_{Fn(Fp)}(N, r_{d(a)}, x, T)}$ and therefore, the Hall mobility yields: $\mu_H(N, r_{d(a)}, x, T) \equiv \mu(N, r_{d(a)}, x, T) \times r_H(N^*, T) (\frac{cm^2}{V \times s})$ (16) noting that, at T=0K, since $r_H(N, r_d(a), x, T) = 1$, one then gets: $\mu_H(N, r_d(a), x, T) \equiv \mu(N, r_d(a), x, T)$.

Finally, our generalized Einstein relation is found to be defined as:

$$\frac{D(N,r_{d(a)},x,T)}{\mu(N,r_{d(a)},x,T)} \equiv \frac{N^*}{q} \times \frac{dE_{Fn(Fp)}}{dN^*} \equiv \frac{k_B \times T}{q} \times \left(u \frac{d\xi_{n(p)}(u)}{du}\right) = \sqrt{\frac{3 \times L}{\pi^2}} \times T \times \left(u \frac{d\xi_{n(p)}(u)}{du}\right), \frac{k_B}{q} = \sqrt{\frac{3 \times L}{\pi^2}}$$
(17)

where D(N, rd(a), x, T) is the diffusion coefficient, $\xi_n(p)(u)$ is defined in Eq. (11), and the mobility $\mu(N, rd(a), x, T)$ is determined in Eq. (15). Then, by differentiating this function $\xi_n(p)(u)$ with respect to u, one thus obtains $\frac{d\xi_{n(p)}(u)}{du}$ Therefore, Eq. (17) can also be rewritten as: $\frac{D(N.r_{d(a)}.xT)}{\mu(N.r_{d(a)}.xT)} = \frac{k_B \times T}{q} \times u \frac{V'(u) \times W(u) - V(u) \times W'(u)}{W^2(u)}$

where
$$W'(u) = ABu^{B-1}V'(u) = u^{-1} + 2^{-\frac{3}{2}}e^{-du}(1-du) + \frac{2}{3}Au^{B-1}F(u)\left[\left(1+\frac{3B}{2}\right) + \frac{4}{3}\times\frac{u^{-\frac{4}{3}}-\frac{8}{3}}{1+bu^{-\frac{4}{3}}+cu^{-\frac{8}{3}}}\right]$$

One remarks that: (i) as $u \to 0$, one has: $W^2 \simeq 1$ and $u[V' \times W - V \times W'] \simeq 1$, and therefore: $\frac{D_{n(p)}(u)}{\mu} \simeq \frac{k_B \times T}{q}$ and (ii) as $u \to \infty$, one has: $W^2 \approx A^2 u^{2B}$ and $u[V' \times W - V \times W'] \approx \frac{2}{3}au^{2/3}A^2u^{2B}$ and therefore, in this **highly degenerate case** and at T=0K, the **above generalized Einstein relation** is reduced to the **usual Einstein one** $\frac{D(N,r_{d(a)},xT=0K)}{\mu(N,r_{d(a)},xT=0K)} \approx \frac{2}{3}E_{Fno}(Fpo)(N^*)/q$ In other words, Eq. (17) verifies the correct limiting conditions.

Furthermore, in the present degenerate case ($u \gg 1$), Eq. (17) gives:

$$\frac{D(N, r_{d(a)}, x, T)}{\mu(N, r_{d(a)}, x, T)} \simeq \frac{2}{3} \times \frac{E_{Fno(Fpo)}(u)}{q} \times \left[1 + \frac{4}{3} \times \frac{\left(bu^{-\frac{4}{3}} + 2cu^{-\frac{8}{3}} \right)}{\left(1 + bu^{-\frac{4}{3}} + cu^{-\frac{8}{3}} \right)} \right]$$
(18)

where
$$a = \left[3\sqrt{\pi}/4\right]^{2/3}$$
, $b = \frac{1}{8} \left(\frac{\pi}{a}\right)^2$, and $c = \frac{62.3739855}{1920} \left(\frac{\pi}{a}\right)^4$.

In Tables 3n(3p) given in Appendix 1, for given x, $N > N_{CDn}$ and T(=4.2 K and 77 K), and from Equations (14, 15, 16, 17), the numerical results of the coefficients: σ , μ , μ_{H} and D are found to be decreased with increasing $r_{d(a)}$, respectively.

Thermoelectric Coefficients

First of all, from Eq. (14), obtained for $\sigma(N, r_d(a), x, T)$, the well-known Mott definition for the thermoelectric power or for the Seebeck coefficient, S, is found to be given by: $S(N, r_{d(a)}, x, T) \equiv \frac{-\pi^2}{3} \times \frac{k_B}{q>0} \times k_B T \times \frac{\partial \ln \sigma(E)}{\partial E}\Big|_{E=E_{Fn}(Fp)} = \frac{-\pi^2}{3} \times \frac{k_B}{q} \times \frac{\partial \ln \sigma(\xi_{n(p)})}{\partial \xi_{n(p)}}$

Then, using Eq. (11), for the degenerate case, $\xi_{n(p)} \ge 0$, one gets, by putting

$$\begin{split} F_{S}(N, r_{d(a)}, x, T) &\equiv \left[1 - \frac{y^{2}}{3 \times G_{2}\left(y = \frac{\pi}{\xi_{n(p)}}\right)}\right] \\ S(N, r_{d(a)}, x, T) &\equiv \frac{-\pi^{2}}{3} \times \frac{k_{B}}{q} \times \frac{2F_{Sb}(N^{*}, T)}{\xi_{n(p)}} = -\sqrt{\frac{3 \times L}{\pi^{2}}} \times \frac{2 \times \xi_{n(p)}}{\left(1 + \frac{3 \times \xi_{n(p)}}{\pi^{2}}\right)} = -2\sqrt{L} \times \frac{\sqrt{(ZT)_{Mott}}}{1 + (ZT)_{Mott}} \left(\frac{V}{K}\right) < 0, \quad (ZT)_{Mott} = \frac{\pi^{2}}{3 \times \xi_{n(p)}^{2}}, \end{split}$$

$$(19)$$

According to:
$$\frac{\partial S}{\partial \xi_{n(p)}} = \sqrt{\frac{3 \times L}{\pi^2}} \times 2 \times \frac{\frac{3 \times \xi_{n(p)}^2}{\pi^2} - 1}{\left(1 + \frac{3 \times \xi_{n(p)}}{\pi^2}\right)^2} = \sqrt{\frac{3 \times L}{\pi^2}} \times 2 \times \frac{(ZT)_{Mott} \times [1 - (ZT)_{Mott}]}{[1 + (ZT)_{Mott}]^2}, \quad (ZT)_{Mott} = \frac{\pi^2}{3 \times \xi_{n(p)}^2}$$

Here, one notes that: (i) as $\xi_{n(p)} \to +\infty$ or $\xi_{n(p)} \to +0$, one has a same limiting value of S: S $\to -0$, (ii) at $\xi_{n(p)} = \sqrt{\frac{\pi^2}{3}} \simeq 1.8138$, since $\frac{\partial S}{\partial \xi_{n(p)}} = 0$, one therefore gets: a minimum (S)_{min.} = $-\sqrt{L} \simeq -1.563 \times 10^{-4} \left(\frac{V}{K}\right)$ and (iii) at $\xi_{n(p)} = 1$ one obtains: S $\simeq -1.322 \times 10^{-4} \left(\frac{V}{K}\right)$.

Further, the figure of merit, ZT, is found to be defined by:

$$ZT(N, r_{d(a)}, x, T) \equiv \frac{S^2 \times \sigma \times T}{\kappa} = \frac{S^2}{L} = \frac{4 \times (ZT)_{Mott}}{[1 + (ZT)_{Mott}]^2}$$
(20)

Here, one notes that: (i) $\frac{\partial(ZT)}{\partial \xi_{n(p)}} = 2 \times \frac{S}{L} \times \frac{\partial S}{\partial \xi_{n(p)}}$, S < 0, (ii) at $\xi_{n(p)} = \sqrt{\frac{\pi^2}{3}} \simeq 1.8138$, since $\frac{\partial(ZT)}{\partial \xi_{n(p)}} = 0$ one gets: a maximum (ZT)_{max.} = 1, and (ZT) Mott = 1, and (iii) at $\xi_{n(p)} = 1$, one obtains: $ZT \simeq 0.715$ and $(ZT)_{Mott} = \frac{\pi^2}{3} \simeq 3.290$.

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Finally, the first Van-Cong coefficient, VC1, can be defined by:

$$VC1(N, r_{d(a)}, x, T) \equiv -N^* \times \frac{dS}{dN^*} \left(\frac{V}{K}\right) = N^* \times \frac{\partial S}{\partial \xi_{n(p)}} \times -\frac{\partial \xi_{n(p)}}{\partial N^*}, \text{ being equal to 0 for } \xi_{n(p)} = \sqrt{\frac{\pi^2}{3}}, \tag{21}$$

and the second Van-Cong coefficient, VC2, as: $VC2(N, r_{d(a)}, x, T) \equiv T \times VC1(V)$ (22)

the Thomson coefficient, Ts, by: $Ts(N, r_{d(a)}, x, T) \equiv T \times \frac{dS}{dT} \left(\frac{V}{K}\right) = T \times \frac{\partial S}{\partial \xi_{n(p)}} \times \frac{\partial \xi_{n(p)}}{\partial T}$ being equal to

0 for
$$\xi_{n(p)} = \sqrt{\frac{\pi}{3}}$$
 (23)
and the Peltier coefficient, Pt, as: Pt(N, rd(a), x, T) = T × S (V). (24)

One notes here that in next Tables 5n(p) and 6n(p) given in Appendix 1, obtained with such given physical conditions N(or T) for the decreasing $\xi_{n(p)}$, since VC1(N, rd(a), x, T) and Ts(N, rd(a), x, T) are expressed in terms of $\frac{-dS}{dN^*}$ and $\frac{dS}{dT}$ one has: [VC1, Ts] < 0 for $\xi_{n(p)} > \sqrt{\frac{\pi^2}{3}}$ [VC1, Ts] = 0 for $\xi_{n(p)} = \sqrt{\frac{\pi^2}{3}}$ and [VC1, Ts] > 0 for $\xi_{n(p)} < \sqrt{\frac{\pi^2}{3}}$ stating also that for $\xi_{n(p)} = \sqrt{\frac{\pi^2}{3}}$.

(i) S, determined in Eq. (19), thus presents a same minimum $(S)_{min.} = -\sqrt{L} \simeq -1.563 \times 10^{-4} \left(\frac{V}{v}\right)$

(ii) ZT, determined in Eq. (20), therefore presents **a same maximum:** $(ZT)_{max.} = 1$, since the variations of ZT are expressed in terms of $[VC1, Ts] \times S$, S < 0. Furthermore, it is interesting to remark that the (VC2) - coefficient is related to our generalized Einstein relation (17) by:

$$\frac{\mathbf{k}_{\mathsf{B}}}{q} \times \text{VC2}(\mathbf{N}, \mathbf{r}_{d(a)}, \mathbf{x}, \mathsf{T}) \equiv -\frac{\partial S}{\partial \xi_{n(p)}} \times \frac{\mathbf{D}(\mathbf{N}, \mathbf{r}_{d(a)}, \mathbf{x}, \mathsf{T})}{\mu(\mathbf{N}, \mathbf{r}_{d(a)}, \mathbf{x}, \mathsf{T})} \left(\frac{\mathsf{V}^2}{\mathsf{K}}\right) \frac{\mathbf{k}_{\mathsf{B}}}{q} = \sqrt{\frac{3 \times \mathsf{L}}{\pi^2}}$$
(25)

according, in this work, with the use of our Eq. (21), to:

$$VC2(N, r_{d(a)}, x, T) = -\frac{D(N, r_{d(a)}, x, T)}{\mu(N, r_{d(a)}, x, T)} \times 2 \times \frac{(ZT)_{Mott} \times [1 - (ZT)_{Mott}]}{[1 + (ZT)_{Mott}]^2}$$
(V).

Of course, our relation (25) is reduced to: $\frac{D}{\mu}$ VC1 and VC2, being determined respectively by Equations (17, 21, 22).

Now, in the degenerate n(p)-type X(x) – alloy, and for N> N_{CDn(CDp)}, and for T=3K (80K),

the numerical results of various thermoelectric coefficients are reported in Tables 4n(4p) in Appendix 1, noting that their variations with increasing $r_{d(a)}$ are represented by the arrows: \nearrow (increase), and \searrow (decrease), respectively.

Then, in Tables 5n(5p) given Appendix 1 for a given N and with increasing T, and in Tables 6n(6p) given Appendix 1 for a given T and with decreasing N, the reduced Fermi-energy $\xi_{n(p)}$ decreases, and various thermoelectric coefficients are in variations, as indicated by the arrows as: (increase: \nearrow , decrease: \searrow).

CONCLUDING REMARKS

Here, some concluding remarks can be given as follows.

- 1. In the $\mathbf{n}^+(\mathbf{p}^+) \mathbf{p}(\mathbf{n}) \mathbf{X}(\mathbf{x}) \equiv \mathbf{GaP}_{1-\mathbf{x}} \mathbf{As}_{\mathbf{x}}$ crystalline alloy, $0 \le \mathbf{x} \le 1$, the electricaland- thermoelectric laws, relations, and various coefficients are found to be enhanced by our static dielectric constant law, $\varepsilon(\mathbf{r}_{d(a)}, \mathbf{x})$, being decreased with increasing $\mathbf{r}_{d(a)}$, as given in Equations (1a, 1b) and also in Table 2 of our recent work (2024), by our new electrical conductivity, as given in Eq. (14), and in particular by our accurate Fermi energy, $\mathbf{E}_{\mathrm{Fn}(\mathrm{Fp})}$, as given in Eq. (11), which exists in all the electrical-and- thermoelectric formula.
- 2. The generalized Mott criterium in the MIT is expressed in Equations (3, 5, 6), stating that the critical impurity density $N_{CDn(CDp)}$ is just the density of electrons (holes), localized in the exponential conduction (valence)-band tail, $N_{CDn(CDp)}^{EBT}$, obtained with a precision of the order of 2.92×10^{-7} , as given in our previous work (2024), and the effective electron (hole)-density can be defined by: $N^* \equiv N - N_{CDn(CDp)} \simeq N - N_{CDn(CDp)}^{EBT}$ as that observed in the compensated crystals.
- 3. The ratio of the inverse effective screening length $k_{sn(sp)}$ to Fermi wave number $k_{Fn(kp)}$ at 0 K, $R_{sn(sp)}(N^*)$, defined in Eq. (7), is valid for any density N*.
- 4. In Tables 5n(5p) given Appendix 1, for a given impurity density N and with increasing temperature T, and then in Tables 6n(6p) given Appendix 1, for a given T and with decreasing N, the reduced Fermi-energy ξ_{n(p)} decreases, and other thermoelectric coefficients are in variations, as indicated by the arrows by: (increase: ∧, decrease: ∖). One remarks in these Tables that with increasing T (or with decreasing N) one obtains: (i) for ξ_{n(p)} ≃ 1.8138, while the numerical results of the Seebeck coefficient S present a same minimum (S) (S)_{min.} = -√L ≃ -1.563 × 10⁻⁴ (^V/_K) those of the figure of merit ZT show a same maximum (ZT)_{max.} = 1, (ii) for ξ_{n(p)} = 1, the numerical results of S, ZT,

According, in this

the Mott figure of merit $(ZT)_{Mott}$, the Van-Cong coefficient VC1, and the Thomson coefficient Ts, present the same results: $-1.322 \times 10^{-4} \frac{V}{K} 0.715$, 3.290, $1.105 \times 10^{-4} \frac{V}{K}$ and $1.1.657 \times 10^{-4} \frac{V}{K}$ respectively, and finally (iii) for $\xi_n \simeq 1.8138$, $(ZT)_{Mott} = 1$ It seems that these same results could represent a new law given for the thermoelectric properties, obtained in the degenerate case.

5. Finally, our electrical-and-thermoelectric relation is given in Eq. (25) by:

$$\frac{\mathbf{k}_{B}}{q} \times \text{VC2}(\mathbf{N}, \mathbf{r}_{d(a)}, \mathbf{x}, \mathbf{T}) \equiv -\frac{\partial S}{\partial \xi_{n(p)}} \times \frac{\mathbf{D}(\mathbf{N}, \mathbf{r}_{d(a)}, \mathbf{x}, \mathbf{T})}{\mu(\mathbf{N}, \mathbf{r}_{d(a)}, \mathbf{x}, \mathbf{T})} \left(\frac{\mathbf{V}^{2}}{\mathbf{K}}\right), \frac{\mathbf{k}_{B}}{q} = \sqrt{\frac{3 \times \mathbf{L}}{\pi^{2}}}$$

work, to: VC2(N, $r_{d(a)}, x, T$) = $-\frac{D(N, r_{d(a)}, x, T)}{\mu(N, r_{d(a)}, x, T)} \times 2 \times \frac{(ZT)_{Mott} \times [1 - (ZT)_{Mott}]^2}{[1 + (ZT)_{Mott}]^2}$ (V) being reduced to: $\frac{D}{\mu}$ VC1 and VC2, determined respectively in Equations (17, 21, 22). This should be **a** new result.

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APPENDIX 1: Tables

 Table 1: The values of energy-band-structure parameters are given in the following.

In the $X(x) \equiv GaP_{1-x}As_x$ -crystalline alloy, in which $r_{do(ao)} = r_{P(Ga)} = 0.110$ nm (0.126 nm), we have: $g_{c(v)}(x) = 1 \times x + 1 \times (1-x)_{*}m_{c(v)}(x)/m_o = 0.066 \ (0.291) \times x + 0.13 \ (0.5) \times (1-x)$, $\varepsilon_o(x) = 13.13 \times x + 11.1 \times (1-x)$, $E_{go}(x) = 1.52 \times x + 1.796 \times (1-x)$.

Table 2: Expressions for $G_{p\geq 1}(y \equiv \frac{\pi}{\xi_{n(p)}})$, due to the Fermi-Dirac distribution function, noting that $G_{p=1}(y \equiv \frac{\pi k_B T}{E_{Fn(Fp)}} = \frac{\pi}{\xi_{n(p)}}) = 1$, used to determine the electrical-and-thermoelectric coefficients.

$G_{3/2}(y)$	$G_2(y)$	$G_{5/2}(y)$	$G_3(y)$	G _{7/2} (y)	$G_4(y)$	$G_{9/2}(y)$
$\left(1+\frac{y^2}{8}+\frac{7y^4}{640}\right)$	$\left(1+\frac{y^2}{3}\right)$	$\left(1 + \frac{5y^2}{8} - \frac{7y^4}{384}\right)$	$\left(1+y^2\right)$	$\left(1+\frac{35y^2}{24}+\frac{49y^4}{384}\right)$	$\left(1+2y^2+\frac{7y^4}{15}\right)$	$\left(1 + \frac{21y^2}{8} + \frac{147y^4}{128}\right)$

Table 3n: Here, one notes that, for given x, N > N_{CDn} and T(=4.2 K and 77 K), the functions: σ , μ , μ_H , D, expressed respectively in $\left(\frac{10^2}{\text{obm}\times\text{cm}}, \frac{10^3\times\text{cm}^2}{\text{V}\times\text{s}}, \frac{10^3\times\text{cm}^2}{\text{V}\times\text{s}}, \frac{10\times\text{cm}^2}{\text{s}}\right)$, decrease with increasing r_d .

-	-	\ohm×cm	V×s	V×s	s /				
Don	or	Р		As		Sb	Sn		_
r _d (n	um) 🏼 🏲	0.110	0	0.118		0.136	0.14	0	
For	x=0, the val	lues of (σ, μ, μ _H ,	D) at 4 . 2K						
N (1	0 ¹⁸ cm ⁻³)								
3	6.57, 1.4	47, 1.448, 5.42	6.34, 1.40	03, 1.404, 5.23	4.62,	, 1.080, 1.081, 3.89	4.16, 0.997	, 0.997, 3.53	
10	17.0, 1.0	82, 1.082, 9.28	16.5, 1.04	19, 1.049, 8.99	12.6,	, 0.813, 0.813, 6.90	11.6, 0.753	, 0.753, 6.36	
40	50.7, 0.7	95, 0.795, 17.3	49.0, 0.76	58, 0.768, 16.7	37.2,	, 0.585, 0.585, 12.7	34.3, 0.540), 0.540, 11.7	
70	79.8, 0.7	14, 0.714, 22.6	77.1, 0.68	39, 0.689, 21.8	57.9,	, 0.519, 0.519, 16.4	53.3, 0.478	3, 0.478, 15.1	
For	x=0.5, the v	values of (σ, μ, μ	_H , D) at 4. 2	(
N (1	0 ¹⁸ cm ⁻³)								
3	7.94, 1.6	84, 1.684, 8.58	7.68, 1.63	31, 1.631, 8.30	5.76,	, 1.245, 1.245, 6.26	5.26, 1.144	, 1.145, 5.73	
10	20.2, 1.2	67, 1.267, 14.5	19.6, 1.22	28, 1.229, 14.1	15.0,	, 0.950, 0.950, 10.8	13.9, 0.878	, 0.878, 10.0	
40	59.5, 0.9	30, 0.930, 26.9	57.6, 0.90	00, 0.900, 26.1	43.8,	, 0.686, 0.686, 19.9	40.4, 0.633	, 0.633, 18.3	
70	93.5, 0.8	34, 0.834, 35.1	90.3, 0.80	06, 0.806, 33.9	68.1,	, 0.608, 0.608, 25.6	62.6, 0.559	0, 0.559, 23.5	
For	x=1, the val	lues of (σ, μ, μ _H ,	D) at 4 . 2K						
N (1	0 ¹⁸ cm ⁻³)								
3	9.98, 2.0	85, 2.085, 15.9	9.66, 2.01	19, 2.019, 15.4	7.31,	, 1.535, 1.535, 11.7	6.70, 1.409	, 1.410, 10.7	
10	25.2, 1.5	75, 1.575, 26.9	24.4, 1.52	26, 1.526, 26.1	18.8,	, 1.179, 1.179, 20.1	17.4, 1.089	, 1.089, 18.6	
40	73.9, 1.15	54, 1.154, 49.7	71.5, 1.11	16, 1.116, 48.1	54.6,	0.852, 0.852, 36.7	50.4, 0.787	, 0.787, 33.9	
70	116, 1.03	34, 1.034, 64.6	112, 0.99	8, 0.998, 62.4	84.6,	0.754, 0.754, 47.2	77.9, 0.695	, 0.695, 43.4	
For	x=0, the val	lues of (σ, μ, μ _H ,	D) at 77 K						—
N(1	018 cm ⁻³)								
3	7.10, 1.5	00, 1.829, 5.75	6.86, 1.51	18, 1.776, 5.56	5.03,	, 1.176, 1.389, 4.14	4.54, 1.088	3, 1.291, 3.77	
10	17.3, 1.0	98, 1.136, 9.39	16.7, 1.06	55, 1.102, 9.10	12.8,	, 0.825, 0.854, 6.98	11.8, 0.764	, 0.792, 6.43	
40	50.8, 0.7	97, 0.801, 17.4	49.1, 0.77	/0, 0.774, 16.8	37.3,	, 0.587, 0.590, 12.7	34.4, 0.542	2, 0.545, 11.7	
/0	/9.9, 0.7	14, 0.716, 22.6	77.2, 0.69	90, 0.692, 21.9	58.0,	, 0.520, 0.521, 16.4	53.3, 0.478	3, 0.479, 15.1	

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For x	x=0.5, the values of (σ, μ , μ _F	4, D) at 4. 2K			
N (1	0 ¹⁸ cm ⁻³)				
3	7.94, 1.684, 1.684, 8.58	7.68, 1.631, 1.631, 8.30	5.76, 1.245, 1.245, 6.26	5.26, 1.144, 1.145, 5.73	
10 40	20.2, 1.207, 1.207, 14.5	19.0, 1.228, 1.229, 14.1 57.6 0.900 0.900 26.1	43.8 0.686 0.686 10.9	40.4 0.633 0.633 18.3	
70	93.5, 0.834, 0.834, 35.1	90.3, 0.806, 0.806, 33.9	68.1, 0.608, 0.608, 25.6	62.6, 0.559, 0.559, 23.5	
For x	$x=1$, the values of (σ, μ, μ_H)	D) at 4 . 2 K			
N (1	0 ¹⁸ cm ⁻³)				
3	9.98, 2.085, 2.085, 15.9	9.66, 2.019, 2.019, 15.4	7.31, 1.535, 1.535, 11.7	6.70, 1.409, 1.410, 10.7	
10	25.2, 1.575, 1.575, 26.9	24.4, 1.526, 1.526, 26.1	18.8, 1.179, 1.179, 20.1	17.4, 1.089, 1.089, 18.6	
40 70	73.9, 1.154, 1.154, 49.7 116 1 034 1 034 64 6	/1.5, 1.110, 1.110, 48.1 112, 0.998, 0.998, 62, 4	54.0, 0.852, 0.852, 30.7 84.6 0.754 0.754 47.2	50.4, 0.787, 0.787, 33.9 77 9 0.695 0.695 43.4	
For s	$x=0$, the values of (σ, μ, μ_H) .	D) at 77 K			
N (1	0 ¹⁸ cm ⁻³)				
3	7.10, 1.500, 1.829, 5.75	0.80, 1.518, 1.770, 5.50	5.03, 1.176, 1.389, 4.14	4.54, 1.088, 1.291, 3.77	
40	50.8, 0.797, 0.801, 17.4	49.1, 0.770, 0.774, 16.8	37.3, 0.587, 0.590, 12.7	34.4, 0.542, 0.545, 11.7	
70	79.9, 0.714, 0.716, 22.6	77.2, 0.690, 0.692, 21.9	58.0, 0.520, 0.521, 16.4	53.3, 0.478, 0.479, 15.1	
For x	x=0.5, the values of (σ, μ, $\mu_{\rm F}$	_I , D) at 77 K			
N (1	0 ¹⁸ cm ⁻³)				
3	8.29, 1.757, 1.923, 8.86	8.02, 1.702, 1.864, 8.58	6.02, 1.300, 1.426, 6.48	5.50, 1.196, 1.313, 5.93	
10 40	20.4, 1.278, 1.303, 14.0	19.7, 1.239, 1.203, 14.2 57.6 0.901 0.904 26.1	15.2, 0.958, 0.976, 10.9 43 9 0.687 0.689 19 9	14.0, 0.880, 0.903, 10.1 40 5 0.634 0.636 18 3	
70	93.5, 0.835, 0.836, 35.1	90.3, 0.806, 0.807, 33.9	68.1, 0.608, 0.609, 25.6	62.7, 0.560, 0.561, 23.5	
Form	-1 the values of (σ, μ, μ))) at 77 K			
) at 77 K			
N (10	$10^{2} 2126 2217 162$	9 85 2 058 2 147 15 6	7 46 1 565 1 633 11 9	6 83 1 437 1 499 10 9	
10	25.3, 1.581, 1.595, 27.0	24.5, 1.532, 1.546, 26.1	18.9, 1.183, 1.194, 20.2	17.5, 1.094, 1.103, 18.6	
40	74.0, 1.155, 1.156, 49.7	71.6, 1.117, 1.119, 48.1	54.6, 0.853, 0.854, 36.7	50.4, 0.787, 0.788, 33.9	
	,,	,,,	, , , , ,	,,,	
T-11					
Labi			1 T (4 0 T 1 7 7 7		1
	le 3p: Here, one notes the second sec	nat, for given x, N > N _{CD}	p and T(=4.2 K and 77 K cm ²)), the functions: σ, μ, μ _H , D, es	pressed
respe	e 3p: Here, one notes the ectively in $\left(\frac{10^3}{\text{ohm} \times \text{cm}}, \frac{10^3}{10^3}\right)$	hat, for given x, N > N _{CD} $\frac{v^2 \times \text{cm}^2}{V \times \text{s}}$, $\frac{10^2 \times \text{cm}^2}{V \times \text{s}}$, $\frac{10 \times \text{cm}^2}{\text{s}}$	$\frac{2}{2}$ and T(=4.2 K and 77 K $\frac{2}{2}$), decrease with increase.), the functions: σ , μ , μ_H , D, estensing r_a .	xpressed
respe	ectively in $\left(\frac{10^2}{\text{ohm} \times \text{cm}}, \frac{10^2}{10^2}\right)$	hat, for given x, N > N _{CD} $\frac{v^2 \times cm^2}{v \times s}, \frac{10^2 \times cm^2}{v \times s}, \frac{10 \times c}{s}$	p and T(=4.2 K and 77 K m ²), decrease with incre In), the functions: σ , μ , μ_H , D, exercises r_a .	xpressed
respe Accep r _a (m	the 3p : Here, one notes the ectively in $\left(\frac{10^2}{\text{ohm} \times \text{cm}}, \frac{10^2}{\text{ohm}}, 1$	hat, for given x, N > N _{CD} $\frac{v^2 \times cm^2}{V \times s}$, $\frac{10^2 \times cm^2}{V \times s}$, $\frac{10 \times c}{s}$ Mg 0.140	p and T(=4.2 K and 77 K ²), decrease with incre In 0.144), the functions: σ , μ , μ_H , D , exeasing r_a . Cd 0.148	xpressed
respe Accep r _a (m For x	the 3p : Here, one notes the ectively in $\left(\frac{10^2}{\text{ohm} \times \text{cm}}, \frac{10^2}{\text{ohm}}, 1$	hat, for given x, N > N _{CD} , $\frac{v^2 \times cm^2}{V \times s}$, $\frac{10^2 \times cm^2}{V \times s}$, $\frac{10 \times c}{s}$ Mg 0.140 D) at 4.2K	p and T(=4.2 K and 77 K m ²), decrease with incre In 0.144), the functions: σ , μ , μ_H , D , exceeding r_a . Cd 0.148	xpressed
For X	le 3p: Here, one notes ti ectively in $\left(\frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{100}\right)^{1/2}$ ptor Ga m) $\nearrow 0.126$ =0, the values of $(\sigma, \mu, \mu_{\text{H}}, \Gamma)^{1/2}$ cm ⁻²)	hat, for given x, N > N _{CD} , $\frac{p^2 \times cm^2}{V \times s}$, $\frac{10^2 \times cm^2}{V \times s}$, $\frac{10 \times c}{s}$, Mg 0.140 D) at 4.2K	p and T(=4.2 K and 77 K m ²), decrease with incre In 0.144), the functions: σ, μ, μ _H , D, exeasing r _a . Cd 0.148	kpressed
respective	the 3p: Here, one notes to ectively in $\left(\frac{10^2}{\text{ohm} \times \text{cm}}, \frac{10^2}{\text{ohm} \times \text{cm}}, 1$	hat, for given x, N > N _{CD} , $\frac{v^2 \times cm^2}{V \times s}$, $\frac{10^2 \times cm^2}{V \times s}$, $\frac{10 \times c}{s}$ Mg 0.140 D) at 4. 2K	p and T(=4.2 K and 77 K m ²), decrease with incre In 0.144), the functions: σ, μ, μ _H , D, eseasing r _a .	cpressed
For x N (10	le 3p: Here, one notes ti ectively in $\left(\frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, 1$	hat, for given x, N > N _{CD} , $\frac{v^2 \times cm^2}{V \times s}$, $\frac{10^2 \times cm^2}{V \times s}$, $\frac{10 \times c}{v \times s}$, $\frac{10 \times c}{s}$ Mg 0.140 D) at 4. 2K 1.11, 3.699, 3.701, 1.26 1.93, 3.123, 3.124, 1.73	p and T(=4.2 K and 77 K m ²), decrease with incre In 0.144 1.00, 3.596, 3.598, 1.17 1.80, 3.006, 3.007, 1.63), the functions: σ, μ, μ _H , D, exercises of the set	cpressed
For x N (10	le 3p: Here, one notes ti ectively in $\left(\frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, 1$	hat, for given x, N > N _{CD} , $\frac{v^2 \times cm^2}{V \times s}$, $\frac{10^2 \times cm^2}{V \times s}$, $\frac{10 \times cm^2}{V \times s}$, $\frac{10 \times cm^2}{s}$, 10	n n n 1.00, 3.596, 3.598, 1.17 1.80, 3.006, 3.007, 1.63 2.85, 2.639, 2.639, 2.12 3.50, 2.409, 2.409, 2.300 2.350, 2.309, 2.300 2.350,), the functions: σ, μ, μ _H , D, example, a. Cd 0.148 0.88, 3.491, 3.494, 1.07 1.65, 2.879, 2.880, 1.52 2.64, 2.510, 2.510, 1.99 3.62, 2.71, 2.321, 2.24	cpressed
For x N (10 3 5 8 10 For	the 3p : Here, one notes ti ectively in $\left(\frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, $	hat, for given x, N > N _{CD} , $p^{2} \times cm^{2}$, $\frac{10^{2} \times cm^{2}}{V \times s}$, $\frac{10 \times cm^{2}}{V \times s}$, $\frac{10 \times cm^{2}}{s}$, $10 \times cm^$	n 0.144 1.00, 3.596, 3.598, 1.17 1.80, 3.006, 3.007, 1.63 2.85, 2.639, 2.639, 2.12 3.50, 2.498, 2.499, 2.39), the functions: σ, μ, μ _H , D, exercises of the function of	cpressed
For x N (10 For x N (10 For x	le 3p: Here, one notes ti ectively in $\left(\frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, 1$	hat, for given x, N > N _{CD} , $p^{2} \times cm^{2}$, $\frac{10^{2} \times cm^{2}}{V \times s}$, $\frac{10 \times cm^{2}}{V \times s}$, $\frac{10 \times cm^{2}}{s}$, $10 \times cm^$	n 0.144 1.00, 3.596, 3.598, 1.17 1.80, 3.006, 3.007, 1.63 2.85, 2.639, 2.639, 2.12 3.50, 2.498, 2.499, 2.39), the functions: σ, μ, μ _H , D, exeasing r _a . Cd 0.148 0.88, 3.491, 3.494, 1.07 1.65, 2.879, 2.880, 1.52 2.64, 2.510, 2.510, 1.99 3.26, 2.371, 2.371, 2.24	cpressed
respective Accepting r_a (minute) For x N (10) 3 5 8 10 For N (12) 3 5 8 10 N (12)	le 3p: Here, one notes ti ectively in $\left(\frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, 1$	hat, for given x, N > N _{CD} , $p^{2} \times cm^{2}$, $\frac{10^{2} \times cm^{2}}{V \times s}$, $\frac{10 \times cm^{2}}{V \times s}$, $\frac{10 \times cm^{2}}{s}$, $10 \times cm^$	n 0.144 1.00, 3.596, 3.598, 1.17 1.00, 3.596, 3.007, 1.63 2.85, 2.639, 2.639, 2.12 3.50, 2.498, 2.499, 2.39 2.04, 5.043, 5.044, 2.66), the functions: σ, μ, μ _H , D, exeasing r _a . Cd 0.148 0.88, 3.491, 3.494, 1.07 1.65, 2.879, 2.880, 1.52 2.64, 2.510, 2.510, 1.59 3.26, 2.371, 2.371, 2.24 	cpressed
respective Acception For x N (10) 3 5 8 10 For N (10) 3 5 8 10 For N (10) 3 5	le 3p: Here, one notes ti ectively in $\left(\frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^{19}}{\text{ohm}\times\text{cm}}, \frac{10^{19}}{\text{ohm}\times$	hat, for given x, N > N _{CD} , $p^{2} \times cm^{2}$, $\frac{10^{2} \times cm^{2}}{V \times s}$, $\frac{10 \times cm^{2}}{V $	n 0.144 1.00, 3.596, 3.598, 1.17 1.00, 3.596, 3.007, 1.63 2.85, 2.639, 2.639, 2.12 3.50, 2.498, 2.499, 2.39 2.04, 5.043, 5.044, 2.66 3.24, 4.473, 4.474, 3.49 4.90, 4.065, 4.065, 4.056, 4.05), the functions: σ, μ, μ _H , D, exeasing r _a . Cd 0.148 0.88, 3.491, 3.494, 1.07 1.65, 2.879, 2.880, 1.52 2.64, 2.510, 2.510, 1.59 3.26, 2.371, 2.371, 2.24 	cpressed
respective Acception r_a (m) For x N (10) 3 5 8 10 For N (12) 3 5 8 10	le 3p: Here, one notes ti ectively in $\left(\frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^{19}}{\text{ohm}}, \frac{10^2}{\text{ohm}}, \frac{10^2}{\text{ohm}}$	$\begin{array}{c} \text{i.i.t., for given x, N > N_{CD}, \\ \frac{p^2 \times \text{cm}^2}{V \times \text{s}}, \frac{10^2 \times \text{cm}^2}{V \times \text{s}}, \frac{10 \times \text{cm}^2}{V \times \text{s}}, \frac{10 \times \text{cm}^2}{\text{s}}, \\ \hline \\ \hline \\ \hline \\ \hline \\ \text{Mg} \\ 0.140 \\ \hline \\ \text{O) at 4. 2K} \\ \hline \\ \hline \\ 1.11, 3.699, 3.701, 1.26 \\ 1.93, 3.123, 3.124, 1.73 \\ 3.03, 2.755, 2.755, 2.24 \\ 3.71, 2.614, 2.614, 2.53 \\ \hline \\ \text{m.D) at 4. 2K} \\ \hline \\ \hline \\ 2.17, 5.265, 5.267, 2.82 \\ 3.43, 4.688, 4.689, 3.68 \\ 5.18, 4.273, 4.70 \\ 6.29, 4.105, 4.105, 5.28 \\ \hline \end{array}$	n n n n n 0.144 1.00, 3.596, 3.598, 1.17 1.80, 3.006, 3.007, 1.63 2.85, 2.639, 2.639, 2.12 3.50, 2.498, 2.499, 2.39 2.04, 5.043, 5.044, 2.66 3.24, 4.473, 4.474, 3.49 4.90, 4.066, 4.066, 4.45 5.95, 3.902, 3.902, 5.00), the functions: σ, μ, μ _H , D, example, b, example, example, b, example, example, example, example,	cpressed
respective for the second sec	le 3p: Here, one notes ti ectively in $\left(\frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^{19}}{\text{ohm}\times\text{cm}}, $	hat, for given x, N > N _{CD} , $p^{2} \times cm^{2}$, $\frac{10^{2} \times cm^{2}}{V \times s}$, $\frac{10 \times cm^{2}}{V $	2.04, 5.043, 5.044, 2.66 2.04, 5.043, 5.044, 2.66 3.24, 4.473, 4.474, 3.49 4.90, 4.066, 4.066, 4.45 5.95, 3.902, 3.902, 5.00), the functions: σ, μ, μ _H , D, example,	cpressed
respective Accept r_a (m) For x N (10) 3 5 8 10 For N (10)	le 3p: Here, one notes ti ectively in $\left(\frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^{19}}{\text{ohm}\times\text{cm}^{-2}}, \frac{127, 3.892, 3.894, 1.41}{2.15, 3.330, 3.331, 1.90}$ 1.27, 3.892, 3.894, 1.41 2.15, 3.330, 3.331, 1.90 3.34, 2.959, 2.959, 2.45 4.08, 2.815, 2.815, 2.75 x=0.5, the values of (σ, μ, μ 10 ¹⁹ cm ⁻²) 2.39, 5.654, 5.655, 3.08 3.76, 5.063, 5.063, 4.01 5.67, 4.633, 4.634, 5.12 6.88, 4.458, 4.459, 5.76 x=1, the values of ($\sigma, \mu, \mu_{\text{H}}, 10^{19}$ cm ⁻²)	hat, for given x, N > N _{CD} , $p^{2} \times cm^{2}$, $\frac{10^{2} \times cm^{2}}{V \times s}$, $\frac{10 \times cm^{2}}{V $	n 0.144 1.00, 3.596, 3.598, 1.17 1.80, 3.006, 3.007, 1.63 2.85, 2.639, 2.639, 2.12 3.50, 2.498, 2.499, 2.39 2.04, 5.043, 5.044, 2.66 3.24, 4.473, 4.474, 3.49 4.90, 4.066, 4.066, 4.45 5.95, 3.902, 3.902, 5.00), the functions: σ, μ, μ _H , D, example, b, example, example, b, example, b, example, b,	cpressed
For x N (10) 3 5 8 10 For (13) 5 8 10	le 3p: Here, one notes ti ectively in $\left(\frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^{19}}{\text{ohm}}, $	hat, for given x, N > N _{CD} , $p^{2} \times cm^{2}$, $\frac{10^{2} \times cm^{2}}{V \times s}$, $\frac{10 \times cm^{2}}{V $	n 0.144 1.00, 3.596, 3.598, 1.17 1.80, 3.006, 3.007, 1.63 2.85, 2.639, 2.639, 2.12 3.50, 2.498, 2.499, 2.39 2.04, 5.043, 5.044, 2.66 3.24, 4.473, 4.474, 3.49 4.90, 4.066, 4.066, 4.45 5.95, 3.902, 3.902, 5.00 3.89, 8.531, 8.532, 6.65 6.08, 7.821, 7.821, 8.69), the functions: σ, μ, μ _H , D, example,	cpressed
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For x Accept For x N (10) 3 5 8 10 For N (10) 3 5 8 10 For N (10) 3 5 8 10 For N (10) 5 8 10 For N (10) 3 5 8 10 For N (10) 3 5 8 10 For For N (10)	le 3p: Here, one notes ti ectively in $\left(\frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}^2}\right)$ =0, the values of $(\sigma, \mu, \mu_{\text{H}}, \Pi)^{19}$ cm ⁻²) 1.27, 3.892, 3.894, 1.41 2.15, 3.330, 3.331, 1.90 3.34, 2.959, 2.959, 2.45 4.08, 2.815, 2.815, 2.75 x=0.5 , the values of $(\sigma, \mu, \mu)^{19}$ cm ⁻²) 2.39, 5.654, 5.655, 3.08 3.76, 5.063, 4.633, 4.634, 5.12 6.88, 4.458, 4.459, 5.76 x=1 , the values of $(\sigma, \mu, \mu_{\text{H}}, \Pi)^{19}$ cm ⁻²) 4.50, 9.743, 9.744, 7.65 7.03, 8.982, 8.982, 10.0 10.6, 8.404, 8.404, 12.9 12.9, 8.162, 8.162, 14.6 x=0 , the values of $(\sigma, \mu, \mu_{\text{H}}, \Pi)^{19}$ cm ⁻²) 1.38, 4.229, 4.983, 1.50 2.23, 3.445, 3.706, 1.96 3.39, 3.008, 3.118, 2.48 4.12, 2.848, 2.923, 2.78 x=0.5 , the values of $(\sigma, \mu, \mu_{\text{H}}, \Pi)^{10}$ cm ⁻²)	hat, for given x, N > N _{CD} , $p^{2} \times cm^{2}$, $\frac{10^{2} \times cm^{2}}{V \times s}$, $\frac{10 \times cm^{2}}{V \times s}$, $\frac{111, 3, 699, 3, 701, 1.26}{1.93, 3, 123, 3, 124, 1.73}$, $\frac{10 \times cm^{2}}{3.71, 2.614, 2.614, 2.53}$, $\frac{10 \times cm^{2}}{V \times s}$, $\frac{10 \times cm^{2}}{3.71, 2.614, 2.614, 2.53}$, $\frac{10 \times cm^{2}}{2.17, 5.265, 5.267, 2.82}$, $\frac{3.43, 4.688, 4.689, 3.68}{5.18, 4.273, 4.273, 4.70}$, $\frac{6.29, 4.105, 4.105, 5.28}{0.29, 4.105, 4.105, 5.28}$ D) at 4.2K 4 .12, 8.973, 8.974, 7.02 6 .43, 8.244, 8.245, 9.18 9 .69, 7.693, 7.693, 11.8 11.8 , 7.464, 7.464, 13.3 D) at 77K 1 .21, 4.061, 4.866, 1.36 2.00, 3.238, 3.497, 1.78 1 .21, 4.061, 4.866, 1.36 2.00, 3.238, 3.497, 1.78 1 .21, 4.061, 4.866, 1.36 2.00, 3.238, 3.497, 1.78, 3.08, 2.902, 2.903, 2.97 3 .76, 2.645, 2.717, 2.55 m , D) at 77K	n 0.144 1.00, 3.596, 3.598, 1.17 1.80, 3.006, 3.007, 1.63 2.85, 2.639, 2.639, 2.12 3.50, 2.498, 2.499, 2.39 2.04, 5.043, 5.044, 2.66 3.24, 4.473, 4.474, 3.49 4.90, 4.066, 4.066, 4.45 5.95, 3.902, 3.902, 5.00 3.89, 8.531, 8.532, 6.65 6.08, 7.821, 7.821, 8.69 9.16, 7.821, 7.821, 8.69 9.16, 7.821, 7.821, 8.69 9.16, 7.821, 7.821, 8.69 9.16, 7.821, 7.821, 8.69 1.11, 3.981, 4.839, 1.27 1.87, 3.121, 3.382, 1.68 2.90, 2.684, 2.789, 2.15 3.54, 2.529, 2.599, 2.41), the functions: σ, μ, μ _H , D, escaing r _a . Cd 0.88, 3.491, 3.494, 1.07 1.65, 2.879, 2.880, 1.52 2.64, 2.510, 2.510, 1.99 3.26, 2.371, 2.371, 2.24 	cpressed
respective Acception For x N (10) 3 5 8 10 For N (10) 3 5 8 10 For N (10) 3 5 8 10 For N (10) 5 8 10 For N (10) 5 8 10 For N (10) 3 5 8 10 For N (10) 3	le 3p: Here, one notes ti ectively in $\left(\frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^2}{\text{ohm}\times\text{cm}}, \frac{10^{19}}{\text{ohm}\times\text{cm}}, \frac{10^{19}}{\text{ohm}\times\text{cm}^2}\right)$ =0, the values of $(\sigma, \mu, \mu_{\text{H}}, \Pi)^{19}$ cm ⁻²) 1.27, 3.892, 3.894, 1.41 2.15, 3.330, 3.331, 1.90 3.34, 2.959, 2.959, 2.45 4.08, 2.815, 2.815, 2.75 x=0.5, the values of $(\sigma, \mu, \mu)^{10}$ cm ⁻²) 2.39, 5.654, 5.655, 3.08 3.76, 5.063, 5.063, 4.01 5.67, 4.633, 4.634, 5.12 6.88, 4.458, 4.459, 5.76 x=1, the values of $(\sigma, \mu, \mu_{\text{H}}, 10^{19}$ cm ⁻²) 4.50, 9.743, 9.744, 7.65 7.03, 8.928, 2.892, 10.0 10.6, 8.404, 8.404, 12.9 12.9, 8.162, 8.162, 14.6 x=0, the values of $(\sigma, \mu, \mu_{\text{H}}, 10^{19}$ cm ⁻²) 1.38, 4.229, 4.983, 1.50 2.23, 3.445, 3.706, 1.96 3.39, 3.008, 3.118, 2.48 4.12, 2.848, 2.923, 2.78 x=0.5, the values of $(\sigma, \mu, \mu)^{10}$ cm ⁻²) 2.48, 5.870, 6.360, 3.17	hat, for given x, N > N _{CD} , $p^{2} \times cm^{2}$, $\frac{10^{2} \times cm^{2}}{V \times s}$, $\frac{10 \times cm^{2}}{V \times s}$, $\frac{111, 3, 699, 3, 701, 1.26}{1.93, 3, 123, 3, 124, 1.73}$, $\frac{10 \times cm^{2}}{3, 3, 123, 3, 124, 1.73}$, $\frac{10 \times cm^{2}}{3, 3, 123, 3, 124, 1.73}$, $\frac{10 \times cm^{2}}{3, 123, 3, 124, 1.73}$, $\frac{10 \times cm^{2}}{3, 10, 2, 103}$, $\frac{10 \times cm^{2}}{3, 104, 2, 105}$, $\frac{10 \times cm^{2}}{1, 21, 4, 061, 4, 866, 1.36}$, $\frac{10 \times cm^{2}}{2, 00, 3, 238, 3, 497, 1.78}$, $\frac{10 \times cm^{2}}{3, 108, 2, 02, 2, 90$, $\frac{2, 27}{3, 76, 2, 645, 2, 717, 2, 55}$, $\frac{10 \times cm^{2}}{1, 21, 4, 061, 4, 866, 1.36}$, $\frac{10 \times cm^{2}}{2, 25, 5, 474, 5, 945, 2, 90}$	n 0.144 1.00, 3.596, 3.598, 1.17 1.80, 3.006, 3.007, 1.63 2.85, 2.639, 2.639, 2.12 3.50, 2.498, 2.499, 2.39 2.04, 5.043, 5.044, 2.66 3.24, 4.473, 4.474, 3.49 4.90, 4.066, 4.066, 4.45 5.95, 3.902, 3.902, 5.00 3.89, 8.531, 8.532, 6.65 6.08, 7.821, 7.821, 8.69 9.16, 7.285, 7.286, 11.1 11.1, 7.063, 7.063, 12.6 1.11, 3.981, 4.839, 1.27 1.87, 3.121, 3.382, 1.68 2.90, 2.684, 2.789, 2.15 3.54, 2.529, 2.599, 2.41 2.12, 5.248, 5.711, 2.75), the functions: σ, μ, μ _H , D, escaing r _a . Cd 0.88, 3.491, 3.494, 1.07 1.65, 2.879, 2.880, 1.52 2.64, 2.510, 2.510, 1.99 3.26, 2.371, 2.371, 2.24 	cpressed

 8
 5.12, 4.070, 4.173, 5.10
 5.23, 4.513, 4.404, 4.73
 4.95, 4.104, 4.192, 4.48
 4.05, 3.875, 5.950, 4.21

 10
 6.93, 4.489, 4.557, 5.79
 6.34, 4.133, 4.197, 5.30
 5.99, 3.929, 3.990, 5.03
 5.61, 3.702, 3.760, 4.71

For x=1, the values of (σ, μ, μ_H, D) at 77K									
N (10 ¹⁹ cm ⁻²) 3 4.59, 9.92 5 7.09, 9.00 8 10.7, 8.44 10 13.0, 8.19	21, 10.33, 7.76 53, 9.248, 10.1 14, 8.535, 12.9 21, 8.257, 14.6	4.19, 9.139, 9.516, 7.12 6.48, 8.319, 8.490, 9.24 9.74, 7.730, 7.814, 11.8 11.8, 7.490, 7.550, 13.4	3.97, 8.689, 9.050, 6.74 6.13, 7.892, 8.055, 8.75 9.21, 7.320, 7.400, 11.2 11.2, 7.088, 7.145, 12.6	3.71, 8.191, 8.554, 6.33 5.74, 7.418, 7.572, 8.20 8.61, 6.866, 6.941, 10.5 10.5, 6.642, 6.995, 11.8					

Table 4n: In the lightly degenerate n-type X(x) – alloy, and for T=3K and 80K, the numerical results of various thermoelectric coefficients are reported. Further, their variations with increasing $r_{d(a)}$ are represented by the arrows: \nearrow (increase), and \searrow (decrease).

Donor	Р	As	Sb	Sn
-	_2			
For x=0 and N=3 × 10 ¹⁸	cm ⁻³ ,		000 750	205.2505
ξn(T=3K)	217.111	210.404	208.752	205.3606
ξn(T=80K)	8.298	8.274	7.991	7.804
$\kappa_{(T=3K)} \left(\frac{10^{-5} \times W}{cm \times K} \right) $	4.812	4.644	3.386	3.047
$\kappa_{(T=80K)} \left(\frac{10^{-5} \times W}{cm \times K}\right)$	1.396	1.348	0.989	0.893
$-S_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$	2.611	2.619	2.716	2.761
$-S_{(T=80K)}\left(\frac{10^{-5}\times V}{K}\right)$	6.521	6.538	6.748	6.845
$-\text{VC1}_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$ \	1.740	1.746	1.810	1.840
$-\text{VC1}_{(T=80\text{K})}\left(\frac{10^{-5}\times\text{V}}{\text{K}}\right)$ >	3.799	3.806	3.889	3.926
$-\text{VC2}_{(T=3K)}(\frac{10^{-6}\times\text{V}}{K})$ >	5.222	5.237	5.431	5.522
$-\text{VC2}_{(\text{T}=80\text{K})}\left(\frac{10^{-5}\times\text{V}}{\text{K}}\right)$	3.039	3.045	3.111	3.141
$-Ts_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$	2.611	2.619	2.715	2.761
$-Ts_{(T=80K)}\left(\frac{10^{-5}\times V}{K}\right)$	5.699	5.709	5.834	5.890
$-Pt_{(T=3K)}(10^{-6} \times V)$ >	7.834	7.857	8.148	8.284
$-Pt_{(T=B0K)}(10^{-3} \times V)$ >	5.217	5.231	5.398	5.476
ZT _(T=3K) (10 ⁻⁴) ∧	2.791	2.808	3.019	3.121
ZT _(T=80K) (10 ⁻¹) ∧	1.741	1.750	1.864	1.918
For x=0.5 and N=10 ¹⁸ c	m ⁻³			
ξ _{n(T=3K)}	138.526	138.119	133.259	131.088
ξ _{n(T=80K)}	5.432	5.417	5.239	5.159
$\kappa_{(T=3K)} \left(\frac{10^{-5} \times W}{cm \times K} \right) \qquad \searrow$	2.355	2.266	1.607	1.435
$\kappa_{(T=80K)} \left(\frac{10^{-3} \times W}{cm \times K} \right)$	0.763	0.735	0.527	0.474
$-S_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$	4.092	4.104	4.254	4.324
$-S_{(T=80K)}\left(\frac{10^{-4}\times V}{K}\right)$	9.391	9.412	9.664	9.781
$-\text{VC1}_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$	2.727	2.735	2.834	2.881
$-\text{VC1}_{(T=80\text{K})}\left(\frac{10^{-5}\times\text{V}}{\text{K}}\right)$	4.659	4.664	4.734	4.769
$-\text{VC2}_{(T=3K)}\left(\frac{10^{-5}\times V}{K}\right)$	8.181	8.205	8.504	8.644
$-\text{VC2}_{(\text{T}=80\text{K})}\left(\frac{10^{-5}\times\text{V}}{\text{K}}\right)$	3.727	3.731	3.787	3.815
$-Ts_{(T=3K)}\left(\frac{10^{-\circ}\times V}{K}\right)$	4.090	4.102	4.252	4.322
$-Ts_{(T=80K)}\left(\frac{10^{-5}\times V}{K}\right)$	6.988	6.996	7.101	7.153
$-Pt_{(T=3K)}(10^{-5} \times V)$ >	12.277	12.313	12.762	12.973
$-Pt_{(T=80K)}(10^{-3} \times V)$ >	7.513	7.529	7.731	7.825
ZT _(T=3K) (10 ⁻³)	6.855	6.896	7.408	7.655
$ZT_{(T=80K)}(10^{-1})$ /	3.610	3.626	3.823	3.916

For x=1 and N=10 ¹⁸ cm ⁻	3,			
ξn(T=3K)	211.769	211.626	209.933	209.184
ξn(T=80K)	8.101	8.096	8.034	8.007
$\kappa_{(T=3K)}\left(\frac{10^{-5}\times W}{cm\times K}\right)$	3.023	2.916	2.141	1.944
$\kappa_{(T=80K)} \left(\frac{10^{-3} \times W}{cm \times K} \right)$	0.881	0.850	0.625	0.568
$-S_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$ >	2.677	2.679	2.701	2.710
$-S_{(T=80K)}\left(\frac{10^{-4}\times V}{K}\right)$ >	6.664	6.668	6.715	6.736
$-\text{VC1}_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$ >	1.784	1.786	1.800	1.806
$-\text{VC1}_{(T=80\text{K})}\left(\frac{10^{-5}\times\text{V}}{\text{K}}\right)$	3.856	3.858	3.876	3.884
$-\text{VC2}_{(T=3K)}\left(\frac{10^{-5}\times V}{K}\right)$ >	5.353	5.357	5.400	5.419
$-\text{VC2}_{(T=80\text{K})}\left(\frac{10^{-8}\times\text{V}}{\text{K}}\right)$	3.085	3.086	3.101	3.107
$-Ts_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$	2.677	2.678	2.700	2.710
$-Ts_{(T=80K)}\left(\frac{10^{-5}\times V}{K}\right)$	5.785	5.787	5.814	5.827
$-Pt_{(T=3K)}(10^{-5} \times V)$ >	8.032	8.037	8.102	8.131
$-Pt_{(T=80K)}(10^{-3} \times V)$ >	5.332	5.335	5.372	5.389
ZT _(T=3K) (10 ⁻³) ∧	2.934	2.938	2.985	3.007
ZT _(T=80K) (10 ⁻¹) ∧	1.818	1.820	1.846	1.857

Table 4p: In the lightly degenerate p-type X(x) – alloy, in which N=2 × 10¹⁹ cm⁻³, and for T=3K and 80K, the numerical results of various thermoelectric coefficients are reported. Further, their variations with increasing $r_{d(a)}$ are represented by the arrows: \nearrow (increase), and \searrow (decrease).

Acceptor	Ga	Mg	In	Cđ
For x=0,				
ξ _{n(T=3K)}	134.452	119.021	107.417	90.933
ξ _{n(T=80K)}	5.283	4.706	4.241	3.483
$\kappa_{(T=3K)} \left(\frac{10^{-5} \times W}{cm \times K}\right) \qquad \searrow$	5.576	4.510	3.828	2.983
$\kappa_{(T=80K)}\left(\frac{10^{-3}\times W}{cm\times K}\right)$	1.824	1.535	1.338	1.054
$-S_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$ >	4.216	4.763	5.277	6.233
$-S_{(T=80K)}\left(\frac{10^{-5}\times V}{K}\right)$	9.601	10.490	11.301	12.806
$-\text{VC1}_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$	2.809	3.173	3.515	4.151
$-\text{VC1}_{(T=80\text{K})}\left(\frac{10^{-5}\times\text{V}}{\text{K}}\right)$	4.716	5.044	5.530	6.430
$-\text{VC2}_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$ \	8.428	9.519	10.545	12.452
$-VC2_{(T=80K)}\left(\frac{10^{-8}\times V}{K}\right)$ \	3.772	4.035	4.424	5.144
$-Ts_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$ >	4.214	4.760	5.273	6.226
$-Ts_{(T=80K)}\left(\frac{10^{-5}\times V}{K}\right)$	7.073	7.567	8.295	9.646
$-Pt_{(T=3K)}(10^{-5} \times V)$ >	1.265	1.429	1.583	1.870
$-Pt_{(T=80K)}(10^{-3} \times V)$ >	7.681	8.392	9.041	10.245
ZT _(T=3K) (10 ⁻⁴) ∧	7.277	9.285	11.398	15.902
ZT _(T=80K) (10 ⁻¹) ∧	3.773	4.505	5.228	6.713

F 0.5				
For $x=0.5$, $\xi_{n(T=2K)}$	229.683 8.760	223.439 8.530	218.947 8.365	212.904 8.143
$\kappa_{(T=3K)} \left(\frac{10^{-5} \times W}{cm \times K} \right)$	12.009	10.797	10.075	9.243
$\kappa_{(T=80K)} \left(\frac{10^{-2} \times W}{cm \times K} \right)$	3.454	3.119	2.920	2.691
$-S_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$	2.468	2.537	2.589	2.663
$-S_{(T=80K)}\left(\frac{10^{-5}\times V}{K}\right)$ >	6.206	6.359	6.474	6.634
$-\text{VC1}_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$	1.645	1.691	1.726	1.775
$-\text{VC1}_{(T=80K)}\left(\frac{10^{-5}\times V}{K}\right)$	3.667	3.732	3.779	3.844
$-\text{VC2}_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$	4.936	5.074	5.178	5.325
$-VC2_{(T=80K)}\left(\frac{10^{-8}\times V}{K}\right)$	2.933	2.986	3.024	3.075
$-Ts_{(T=3K)}\left(\frac{10^{-6}\times V}{K}\right)$ >	2.468	2.537	2.589	2.662
$-Ts_{(T=80K)}\left(\frac{10^{-5}\times V}{K}\right)$	5.500	5.598	5.669	5.766
$-Pt_{(T=3K)}(10^{-5} \times V)$ >	0.740	0.761	0.777	0.799
$-Pt_{(T=80K)}(10^{-3} \times V)$ >	4.965	5.087	5.179	5.307
ZT(T-2K) (10 ⁻⁴)	2.494	2.635	2,745	2,903
$ZT_{(T-20V)}(10^{-1})$	1.577	1.655	1.715	1.801
(1=80K)(/				
For x=1,	242 221	240 911	330.015	336 610
For x=1, ξ _{n(T=3K)}	343.331	340.811	339.015	336.619
For x=1, ξ _{n(T=3K)} ξ _{n(T=80K)} 5	343.331 12.972	340.811 12.878	339.015 12.811	336.619 12.722
For x=1, $\xi_{n(T=3K)}$ \searrow $\xi_{n(T=80K)}$ \searrow $\kappa_{(T=3K)} \left(\frac{10^{-5} \times W}{cm \times K}\right)$ \searrow	343.331 12.972 23.190	340.811 12.878 21.191	339.015 12.811 20.030	336.619 12.722 18.726
For x=1, $ \begin{aligned} \xi_{n(T=3K)} & \searrow \\ \xi_{n(T=80K)} & \searrow \\ \kappa_{(T=3K)} \left(\frac{10^{-5} \times W}{cm \times K}\right) & \searrow \\ \kappa_{(T=80K)} \left(\frac{10^{-3} \times W}{cm \times K}\right) & \searrow \end{aligned} $	343.331 12.972 23.190 6.400	340.811 12.878 21.191 5.851	339.015 12.811 20.030 5.533	336.619 12.722 18.726 5.175
For x=1, $\xi_{n(T=3K)}$ $\xi_{n(T=80K)}$ $\kappa_{(T=3K)} \left(\frac{10^{-5} \times W}{cm \times K}\right)$ $\kappa_{(T=80K)} \left(\frac{10^{-2} \times W}{cm \times K}\right)$ χ	343.331 12.972 23.190 6.400	340.811 12.878 21.191 5.851	339.015 12.811 20.030 5.533	336.619 12.722 18.726 5.175
For x=1, $\xi_{n(T=3K)}$ \downarrow $\xi_{n(T=80K)}$ \downarrow $\kappa_{(T=3K)} (\frac{10^{-5} \times W}{cm \times K})$ \downarrow $\kappa_{(T=80K)} (\frac{10^{-2} \times W}{cm \times K})$ \downarrow $-S_{(T=3K)} (\frac{10^{-6} \times V}{K})$ \downarrow	343.331 12.972 23.190 6.400 1.651	340.811 12.878 21.191 5.851 1.664	339.015 12.811 20.030 5.533 1.672	336.619 12.722 18.726 5.175 1.684
For x=1, $\xi_{n(T=3K)}$ $\xi_{n(T=80K)}$ $\kappa_{(T=3K)} \left(\frac{10^{-5} \times W}{cm \times K}\right)$ $\kappa_{(T=80K)} \left(\frac{10^{-3} \times W}{cm \times K}\right)$ $-S_{(T=80K)} \left(\frac{10^{-5} \times V}{K}\right)$ $-S_{(T=80K)} \left(\frac{10^{-5} \times V}{K}\right)$ λ	343.331 12.972 23.190 6.400 1.651 4.287	340.811 12.878 21.191 5.851 1.664 4.317	339.015 12.811 20.030 5.533 1.672 4.339	336.619 12.722 18.726 5.175 1.684 4.368
For x=1, $\xi_{n(T=3K)}$ $\kappa_{(T=3K)}$ $\kappa_{(T=3K)} (\frac{10^{-5} \times W}{cm \times K})$ $\kappa_{(T=80K)} (\frac{10^{-3} \times W}{cm \times K})$ $-S_{(T=3K)} (\frac{10^{-6} \times V}{K})$ $-S_{(T=3K)} (\frac{10^{-5} \times V}{K})$ $-VC1_{(T=3K)} (\frac{10^{-6} \times V}{K})$ λ	343.331 12.972 23.190 6.400 1.651 4.287 1.101	340.811 12.878 21.191 5.851 1.664 4.317 1.109	339.015 12.811 20.030 5.533 1.672 4.339 1.115	336.619 12.722 18.726 5.175 1.684 4.368 1.123
For x=1, $\xi_{n(T=3K)}$ $\xi_{n(T=80K)}$ $\kappa_{(T=3K)} \left(\frac{10^{-5} \times W}{cm \times K}\right)$ $\kappa_{(T=80K)} \left(\frac{10^{-3} \times W}{cm \times K}\right)$ $-S_{(T=3K)} \left(\frac{10^{-6} \times V}{K}\right)$ $-S_{(T=80K)} \left(\frac{10^{-5} \times V}{K}\right)$ $-VC1_{(T=3K)} \left(\frac{10^{-6} \times V}{K}\right)$ $-VC1_{(T=80K)} \left(\frac{10^{-5} \times V}{K}\right)$	343.331 12.972 23.190 6.400 1.651 4.287 1.101 2.707	340.811 12.878 21.191 5.851 1.664 4.317 1.109 2.723	339.015 12.811 20.030 5.533 1.672 4.339 1.115 2.735	336.619 12.722 18.726 5.175 1.684 4.368 1.123 2.752
$\begin{array}{l} \mbox{For $x=1$,} \\ \xi_{n(T=3K)} & \searrow \\ \xi_{n(T=80K)} & \searrow \\ \kappa_{(T=3K)} \left(\frac{10^{-5} \times W}{cm \times K}\right) & \searrow \\ \kappa_{(T=80K)} \left(\frac{10^{-3} \times W}{cm \times K}\right) & \searrow \\ -S_{(T=80K)} \left(\frac{10^{-5} \times V}{K}\right) & \searrow \\ -S_{(T=80K)} \left(\frac{10^{-5} \times V}{K}\right) & \searrow \\ -VC1_{(T=3K)} \left(\frac{10^{-5} \times V}{K}\right) & \searrow \\ -VC1_{(T=80K)} \left(\frac{10^{-5} \times V}{K}\right) & \searrow \\ -VC2_{(T=3K)} \left(\frac{10^{-5} \times V}{K}\right) & \searrow \end{array}$	343.331 12.972 23.190 6.400 1.651 4.287 1.101 2.707 3.302	340.811 12.878 21.191 5.851 1.664 4.317 1.109 2.723 3.327	339.015 12.811 20.030 5.533 1.672 4.339 1.115 2.735 3.344	336.619 12.722 18.726 5.175 1.684 4.368 1.123 2.752 3.368
$\begin{array}{c c} F \text{ or } x=1, \\ \xi_{n(T=3K)} & \searrow \\ \xi_{n(T=80K)} & \searrow \\ \kappa_{(T=3K)} \left(\frac{10^{-5} \times W}{cm \times K}\right) & \searrow \\ \kappa_{(T=80K)} \left(\frac{10^{-2} \times W}{cm \times K}\right) & \searrow \\ -S_{(T=3K)} \left(\frac{10^{-5} \times V}{K}\right) & \searrow \\ -S_{(T=80K)} \left(\frac{10^{-5} \times V}{K}\right) & \searrow \\ -VC1_{(T=3K)} \left(\frac{10^{-6} \times V}{K}\right) & \searrow \\ -VC1_{(T=3K)} \left(\frac{10^{-6} \times V}{K}\right) & \searrow \\ -VC2_{(T=3K)} \left(\frac{10^{-6} \times V}{K}\right) & \searrow \\ -VC2_{(T=80K)} \left(\frac{10^{-5} \times V}{K}\right) & \searrow \end{array}$	343.331 12.972 23.190 6.400 1.651 4.287 1.101 2.707 3.302 2.165	340.811 12.878 21.191 5.851 1.664 4.317 1.109 2.723 3.327 2.179	339.015 12.811 20.030 5.533 1.672 4.339 1.115 2.735 3.344 2.188	336.619 12.722 18.726 5.175 1.684 4.368 1.123 2.752 3.368 2.201
$\begin{array}{l} \mbox{For $x=1$,} \\ \xi_{n(T=3K)} & \searrow \\ \xi_{n(T=80K)} & \searrow \\ \kappa_{(T=3K)} \left(\frac{10^{-5} \times W}{cm \times K} \right) & \searrow \\ \kappa_{(T=80K)} \left(\frac{10^{-3} \times W}{cm \times K} \right) & \searrow \\ -S_{(T=3K)} \left(\frac{10^{-5} \times V}{K} \right) & \searrow \\ -S_{(T=80K)} \left(\frac{10^{-5} \times V}{K} \right) & \searrow \\ -VC1_{(T=3K)} \left(\frac{10^{-6} \times V}{K} \right) & \searrow \\ -VC2_{(T=3K)} \left(\frac{10^{-6} \times V}{K} \right) & \searrow \\ -VC2_{(T=3K)} \left(\frac{10^{-6} \times V}{K} \right) & \searrow \\ -Ts_{(T=3K)} \left(\frac{10^{-6} \times V}{K} \right) & \searrow \end{array}$	343.331 12.972 23.190 6.400 1.651 4.287 1.101 2.707 3.302 2.165 1.651	340.811 12.878 21.191 5.851 1.664 4.317 1.109 2.723 3.327 2.179 1.663	339.015 12.811 20.030 5.533 1.672 4.339 1.115 2.735 3.344 2.188 1.672	336.619 12.722 18.726 5.175 1.684 4.368 1.123 2.752 3.368 2.201 1.684
$\begin{array}{l} \mbox{For $x=1$,} \\ \xi_{n(T=3K)} & \searrow \\ \xi_{n(T=80K)} & \searrow \\ \kappa_{(T=3K)} \left(\frac{10^{-5}\times W}{cm\times K}\right) & \searrow \\ \kappa_{(T=80K)} \left(\frac{10^{-3}\times W}{cm\times K}\right) & \searrow \\ -S_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -S_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -VC1_{(T=3K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -VC2_{(T=3K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -VC2_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -Ts_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -Ts_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \end{array}$	343.331 12.972 23.190 6.400 1.651 4.287 1.101 2.707 3.302 2.165 1.651 4.060	340.811 12.878 21.191 5.851 1.664 4.317 1.109 2.723 3.327 2.179 1.663 4.085	339.015 12.811 20.030 5.533 1.672 4.339 1.115 2.735 3.344 2.188 1.672 4.103	336.619 12.722 18.726 5.175 1.684 4.368 1.123 2.752 3.368 2.201 1.684 4.128
$\begin{array}{l} \mbox{For $x=1$,} \\ \xi_{n(T=3K)} & \searrow \\ \xi_{n(T=80K)} & \searrow \\ \kappa_{(T=3K)} \left(\frac{10^{-5}\times W}{cm\times K}\right) & \searrow \\ \kappa_{(T=80K)} \left(\frac{10^{-5}\times V}{cm\times K}\right) & \searrow \\ -S_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -VC1_{(T=3K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -VC1_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -VC2_{(T=3K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -VC2_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -Ts_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -Ts_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -Pt_{(T=3K)}(10^{-5}\times V) & \searrow \end{array}$	343.331 12.972 23.190 6.400 1.651 4.287 1.101 2.707 3.302 2.165 1.651 4.060 0.495	340.811 12.878 21.191 5.851 1.664 4.317 1.109 2.723 3.327 2.179 1.663 4.085 0.499	339.015 12.811 20.030 5.533 1.672 4.339 1.115 2.735 3.344 2.188 1.672 4.103 0.502	336.619 12.722 18.726 5.175 1.684 4.368 1.123 2.752 3.368 2.201 1.684 4.128 0.505
$\begin{array}{l} \mbox{For $x=1$,} \\ \xi_{n(T=3K)} & \searrow \\ \xi_{n(T=80K)} & \searrow \\ \kappa_{(T=3K)} \left(\frac{10^{-5}\times W}{cm\times K}\right) & \searrow \\ \kappa_{(T=80K)} \left(\frac{10^{-5}\times V}{cm\times K}\right) & \searrow \\ -S_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -VC1_{(T=3K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -VC1_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -VC2_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -VC2_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -Ts_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -Ts_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -Pt_{(T=80K)}(10^{-5}\times V) & \searrow \\ -Pt_{(T=80K)}(10^{-3}\times V) & \searrow \end{array}$	343.331 12.972 23.190 6.400 1.651 4.287 1.101 2.707 3.302 2.165 1.651 4.060 0.495 3.430	340.811 12.878 21.191 5.851 1.664 4.317 1.109 2.723 3.327 2.179 1.663 4.085 0.499 3.454	339.015 12.811 20.030 5.533 1.672 4.339 1.115 2.735 3.344 2.188 1.672 4.103 0.502 3.471	336.619 12.722 18.726 5.175 1.684 4.368 1.123 2.752 3.368 2.201 1.684 4.128 0.505 3.494
$\begin{array}{l} \mbox{For $x=1$,} \\ \xi_{n(T=3K)} & \searrow \\ \xi_{n(T=80K)} & \searrow \\ \kappa_{(T=3K)} \left(\frac{10^{-5}\times W}{cm\times K}\right) & \searrow \\ \kappa_{(T=80K)} \left(\frac{10^{-5}\times V}{cm\times K}\right) & \searrow \\ -S_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -S_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -VC1_{(T=3K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -VC2_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -VC2_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -Ts_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -Ts_{(T=80K)} \left(\frac{10^{-5}\times V}{K}\right) & \searrow \\ -Pt_{(T=80K)} (10^{-5}\times V) & \searrow \\ -Pt_{(T=80K)} (10^{-3}\times V) & \searrow \\ TT_{(T=2K)} (10^{-4}) & \swarrow \end{array}$	343.331 12.972 23.190 6.400 1.651 4.287 1.101 2.707 3.302 2.165 1.651 4.060 0.495 3.430 1.116	340.811 12.878 21.191 5.851 1.664 4.317 1.109 2.723 3.327 2.179 1.663 4.085 0.499 3.454 1.133	339.015 12.811 20.030 5.533 1.672 4.339 1.115 2.735 3.344 2.188 1.672 4.103 0.502 3.471 1.145	336.619 12.722 18.726 5.175 1.684 4.368 1.123 2.752 3.368 2.201 1.684 4.128 0.505 3.494 1.161
$\begin{array}{llllllllllllllllllllllllllllllllllll$	343.331 12.972 23.190 6.400 1.651 4.287 1.101 2.707 3.302 2.165 1.651 4.060 0.495 3.430 1.116 0.752	340.811 12.878 21.191 5.851 1.664 4.317 1.109 2.723 3.327 2.179 1.663 4.085 0.499 3.454 1.133 0.763	339.015 12.811 20.030 5.533 1.672 4.339 1.115 2.735 3.344 2.188 1.672 4.103 0.502 3.471 1.145 0.770	336.619 12.722 18.726 5.175 1.684 4.368 1.123 2.752 3.368 2.201 1.684 4.128 0.505 3.494 1.161 0.781

Table 5n: Here, for a given N and with increasing T, the reduced Fermi-energy ξ_n decreases, and other thermoelectric coefficients are in variations, as indicated by the arrows as: (increase: \nearrow , decrease: \checkmark). One notes here that with increasing T: (i) for $\xi_n \simeq 1.8138$, while the numerical results of S present a same minimum $(S)_{min} \left(\simeq -1.563 \times 10^{-4} \frac{V}{K}\right)$, those of ZT show a same maximum $(ZT)_{max} = 1$, (ii) for $\xi_n = 1$, those of S, ZT, $(ZT)_{Mott}$, VC1, and T_s present the same results: $-1.322 \times 10^{-4} \frac{V}{K}$, 0.715, 3.290, $1.105 \times 10^{-4} \frac{V}{K}$, and $1.657 \times 10^{-4} \frac{V}{K}$, respectively, and (iii) for $\xi_n \simeq 1.8138$, $(ZT)_{Mott} = 1$.

In the degenerate P- X(x) – alloy, for N = 2 × N _{CDn} (r _p), one gets: T(K) \land 43.85 44.769183 45.7 60.920214 60.945 ξ_n \searrow 1.877 1.8138 1.752 1 0.999 S $\left(10^{-4} \frac{V}{K}\right)$ –1.562 \checkmark –1.563 \nearrow –1.562 \nearrow –1.322 \nearrow –1.321 ZT 0.999 \nearrow 1 \checkmark 0.999 \searrow 0.715 \searrow 0.714 (ZT) _{Mott} \nearrow 0.933 1 1.071 3.290 3.296 VC1 $\left(10^{-4} \frac{V}{K}\right)$ –0.059 \nearrow 0 \checkmark 0.061 \nearrow 1.105 \nearrow 1.106 VC2 $\left(10^{-4} \frac{V}{K}\right)$ –0.089 \nearrow 0 \checkmark 0.091 \nearrow 1.657 \nearrow 1.660 Pt (10 ⁻⁴ $\frac{V}{K}$) –0.089 \nearrow 0 \checkmark 0.091 \checkmark 1.657 \checkmark 1.660 Pt (10 ⁻⁴ $\frac{V}{K}$) –1.562 \checkmark –1.563 \checkmark –7.139 \checkmark –8.0518 \nearrow –8.0510 In the degenerate As-X(x) – alloy, for N = 2 × N _{CDn} (r _{As}), one gets: T(K) \checkmark 45.98 46.979655 47.99 63.928142 63.955 ξ_n \checkmark 1.880 1.8138 1.750 1 0.999 S $\left(10^{-4} \frac{V}{K}\right)$ –1.562 \checkmark –1.563 \nearrow –1.562 \checkmark –1.322 \checkmark –1.321 ZT 0.999 \nearrow 1 \checkmark 0.999 \checkmark 0.715 \checkmark 0.714 (ZT) _{Mott} \checkmark 0.931 1 1.074 3.290 3.296 VC1 $\left(10^{-4} \frac{V}{K}\right)$ –0.061 \checkmark 0 \checkmark 0.063 \checkmark 1.105 \checkmark 1.107 VC2 $\left(10^{-4} \frac{V}{K}\right)$ –0.061 \checkmark 0 \checkmark 0.094 \checkmark 1.657 \checkmark 1.660 Pt (10 ⁻⁴ $\frac{V}{K}$) –2.814 \checkmark 0 \checkmark 0.094 \checkmark 1.657 \checkmark 1.660 Pt (10 ⁻⁴ $\frac{V}{K}$) –0.992 \checkmark 0 \checkmark 0.094 \checkmark 1.657 \checkmark 1.660 Pt (10 ⁻⁴ $\frac{V}{K}$) –0.7182 \checkmark -7.343 \checkmark -7.496 \checkmark -8.4494 \checkmark -8.4485 —	For x=0,									
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	In the degenera	te P- X(x	s) — al	lloy, for N	= 2 ×	N _{CDn} (r _p), one	gets:		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	T(K) 7.	43.85		44.769183		45.7	-	60.920214		60.945
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	ξn 💈	1.877		1.8138		1.752		1		0.999
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	5	-1.563	7	-1.562	7	- 1.322	7	- 1.321
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	ZT	0.999	7	1	\sim	0.999	5	0.715	5	0.714
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	(ZT) _{Mott}	0.933		1		1.071		3.290		3.296
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$VC1\left(10^{-4}\frac{V}{K}\right)$	-0.059	7	0	7	0.061	7	1.105	7	1.106
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$VC2\left(10^{-4}\frac{V}{K}\right)$	-2.590	7	0	7	2.778	1	67.313	7	67.440
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$T_s \left(10^{-4} \frac{V}{K} \right)$	-0.089	7	0	7	0.091	7	1.657	7	1.660
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Pt (10-°V)	-6.850	7	-6.997	2	-7.139	2	-8.0518	7	-8.0510
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	In the degenera	te As- X	(x) –	alloy, for N	1 = 2	× N _{CDn} (r	م.), or	ne gets:		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	T(K) Z.	45.98		46.979655		47.99		63.928142		63.955
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	ξ. ν	1.880		1.8138		1.750		1		0.999
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	2	-1.563	7	-1.562	7	- 1.322	7	- 1.321
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	ZT	0.999	7	1	5	0.999	5	0.715	5	0.714
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	(ZT) _{Mott}	0.931		1		1.074		3.290		3.296
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$VC1\left(10^{-4}\frac{V}{K}\right)$	-0.061	7	0	7	0.063	7	1.105	7	1.107
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$VC2\left(10^{-4}\frac{V}{K}\right)$	-2.814	7	0	7	3.018	7	70.637	7	70.774
Pt $(10^{-3}V)$ -7.182 \searrow -7.343 \searrow -7.496 \bigvee -8.4494 \nearrow -8.4485 In the degenerate Sb-X(x) - alloy, for N = 2 × N _{CDn} (r _{Sb}), one gets:	$T_s \left(10^{-4} \frac{V}{K} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.660
In the degenerate Sb-X(x) – alloy, for N = $2 \times N_{CDn}(r_{Sb})$, one gets:	Pt (10 ⁻³ V)	-7.182	2	-7.343	2	-7.496	2	-8.4494	7	-8.4485

In the	degenerat	e Sb- X((x) —	alloy, for N	= 2	$\times N_{CDn}(r_{s})$	_{Sb}), on	ie gets:		
T(K)	Z.	68.64		70.128324		71.63		95.427976		95.468
ξn	2	1.879		1.8138		1.750		1		0.999
S (10	$-4\frac{V}{K}$	-1.562	2	-1.563	7	-1.562	7	- 1.322	7	- 1.321
ZT		0.999	7	1	5	0.999	5	0.715	5	0.714
(ZT) _{Mo}	nt 7	0.931		1		1.074		3.290		3.296
VC1 ($10^{-4} \frac{V}{\kappa}$	-0.061	7	0	7	0.063	7	1.105	7	1.107

$VC2(10^{-4}\frac{v}{K})$) -4.190	7	0	7	4.485	7	105.443	7	105.647
$T_{s}(10^{-4}\frac{V}{T})$	-0.091	7	0	7	0.094	7	1.657	7	1.660
Pt (10 ⁻³ V)	-10.722	2	-10.961	2	-11.189	2	-12.613	~	-12.6114
In the degener	nto Co. V	(m)	allow for l	M _ 2	VN (1	.)	no goto:		
T(K)	77.47	(x) -	79.154538	N = 2	80.85	'sn), 01	107.71051	L	107.82
ξn 🖌	1.880		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	2	-1.563	7	-1.562	7	- 1.322	7	- 1.320
ZT	0.999	7	1	\sim	0.999	2	0.715	5	0.713
(ZT) _{Mott}	× 0.931		1		1.074		3.290		3.306
	-0.061	·	0	/	0.063	1	1.105	1	1.109
$VC2\left(10^{-4}\frac{1}{K}\right)$) -4.742	7	0	7	5.064	7	119.014	7	119.574
$T_s \left(10^{-4} \frac{V}{\kappa} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10-°V)	-12.101	~	-12.372	2	-12.629	2	-14.236	~	-14.232
For x=0.5									
In the degenera	te P-X(x)) – all	ov. for N :	= 2 ×	Nepr (rp)	one o	ets:		
T(K) 7	19	, au	28.3309	2 1	28.94	, one g	38.55167		38.59
ξ. ν	1.879		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	5	-1.563	7	-1.562	7 -	- 1.322	7	- 1.320
ZT	0.999	7	1	$\mathbf{N}_{\mathbf{n}}$	0.999	5	0.715	2	0.713
(ZT) _{Mott}	0.931		1		1.074		3.290		3.305
$VC1(10^{-4}\frac{1}{K})$	-0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-4}\frac{V}{K}\right)$	-1.692	7	0	7	1.819	7	42.597	7	42.793
$T_{s}\left(10^{-4}\frac{V}{K}\right)$	-0.091	7	0	7	0.094	7	1.657	7	1.663
Pt (10-°V)	-4.331	5	-4.428	2	-4.520	5	-5.0954	~	-5.094
In the degenera	to Ac. V(llow for M	- 2	M (n)			
T(K) Z	20 006	x) - a	0 720778	= 27	X NCDn(1A 30 37	(s), on	e geis. 40.45516		40.49
ξ _n γ	1.880	-	1.8138		1.750		1		0.998
$S(10^{-4}\frac{V}{V})$	-1.562	5	-1.563	7	-1.562	7 -	- 1.322	7	- 1.320
ZT	0.999	7	1	5	0.999	2	0.715	2	0.713
(ZT) _{Mott} 7	0.931		1		1.074		3.290		3.303
$VC1\left(10^{-4}\frac{V}{K}\right)$	-0.061	7	0	7	0.063	7	1.105	7	1.108
VC2 $\left(10^{-4}\frac{v}{v}\right)$	-1.784	7	0	7	1.912	7	44.701	7	44.879
$T_{1}(10^{-4} \frac{V}{-1})^{2}$	-0.092	7	0	~	0.094	7	1.657	7	1.662
Pt (10 ⁻³ V)	-4.545	<u>`</u>	-4.647		-4.744	<u>`</u>	-5.3470	~	-5.3459
In the degenera	ate Sb- X((x) – a	lloy, for N	1 = 2	× N _{CDn} (r	_{sb}), on	e gets:		
T(K) 7	43.43		44.378775		45.33		60.388962		60.45
ξn 😒	1.880		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{V}{v}\right)$	-1.562	5	-1.563	7	-1.562	7	- 1.322	7	- 1.320
ZT	0.999	7	1	5	0.999	5	0.715	2	0.713
(ZT) _{Mott}	0.931		1		1.074		3.290		3.305
$VC1\left(10^{-4}\frac{v}{v}\right)$) -0.061	7	0	7	0.063	7	1.105	7	1.109
VC2 (10-4 V	-2.670	7	0	7	2.841	7	66.726	7	67.039
T (10-4 V)	_0.000	7	0	7	0.004	2	1.657	2	1 662
$P_{t}(10 - 3V)$	-6.794		-6.036	<u> </u>	-7.090	_	-7 0916	2	-7 0705
	-0.704	¥ 	-0.930	لا	-1.000	2	-7.5610		- (2)
						-			

In the	degene	rate Sn- X(x)	- alloy, for N =	$2 \times N_{CDn}(r_{Sn})$), one gets:	
T(K)	7	49.02	50.090766	51.17	68.161624	68.23
ξn	\sim	1.880	1.8138	1.750	1	0.998

S(10 ⁻⁴ -)	-1.562	~	-1.563	,	-1.562	7	- 1.322	7	- 1.320
ZT K)	0.999	7	1	2	0.999	2	0.715	2	0.713
(ZT) _{Mott}	0.931		1		1.074		3.290		3.305
$VC1\left(10^{-4}\frac{V}{K}\right)$) -0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-4}\frac{V}{K}\right)$) -3.013	7	0	7	3.224	7	75.315	7	75.664
$T_s \left(10^{-4} \frac{V}{K} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10-°V)	-7.657	5	-7.829	<u> </u>	-7.993	2	-9.0089	7	-9.007
For x=1,									
In the degenera	ate P- X(x) — al	loy, for N	= 2 ×	N _{CDn} (r _p)), one	gets:		~ ~ ~ ~ ~
1(K) ブ と。 い	15.896		16.244123 1.8138		16.592 1.750		22.10439		22.126 0.998
$S(10^{-4}\frac{v}{v})$	-1.562	2	-1.563	7	-1.562	7	- 1.322	7	- 1.320
ZT K/	0.999	7	1	5	0.999	2	0.715	5	0.713
(ZT) _{Mott}	0.931		1		1.074		3.290		3.305
$VC1\left(10^{-4}\frac{V}{K}\right)$) -0.062	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-4}\frac{V}{K}\right)$) -0.980	7	0	7	1.039	7	24.424	7	24.535
$T_{s}\left(10^{-4}\frac{V}{K}\right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10-3V)	-2.483	2	-2.539	2	-2.592	2	-2.9215	7	-2.9208
In the degener	ate As- X((x) –	alloy, for N	$\mathbf{V} = 2$	$\times N_{CDn}(r)$	(_{As}), 01	ne gets:	-	22 210
ξ_n	1.879		1.8138		1.750		1	/	0.998
$S\left(10^{-4}\frac{V}{V}\right)$	-1.562	2	-1.563	7	-1.562	7	- 1.322	7	- 1.320
ZT	0.999	7	1	5	0.999	5	0.715	2	0.713
(ZT) _{Mott}	0.931		1		1.074		3.290		3.305
$VC1(10^{-4} + \frac{1}{K})$) -0.061	7	0	7	0.063	7	1.105	7	1.109
	1								
$VC2\left(10^{-4}\frac{v}{K}\right)$) -1.019	7	0	7	1.096	7	25.630	7	25.749
$VC2\left(10^{-4}\frac{v}{\kappa}\right)$ $T_{s}\left(10^{-4}\frac{v}{\kappa}\right)$) -1.019 -0.092	י י	0 0	7 7	1.096 0.094	7	25.630 1.657	7 7	25.749 1.663
$ \begin{array}{l} VC2 \left(10^{-4} \frac{v}{\kappa} \right) \\ T_{s} \left(10^{-4} \frac{v}{\kappa} \right) \\ Pt \left(10^{-3} V \right) \end{array} $) -1.019 -0.092 -2.606	7 - 7 - 5	0 0 -2.664	7 7 5	1.096 0.094 -2.720	7 7 5	25.630 1.657 -3.0658	7 7 7	25.749 1.663 -3.065
$VC2 \left(10^{-4} \frac{v}{k} \right)$ $T_{s} \left(10^{-4} \frac{v}{k} \right)$ $Pt \left(10^{-3} V \right)$ $In the degener$) -1.019 -0.092 -2.606 ate Sb- X(7 7 5 (x) -	0 0 2.664 alloy, for N	7 7 1 1 = 2	1.096 0.094 -2.720 × N _{CDn} (r	л Л 	25.630 1.657 -3.0658 ne gets:	7 7 7	25.749 1.663 -3.065
$VC2 \left(10^{-4} \frac{v}{K}\right)$ $T_{s} \left(10^{-4} \frac{v}{K}\right)$ $Pt \left(10^{-2} V\right)$ $In the degener T(K)$) -1.019 -0.092 -2.606 ate Sb- X(24.904	/ / (x) -	0 -2.664 alloy, for N 25.4454743	7 7 1 = 2 :	1.096 0.094 -2.720 × N _{CDn} (r 25.99	л л ъ ъ ъ ъ	25.630 1.657 -3.0658 ne gets: 34.625241	7 7 7	25.749 1.663 -3.065 34.66
$VC2 \left(10^{-4} \frac{v}{K}\right)$ $T_s \left(10^{-4} \frac{V}{K}\right)$ $Pt \left(10^{-3} V\right)$ $In the degenerT(K) \xrightarrow{\xi_n}S \left(10^{-4} \frac{V}{V}\right)$) -1.019 -0.092 -2.606 ate Sb- X(24.904 1.880	7 7 5 (x) -	0 -2.664 alloy, for N 25.4454743 1.8138	7 7 1=23	1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 1.562	۲ ۲ Sb), 01	25.630 1.657 -3.0658 ne gets: 34.625241 1	7 7 7 7	25.749 1.663 -3.065 34.66 0.998 1.320
$\begin{array}{c} VC2 \left(10^{-4} \frac{v}{K} \right) \\ T_{s} \left(10^{-4} \frac{v}{K} \right) \\ Pt \left(10^{-3} V \right) \\ \hline \\ \hline \\ In the degener \\ T(K) \\ \xi_{n} \\ S \left(10^{-4} \frac{v}{K} \right) \\ T \\ \end{array}$) -1.019 -0.092 -2.606 ate Sb- X(24.904 1.880 -1.562	x x x x)-	0 -2.664 alloy, for N 25.4454743 1.8138 -1.563	7 7 1=2:	1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 -1.562 0.000	7 7 5b), or	25.630 1.657 -3.0658 me gets: 34.625241 1 - 1.322 0.715	7 7 7	25.749 1.663 -3.065 34.66 0.998 - 1.320 0.713
VC2 $\left(10^{-4} \frac{v}{K}\right)$ T _s $\left(10^{-4} \frac{v}{K}\right)$ Pt $\left(10^{-2} V\right)$ In the degener T(K) \hat{z} S $\left(10^{-4} \frac{V}{K}\right)$ ZT (ZT) _{Mott}) -1.019 -0.092 -2.606 ate Sb-X(24.904 1.880 -1.562 0.999 7 0.931	7 5 (x) -	0 -2.664 alloy, for N 25.4454743 1.8138 -1.563 1 1	7 7 1=2: 7	1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 -1.562 0.999 1.074	۲ ۲ (Sb), or ۲	25.630 1.657 -3.0658 ne gets: 34.625241 1 - 1.322 0.715 3.290	7 7 7 7 5	25.749 1.663 -3.065 34.66 0.998 - 1.320 0.713 3.305
$VC2 \left(10^{-4} \frac{v}{K}\right)$ $T_{s} \left(10^{-4} \frac{v}{K}\right)$ $Pt \left(10^{-3} V\right)$ $In the degenerT(K) \xrightarrow{\xi_{n}}S \left(10^{-4} \frac{v}{K}\right)ZT(2T)_{Mott}VC1 \left(10^{-4} \frac{v}{K}\right)$) -1.019 -0.092 -2.606 ate Sb- X(24.904 1.880 -1.562 0.999 7 0.931) -0.061	ア マン (x) -	0 -2.664 alloy, for N 25.4454743 1.8138 -1.563 1 1 0	7 7 1=2: 7	1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 -1.562 0.999 1.074 0.062	۲ ۲ (Sb), 01 ۲ ۲	25.630 1.657 -3.0658 ne gets: 34.625241 1 - 1.322 0.715 3.290 1.105	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	25.749 1.663 -3.065 34.66 0.998 - 1.320 0.713 3.305 1.109
$VC2 \left(10^{-4} \frac{v}{\kappa}\right)$ $T_{s} \left(10^{-4} \frac{v}{\kappa}\right)$ $Pt (10^{-2}V)$ $In the degener T(K)$ $S \left(10^{-4} \frac{v}{\kappa}\right)$ ZT $(ZT)_{Mott}$ $VC1 \left(10^{-4} \frac{v}{\kappa}\right)$ $VC2 \left(10^{-4} \frac{v}{\kappa}\right)$) -1.019 -0.092 -2.606 ate Sb-X(24.904 1.880 -1.562 0.999 ≥ 0.931) -0.061) -1.524	ア 、 、 、 、 、 、 、 、 、 、 、 、 、	0 -2.664 alloy, for N 25.4454743 1.8138 -1.563 1 1 0 0	7 7 7 7 7 7	1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 -1.562 0.999 1.074 0.062 1.626	א יש יש יש יש יש יש יש יש יש יש יש יש יש	25.630 1.657 -3.0658 1e gets: 34.625241 1 - 1.322 0.715 3.290 1.105 38.259	, , , , , , , , , , , , , , , , , , ,	25.749 1.663 -3.065 34.66 0.998 - 1.320 0.713 3.305 1.109 38.437
$VC2 \left(10^{-4} \frac{v}{K}\right)$ $T_{s} \left(10^{-4} \frac{v}{K}\right)$ $Pt \left(10^{-3} V\right)$ $In the degenerT(K) \xrightarrow{\xi_{n}}S \left(10^{-4} \frac{v}{K}\right)ZT(ZT)_{Mott}VC1 \left(10^{-4} \frac{v}{K}\right)VC2 \left(10^{-4} \frac{v}{K}\right)T_{s} \left(10^{-4} \frac{v}{K}\right)$) -1.019 -0.092 -2.606 ate Sb- X(24.904 1.880 -1.562 0.999 2 0.931) -0.061) -1.524 -0.092		0 -2.664 alloy, for N 25.4454743 1.8138 -1.563 1 1 0 0 0		1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 -1.562 0.999 1.074 0.062 1.626 0.094	ج ج (Sb), 01 ج ج ج	25.630 1.657 -3.0658 ne gets: 34.625241 1 - 1.322 0.715 3.290 1.105 38.259 1.657		25.749 1.663 -3.065 34.66 0.998 - 1.320 0.713 3.305 1.109 38.437 1.663
$\begin{array}{c} VC2 \left(10^{-4} \frac{v}{k} \right) \\ T_{s} \left(10^{-4} \frac{v}{k} \right) \\ Pt \left(10^{-2} V \right) \\ \hline \\ \hline \\ In the degener \\ T(K) \\ \tilde{\xi}_{n} \\ S \left(10^{-4} \frac{v}{k} \right) \\ ZT \\ CT \\ VC1 \left(10^{-4} \frac{v}{k} \right) \\ VC1 \left(10^{-4} \frac{v}{k} \right) \\ VC2 \left(10^{-4} \frac{v}{k} \right) \\ Pt \left(10^{-2} V \right) \end{array}$) -1.019 -0.092 -2.606 ate Sb-X(24.904 1.880 -1.562 0.999 > 0.931) -0.061) -1.524 -0.092 -3.890		0 -2.664 alloy, for N 25.4454743 1.8138 -1.563 1 0 0 0 -3.977		1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 -1.562 0.999 1.074 0.062 1.626 0.094 -4.060	ج ج (Sb), or ج ج ج	25.630 1.657 -3.0658 ne gets: 34.625241 1 - 1.322 0.715 3.290 1.105 38.259 1.657 -4.5764		25.749 1.663 -3.065 34.66 0.998 - 1.320 0.713 3.305 1.109 38.437 1.663 -4.5752
$\begin{array}{c} VC2 \left(10^{-4} \frac{v}{K} \right) \\ T_{s} \left(10^{-4} \frac{V}{K} \right) \\ Pt \left(10^{-2} V \right) \\ \hline \\ \hline \\ In the degener \\ T(K) \\ S \left(10^{-4} \frac{V}{K} \right) \\ S \left(10^{-4} \frac{V}{K} \right) \\ ZT \\ (ZT)_{Mott} \\ VC1 \left(10^{-4} \frac{V}{K} \right) \\ VC2 \left(10^{-4} \frac{V}{K} \right) \\ Pt \left(10^{-3} V \right) \\ \hline \end{array}$) -1.019 -0.092 -2.606 ate Sb-X(24.904 1.880 -1.562 0.999 ≥ 0.931) -0.061) -1.524 -0.092 -3.890	ア 、 、 、 、 、 、 、 、 、 、 、 、 、	0 0 -2.664 alloy, for N 25.4454743 1.8138 -1.563 1 0 0 0 -3.977		1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 -1.562 0.999 1.074 0.062 1.626 0.094 -4.060	ج ج (Sb), or ج ج ج ج	25.630 1.657 -3.0658 ne gets: 34.625241 1 - 1.322 0.715 3.290 1.105 38.259 1.657 -4.5764	, , , , , , , , , , , , , , , , , , ,	25.749 1.663 -3.065 34.66 0.998 - 1.320 0.713 3.305 1.109 38.437 1.663 -4.5752
$VC2 \left(10^{-4} \frac{v}{K}\right)$ $T_{s} \left(10^{-4} \frac{v}{K}\right)$ $Pt (10^{-2}V)$ In the degener $T(K) \xrightarrow{\xi_{n}}$ $S \left(10^{-4} \frac{v}{K}\right)$ ZT $VC1 \left(10^{-4} \frac{v}{K}\right)$ $VC2 \left(10^{-4} \frac{v}{K}\right)$ $Pt (10^{-2}V)$ In the degener $T_{s} \left(10^{-2}V\right)$) -1.019 -0.092 -2.606 ate Sb-X(24.904 1.880 -1.562 0.999 7 0.931) -0.061) -1.524 -0.092 -3.890 	אר (x) = - (x) (x)	0 -2.664 alloy, for N 25.4454743 1.8138 -1.563 1 1 0 0 0 -3.977 alloy, for I	7 N=22	1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 -1.562 0.999 1.074 0.062 1.626 0.094 -4.060 × N _{CDn} (r × N _{CDn} (r) × N _{CDn} (r)	۲ (Sb), or ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲	25.630 1.657 -3.0658 1e gets: 34.625241 1 - 1.322 0.715 3.290 1.105 38.259 1.657 -4.5764 		25.749 1.663 -3.065 34.66 0.998 - 1.320 0.713 3.305 1.109 38.437 1.663 -4.5752
$\begin{array}{c} \operatorname{VC2}\left(10^{-4}\frac{v}{\kappa}\right)\\ \operatorname{T}_{s}\left(10^{-4}\frac{v}{\kappa}\right)\\ \operatorname{Pt}\left(10^{-2}V\right)\\ \end{array}$ In the degener $\operatorname{T}(K) \\ \operatorname{S}\left(10^{-4}\frac{v}{\kappa}\right)\\ \operatorname{ZT}\\ \operatorname{VC1}\left(10^{-4}\frac{v}{\kappa}\right)\\ \operatorname{VC2}\left(10^{-4}\frac{v}{\kappa}\right)\\ \operatorname{VC2}\left(10^{-4}\frac{v}{\kappa}\right)\\ \operatorname{Pt}\left(10^{-2}V\right)\\ \end{array}$ In the degener $\operatorname{T}(K) \\ \operatorname{E}_{s} \\ \end{array}$) -1.019 -0.092 -2.606 ate Sb-X(24.904 1.880 -1.562 0.999 > 0.931) -0.061) -1.524 -0.092 -3.890 	/ x) - x - x - x - x - x - x - x - x - x	0 0 -2.664 alloy, for N 25.4454743 1.8138 -1.563 1 0 0 0 0 -3.977 alloy, for I 28.72056 1.8138	7 N=2: 7 7 7 7 7 7	1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 -1.562 0.999 1.074 0.062 1.626 0.094 -4.060 -2.720 -2.720 -2.720 -1.562 0.999 1.074 0.062 1.626 0.094 -4.060 -2.720	7 (Sb), 01 7 7 7 7 7 7 7 7 7	25.630 1.657 -3.0658 ne gets: 34.625241 1 - 1.322 0.715 3.290 1.105 38.259 1.657 -4.5764 -4.5764 -4.5764 -1.3908185 1	ファファ フト ファファ 4	25.749 1.663 -3.065 34.66 0.998 - 1.320 0.713 3.305 1.109 38.437 1.663 -4.5752 39.12 0.998
$VC2 \left(10^{-4} \frac{v}{K}\right)$ $T_{s} \left(10^{-4} \frac{v}{K}\right)$ $Pt (10^{-2}V)$ In the degener $T(K) $ $S \left(10^{-4} \frac{v}{K}\right)$ ZT $VC1 \left(10^{-4} \frac{v}{K}\right)$ $VC2 \left(10^{-4} \frac{v}{K}\right)$ $Pt (10^{-2}V)$ In the degener $T(K) $ $S \left(10^{-4} \frac{v}{K}\right)$ $S \left(10^{-4} \frac{v}{K}\right)$) -1.019 -0.092 -2.606 ate Sb-X(24.904 1.880 -1.562 0.999 > 0.931) -0.061) -1.524 -0.092 -3.890 rate Sn-X(28.111 1.879 -1.562		0 0 -2.664 alloy, for N 25.4454743 1.8138 -1.563 1 0 0 0 -3.977 alloy, for I 28.72056 1.8138 -1.563	7 N=2: 7 7 7 7 7 8 8	1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 -1.562 0.999 1.074 0.062 1.626 0.094 -4.060 × N _{CDn} (r 29.34 1.750 -1.562	۲ (Sb), of ۲ ۲ ۲ ۲ 5n), of	25.630 1.657 -3.0658 ne gets: 34.625241 1 - 1.322 0.715 3.290 1.105 38.259 1.657 -4.5764 ne gets: 39.08185 1 - 1.322		25.749 1.663 -3.065 34.66 0.998 - 1.320 0.713 3.305 1.109 38.437 1.663 -4.5752 39.12 0.998 - 1.320
$\begin{array}{c} VC2 \left(10^{-4} \frac{v}{\kappa}\right) \\ T_s \left(10^{-4} \frac{v}{\kappa}\right) \\ Pt \left(10^{-2} V\right) \\ \hline \\ In the degener \\ T(K) \\ \\ \\ S \left(10^{-4} \frac{v}{\kappa}\right) \\ ZT \\ VC1 \left(10^{-4} \frac{v}{\kappa}\right) \\ VC2 \left(10^{-4} \frac{v}{\kappa}\right) \\ VC2 \left(10^{-4} \frac{v}{\kappa}\right) \\ Pt \left(10^{-2} V\right) \\ \hline \\ \hline \\ In the degener \\ T(K) \\ \\ \\ \\ \\ \\ S \left(10^{-4} \frac{v}{\kappa}\right) \\ \\ \\ \\ ZT \end{array}$) -1.019 -0.092 -2.606 ate Sb-X(24.904 1.880 -1.562 0.999 7 0.931) -0.061) -1.524 -0.092 -3.890 		0 0 -2.664 alloy, for N 25.4454743 1.8138 -1.563 1 0 0 0 -3.977 alloy, for I 28.72056 1.8138 -1.563 1	7 N=22 7 7 7 7 7 7 7 7 7 7	1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 -1.562 0.999 1.074 0.062 1.626 0.094 -4.060 × N _{CDn} (1 29.34 1.750 -1.562 0.999	۲ (Sb), or (Sb), or	25.630 1.657 -3.0658 ne gets: 34.625241 1 - 1.322 0.715 3.290 1.105 38.259 1.657 -4.5764 -1.322 0.715 39.08185 1 - 1.322 0.715		25.749 1.663 -3.065 34.66 0.998 - 1.320 0.713 3.305 1.109 38.437 1.663 -4.5752 39.12 0.998 - 1.320 0.713
$VC2 \left(10^{-4} \frac{v}{K}\right)$ $T_{s} \left(10^{-4} \frac{v}{K}\right)$ $Pt \left(10^{-3}V\right)$ $In the degenerT(K) S \left(10^{-4} \frac{v}{K}\right)ZTVC1 \left(10^{-4} \frac{v}{K}\right)VC2 \left(10^{-4} \frac{v}{K}\right)Pt \left(10^{-3}V\right)In the degenerT(K) S \left(10^{-4} \frac{v}{K}\right)ZTS \left(10^{-4} \frac{v}{K}\right)ZTZT(ZT)_{Mott}ZT(ZT)_{Mott}$) -1.019 -0.092 -2.606 ate Sb-X(24.904 1.880 -1.562 0.999 > 0.931) -0.061) -1.524 -0.092 -3.890 		0 0 -2.664 alloy, for N 25.4454743 1.8138 -1.563 1 0 0 0 -3.977 alloy, for I 28.72056 1.8138 -1.563 1 1 28.72056 1.8138	7 N=2: 7 N=2	1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 -1.562 0.999 1.074 0.062 1.626 0.094 -4.060 -2.34 1.750 -1.562 0.999 1.074	۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲	25.630 1.657 -3.0658 ne gets: 34.625241 1 - 1.322 0.715 3.290 1.105 38.259 1.657 -4.5764 -1.322 0.715 39.08185 1 - 1.322 0.715 3.290		25.749 1.663 -3.065 34.66 0.998 - 1.320 0.713 3.305 1.109 38.437 1.663 -4.5752 39.12 0.998 - 1.320 0.713 3.305
$\begin{array}{c} VC2 \left(10^{-4} \frac{v}{\kappa} \right) \\ T_{s} \left(10^{-4} \frac{v}{\kappa} \right) \\ Pt \left(10^{-3} V \right) \\ \hline \\ In the degener \\ T(K) \\ \xi_{n} \\ S \left(10^{-4} \frac{v}{\kappa} \right) \\ ZT \\ (ZT)_{Mott} \\ VC1 \left(10^{-4} \frac{v}{\kappa} \right) \\ VC2 \left(10^{-4} \frac{v}{\kappa} \right) \\ Pt \left(10^{-3} V \right) \\ \hline \\ \hline \\ In the degener \\ T(K) \\ \xi_{n} \\ S \left(10^{-4} \frac{v}{\kappa} \right) \\ S \left(10^{-4} \frac{v}{\kappa} \right) \\ ZT \\ ZT \\ (ZT)_{Mott} \\ VC1 \left(10^{-4} \frac{v}{\kappa} \right) \\ ZT \\ (ZT)_{Mott} \\ VC1 \left(10^{-4} \frac{v}{\kappa} \right) \\ \end{array}$) -1.019 -0.092 -2.606 ate Sb-X(24.904 1.880 -1.562 0.999 > 0.931) -0.061) -1.524 -0.092 -3.890 cate Sn-X(28.111 1.879 -1.562 0.999 > 0.931) -0.061) -0.061		0 0 -2.664 alloy, for N 25.4454743 1.8138 -1.563 1 0 0 0 -3.977 alloy, for N 28.72056 1.8138 -1.563 1 1 0 0 0 0 -3.977 -1.563 1 0 0 0 0 -3.977 -1.563 1 0 0 0 0 -3.977 -1.563 1 0 0 0 0 0 -3.977 -1.563 1 0 0 0 0 0 0 0 0 0 0 0 0 0	7 N=2: 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 -1.562 0.999 1.074 0.062 1.626 0.094 -4.060 × N _{CDn} (r 29.34 1.750 -1.562 0.994 1.750 -1.562 0.994 1.750 -1.562 0.994 1.750 -1.562 0.994 1.750 -1.562 0.994 1.750 -1.562 0.994 1.750 -1.562 0.994 1.750 -1.562 0.994 1.750 -1.562 0.994 1.750 -1.562 0.994 1.750 -1.562 0.094 -4.060 -1.562 0.994 1.750 -1.562 0.094 -4.060 -1.562 0.994 -1.562 0.994 -1.562 0.094 -1.562 0.094 -1.562 0.094 -1.562 0.094 -1.562 0.094 -1.562 0.094 -1.562 0.094 -1.562 0.094 -1.562 0.094 -1.562 0.094 -1.562 0.094 -1.562 0.094 -1.562 0.094 -1.562 0.094 -1.562 0.094 -1.562 0.995 1.750 -1.562 0.995 1.750 -1.562 0.999 1.750 -1.562 0.999 1.750 -1.562 0.999 1.074 0.063	۲ (Sb), or ۲ ۲ ۲ ۲ 5n), or ۲ ۲ ۲	25.630 1.657 -3.0658 ne gets: 34.625241 1 - 1.322 0.715 3.290 1.105 38.259 1.657 -4.5764 ne gets: 39.08185 1 - 1.322 0.715 3.290 1.105		25.749 1.663 -3.065 34.66 0.998 -1.320 0.713 3.305 1.109 38.437 1.663 -4.5752 39.12 0.998 -1.320 0.713 3.305 1.109
$\begin{array}{c} VC2 \left(10^{-4} \frac{v}{K} \right) \\ T_{s} \left(10^{-4} \frac{v}{K} \right) \\ Pt \left(10^{-3} V \right) \\ \hline \\ In the degener \\ T(K) \\ S \left(10^{-4} \frac{v}{K} \right) \\ ZT \\ VC1 \left(10^{-4} \frac{v}{K} \right) \\ VC2 \left(10^{-4} \frac{v}{K} \right) \\ VC2 \left(10^{-4} \frac{v}{K} \right) \\ Pt \left(10^{-3} V \right) \\ \hline \\ \hline \\ In the degener \\ T(K) \\ \xi_{n} \\ S \left(10^{-4} \frac{v}{K} \right) \\ ZT \\ ZT \\ (ZT)_{Mott} \\ VC1 \left(10^{-4} \frac{v}{K} \right) \\ ZT \\ VC1 \left(10^{-4} \frac{v}{K} \right) \\ VC2 \left(10^{-4} \frac{v}{K} \right) \\ VC3 \left(10^{-4} \frac{v}{K$) -1.019 -0.092 -2.606 ate Sb- X(24.904 1.880 -1.562 0.999 0.931) -0.061) -1.524 -0.092 -3.890 -3.890 -1.562 0.999 -1.562 0.999 -1.562 0.999 -1.562 0.999 -1.562 0.999 -1.562 0.999 -1.562 0.999 -1.562 0.999 -1.562 0.999 -1.562 0.999 -1.562 0.999 -1.562 0.999 -1.562 0.999 -1.562 0.999 -1.562 0.999 -1.562 0.999 -1.562 0.991 -1.562 0.991 -1.562 -1.716		0 0 -2.664 alloy, for N 25.4454743 1.8138 -1.563 1 0 0 0 -3.977 alloy, for N 28.72056 1.8138 -1.563 1 0 0 0 0 0 0 0 0 0 0 0 0 0	7 7 7 7 7 7 7 7 7 7 7 7 7 7	1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 -1.562 0.999 1.074 0.062 1.626 0.094 -4.060 -1.562 0.993 1.750 -1.562 0.999 1.074 0.063 1.850	۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲	25.630 1.657 -3.0658 ne gets: 34.625241 1 - 1.322 0.715 3.290 1.105 38.259 1.657 -4.5764 -4.5764 -1.322 0.715 3.290 1.055 3.290 1.105 3.290 1.105 3.290 1.105 3.290 1.105 3.290 1.105 3.290 1.105 3.290 1.105 3.290 1.105 3.290 1.657 -4.5764 -4.5764 -4.575 -4		25.749 1.663 -3.065 34.66 0.998 - 1.320 0.713 3.305 1.109 38.437 1.663 -4.5752 39.12 0.998 - 1.320 0.713 3.305 1.109 43.378
$\begin{array}{c} VC2 \left(10^{-4} \frac{v}{\kappa} \right) \\ T_{s} \left(10^{-4} \frac{v}{\kappa} \right) \\ Pt \left(10^{-2} V \right) \\ \hline \\ Pt \left(10^{-2} V \right) \\ \hline \\ T_{s} \left(10^{-4} \frac{v}{\kappa} \right) \\ S \left(10^{-4} \frac{v}{\kappa} \right) \\ ZT \\ VC1 \left(10^{-4} \frac{v}{\kappa} \right) \\ VC2 \left(10^{-4} \frac{v}{\kappa} \right) \\ VC2 \left(10^{-4} \frac{v}{\kappa} \right) \\ Pt \left(10^{-2} V \right) \\ \hline \\ \hline \\ T_{s} \left(10^{-4} \frac{v}{\kappa} \right) \\ S \left(10^{-4} \frac{v}{\kappa} \right) \\ ZT \\ ZT \\ (ZT)_{Mott} \\ VC2 \left(10^{-4} \frac{v}{\kappa} \right) \\ ZT \\ (ZT)_{Mott} \\ VC2 \left(10^{-4} \frac{v}{\kappa} \right) \\ \end{array}$) -1.019 -0.092 -2.606 ate Sb-X(24.904 1.880 -1.562 0.999 > 0.931) -0.061) -1.524 -0.092 -3.890 cate Sn-X(28.111 1.879 -1.562 0.999 > 0.931) -0.061) -1.716 -0.091		0 0 -2.664 alloy, for N 25.4454743 1.8138 -1.563 1 0 0 -3.977 alloy, for I 28.72056 1.8138 -1.563 1 0 0 0 0 0 0 0 0 0 0 0 0 0	7 7	1.096 0.094 -2.720 × N _{CDn} (r 25.99 1.750 -1.562 0.999 1.074 0.062 1.626 0.094 -4.060 × N _{CDn} (r 29.34 1.750 -1.562 0.999 1.074 0.063 1.850 0.095	۲ (Sb), or ۲ ۲ ۲ ۲ 5 ۲ 5 7 7 7 7 7 7 7 7 7 7 7 7	25.630 1.657 -3.0658 ne gets: 34.625241 1 - 1.322 0.715 3.290 1.105 38.259 1.657 -4.5764 -1.322 0.715 3.290 1.05 39.08185 1 - 1.322 0.715 3.290 1.105 43.183 1.657		25.749 1.663 -3.065 34.66 0.998 - 1.320 0.713 3.305 1.109 38.437 1.663 -4.5752 39.12 0.998 - 1.320 0.713 3.305 1.109 43.378 1.663

Table 5p: Here, for a given N and with increasing T, the reduced Fermi-energy ξ_p decreases, and other thermoelectric coefficients are in variations, as indicated by the arrows as: (increase: \nearrow , decrease: \searrow). One notes here that with increasing T: (i) for $\xi_p \simeq 1.8138$, while the numerical results of S present a same minimum $(S)_{min.} \left(\simeq -1.563 \times 10^{-4} \frac{V}{K}\right)$, those of ZT show a same maximum $(ZT)_{max.} = 1$, (ii) for $\xi_p = 1$, those of S, ZT, $(ZT)_{Mott}$, VC1, and T_s present the same results: $-1.322 \times 10^{-4} \frac{V}{K}$, 0.715, 3.290, $1.105 \times 10^{-4} \frac{V}{K}$, and $1.657 \times 10^{-4} \frac{V}{K}$, respectively, and (iii) for $\xi_p \simeq 1.8138$, $(ZT)_{Mott} = 1$.

For x=0,									
In the degener	ate Ga- X((x) –	alloy, for l	1 = 2	$\times N_{CDp}(1)$	' _{Ga}), 01	ne gets:		
T(K) 🖍	168.52		172.18917		175.88		234.30852		234.54
ξ _p 🖌	1.880		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	5	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT	0.999	7	1	5	0.998	2	0.715	5	0.713
(ZT) _{Mott}	7 0.931		1		1.074		3.290		3.305
$VC1\left(10^{-4}\frac{V}{K}\right)$) -0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-2}\frac{V}{K}\right)$) -0.103	7	0	7	0.110	7	2.589	7	2.601
$T_{s}\left(10^{-4}\frac{V}{K}\right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-2.632	2	-2.691	2	-2.747	2	-3.0969	7	-3.0961
In the degener	ate Mg- X	(x) –	alloy, for	N = 2	$2 \times N_{CDp}$	r _{Mg}), c	ne gets		
T(K) 🗷	188.32		192.42153		196.55		261.83996		262.1
ξ _p >	1.880		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	5	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT	0.999	7	1	5	0.999	~	0.715	5	0.713
(ZT) _{Mott}	₹ 0.931		1		1.074		3.290		3.305
$VC1\left(10^{-4}\frac{V}{K}\right)$) -0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-2}\frac{V}{K}\right)$) -0.115	7	0	7	0.123	7	2.893	7	2.906
$T_s \left(10^{-4} \frac{V}{K} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-2.941	2	-3.007	2	-3.070	2	-3.4607	~	-3.4599
In the degenera	te In- X(x	c) — a	allov, for N	1 = 2	× Ncp-(r _m), 0	ne gets:		
T(K) Z	201.78		206.17540	3	210.59	- m), -	280.5557	1	280.8
ξ. ν	1.880		1.8138		1.750		1		0.998

T(K)	7	201.78		206.17540	3	210.59		280.55571		280.83
ξp	2	1.880		1.8138		1.750		1		0.998
S(10-	$4\frac{V}{K}$	-1.562	5	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT		0.999	7	1	5	0.999	<u>></u>	0.715	5	0.713
(ZT) _{Mott}	7	0.931		1		1.074		3.290		3.305
VC1 (1	$\left(0^{-4}\frac{v}{\kappa}\right)$	-0.061	7	0	7	0.063	7	1.105	7	1.109
VC2 (1	$0^{-2} \frac{V}{K}$	-0.124	7	0	7	0.132	7	3.100	7	3.114
$T_s(10)$	$-4\frac{v}{\kappa}$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10-	2V)	-3.152	2	-3.222	2	-3.289	2	-3.7081	7	-3.7072

In the degenera	te Cd- X(x) – a	alloy, for l	N = 2	× N _{CDp} (1	cd), on	e gets:		
T(K) 🖍	219.02	1	223.779792	2	228.58		304.5111		304.82
ξ _p 🖌	1.880		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	5	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT	0.999	7	1	5	0.999	<u>></u>	0.715	5	0.713
(ZT) _{Mott} 7	0.931		1		1.074		3.290		3.305
$VC1\left(10^{-4}\frac{V}{K}\right)$	-0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-2}\frac{V}{K}\right)$	-0.134	7	0	7	0.143	7	3.365	7	3.380
$T_s \left(10^{-4} \frac{V}{K} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-3.421	2	-3.498	2	-3.570	2	-4.0247	7	-4.0237

For x=0.5,									
In the degener	ate Ga- X	(x) –	alloy, for	N = 2	$2 \times N_{CDp}$	(r _{Ga}), o	one gets:		
T(K)	111.9		114.33559		116.79		155.583553		155.74
ξ_p (V)	1.880		1.8138		1.750		1		0.998
$S(10^{-4}\frac{1}{K})$	-1.562	2	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT	0.999	7	1	2	0.998	\sim	0.715	2	0.713
(ZT) _{Mott}	0.931		1		1.074		3.290		3.305
$VC1\left(10^{-4}\frac{v}{K}\right)$	-0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-2}\frac{v}{\kappa}\right)$	-0.068	7	0	7	0.073	7	1.719	7	1.727
$T_s \left(10^{-4} \frac{V}{K} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-1.748	2	-1.787	2	-1.824	2	-2.0563	~	-2.0558
In the degenera	te Mg- X	(x) –	alloy, for	N = 2	$2 \times N_{CDp}$	r _{Me}),	one gets		
T(K) 🧷	125.05		127.770112		130.51		173.86475		174.04
ξp	1.880		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	2	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT (7T)	0.999	7	1	2	0.999	2	0.715	2	0.713
$VC1(10^{-4} \frac{V}{-1})$	-0.061	7	0	7	0.063	~	1.105	7	1.109
$VC2(10^{-2} V)$	-0.076	,	0	,	0.092	,	1 021	, ,	1.020
$VC2(10 \frac{1}{K})$	-0.070		0		0.062	<i>.</i>	1.921	΄.	1.950
$T_{s}(10 + \frac{1}{K})$	-0.092	1	0	1	0.094		1.657	/	1.663
Pt (10 ⁻² V)	-1.953	2	-1.997	2	-2.038	2	-2.2980	~	-2.2974
In the degenera	te In-X()	c) — a	allov for N	= 2	X Non (r	.) 01	e orets:		
T(K)	133.99	., .	136.90284		139.84	in), en	186.29222		186.48
ξ _p >	1.880		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	5	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT	0.999	7	1	2	0.999	2	0.715	2	0.713
(ZT) _{Mott} /	0.931		1		1.074		3.290		3.305
VC1 $\left(10^{-4}\frac{1}{K}\right)$	-0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-2}\frac{V}{K}\right)$	-0.082	7	0	7	0.088	7	2.058	7	2.068
$T_s \left(10^{-4} \frac{v}{v} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-2.093	2	-2.140	2	-2.184	2	-2.4622	7	-2.4616
In the degenera	te Cd- X(x) -	alloy for I	V = 2	X Nap. (1	ray) 0	ne øets:		
T(K)	145.43	<i>A</i>)	148.592356		151.78	(Ca), 0	202.19887		202.4
ξp 💈	1.880		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{V}{V}\right)$	-1.562	5	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT	0.999	7	1	5	0.999	5	0.715	5	0.713
(ZT) _{Mott} 7	0.931		1		1.074		3.290		3.305
$VC1\left(10^{-4}\frac{V}{K}\right)$	-0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-2}\frac{V}{K}\right)$	-0.089	7	0	7	0.095	7	2.234	7	2.244
$T_s \left(10^{-4} \frac{V}{v}\right)^{10}$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-2.272	5	-2.322	5	-2.371	5	-2.6725	7	-2.6718
T									
ror x=1, In the degenera	te Ga-X	(x) -	alloy for l	N = 2	XN		ne gets:		
T(K) 7	70.1		71.621813	2	73.16	• Ga), 0	97,46026		97.56
ξ _p >	1.880		1.8138		1.750		1		0.997
$S\left(10^{-4}\frac{V}{v}\right)$	-1.562	5	-1.563	7	-1.562	7	-1.322	7	-1.320
т 7Т	0 999	7	1	5	0.998	~	0.715	2	0.713

(ZT) _{Mott}	↗ 0.931		1		1.074		3.290		3.306
$VC1\left(10^{-4}\frac{V}{R}\right)$	-0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-2}\frac{V}{H}\right)$	-0.043	7	0	7	0.046	7	1.077	7	1.082
$T_s \left(10^{-4} \frac{v}{v} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10-2V)	-1.095	5	-1.119	5	-1.143	5	-1.2881	7	-1.2878
In the degene	rate Mg- X	(x) –	alloy, for	N = 2	$2 \times N_{CDp}$	(r _{Mg}), c	one gets:		
T(K) 7	78.332		80.037437		81.755		108.911924		109.02
ξ _p ν	1.880		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{1}{K}\right)$	-1.562	2	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT	0.999	7	1	2	0.999	2	0.715	2	0.713
(ZT) _{Mott}	× 0.931		1		1.074		3.290		3.305
VC1 (10 ⁻⁴ -	-0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-2}\frac{V}{F}\right)$	-0.048	7	0	7	0.051	7	1.203	7	1.209
$T_{s}\left(10^{-4}\frac{v}{v}\right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10-2V)	-1.223	2	-1.251	2	-1.277	2	-1.4395	7	-1.4391
In the degener	ate In- X(x	c) — a	lloy, for N	= 2 :	× N _{CDp} (r _l	_{in}), one	gets:		
Т(К) 🥕	83.93		85.758335		87.6]	16.696705		116.81
ξ _p	1.880		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{v}{K}\right)$	-1.562	\mathbf{N}	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT	0.999	7	1	2	0.999	2	0.715	2	0.713
(ZT) _{Mott}	7 0.931		1		1.074		3.290		3.305
$VC1(10^{-4} \frac{v}{K})$) -0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-2}\frac{V}{K}\right)$) -0.051	7	0	7	0.055	7	1.289	7	1.295
$T_{s}\left(10^{-4}\frac{V}{K}\right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-1.311	5	-1.340	5	-1.368	5	-1.5424	~	-1.5420
In the degener	ate Cd- X(x) – a	alloy, for l	N = 2	× N _{CDp} (1	r _{In}), on	e gets:		
T(K) Z	91.1		93.080854		95.08	1	26.660912		126 79
ξ _p Σ	1.880		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	5	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT	0.999	7	1	2	0.999	5	0.715	5	0.713
(ZT) _{Mott}	0.931		1		1.074		3.290		3.306
$VC1\left(10^{-4}\frac{V}{K}\right)$) -0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-2}\frac{V}{K}\right)$) -0.056	7	0	7	0.060	7	1.289	7	1.406
$T_s \left(10^{-4} \frac{V}{K} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-1.423	2	-1.455	5	-1.485	<u>></u>	-1.6741	7	-1.6736

Table 6n: Here, for a given T and with decreasing N, the reduced Fermi-energy ξ_n decreases, and other thermoelectric coefficients are in variations, as indicated by the arrows as: (increase: \nearrow , decrease: \searrow). One notes here that with increasing T: (i) for $\xi_n \simeq 1.8138$, while the numerical results of S present a same minimum $(S)_{min} \left(\simeq -1.563 \times 10^{-4} \frac{V}{K}\right)$, those of ZT show a same maximum $(ZT)_{max} = 1$, (ii) for $\xi_n = 1$, those of S, ZT, $(ZT)_{Mott}$, VC1, and T_s present the same results: $-1.322 \times 10^{-4} \frac{V}{K}$, 0.715, 3.290, $-1.105 \times 10^{-4} \frac{V}{K}$, and $1.657 \times 10^{-4} \frac{V}{K}$, respectively, and (iii) for $\xi_n \simeq 1.8138$, $(ZT)_{Mott} = 1$.

For	x=0,										
In t	he degenerate	e P- X(x) ·	– allo	oy, for T=	44.7	69183 K	, one	gets:			
N(1	.0 ¹⁷ cm ⁻³) ∖	3.4274	- 3	.3719916		3.319		2.748139	04	2.74	66
ξn	2	1.880		1.8138		1.750		1		0.99	8
	(1)										
	$S\left(10^{-4}\frac{v}{\kappa}\right)$	-1.562	5	-1.563	7	-1.562	7	- 1.322	7	- 1.320	
	ZT	0.999	7	1	5	0.998	5	0.715	5	0.713	
	(ZT) _{Mott}	↗ 0.931		1		1.074		3.290		3.305	
	$VC1(10^{-4} \frac{V}{10})$	-0.061	7	0	7	0.063	7	1.105	7	1.109	
	$VC2(10^{-4}\frac{1}{4})$	-2.746	7	0	7	2.817	7	49.467	7	49.641	
	$T_s \left(10^{-4} \frac{V}{K}\right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663	
	Pt (10-3V)	-6.993	2	-6.997	7	-6.993	7	-5.917	7	-5.910	
	In the degene	rate As- X(x) -	alloy, for T	= 46	979655 K	one	rets:			
	N(10 ¹⁷ cm ⁻³)	3.6843		3.6247868		3.568	,,	2.9541646		2.9525	
	ξ. 🖌	1.880		1.8138		1.750		1		0.998	
	$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	2	-1.563	7	-1.562	7	- 1.322	7	- 1.320	
	ZT	0.999	7	1	5	0.998	2	0.715	2	0.713	
	(ZT) _{Mott}	↗ 0.931		1		1.074		3.290		3.305	
	$VC1(10^{-4}\frac{V}{R})$	-0.061	7	0	7	0.063	7	1.105	7	1.109	
	$VC2(10^{-4}\frac{1}{10})$	$\frac{7}{2}$ -2.879	7	0	7	2.947	7	51.910	7	52.093	
	$T_s \left(10^{-4} \frac{V}{v}\right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663	
	Pt (10-°V)	-7.338	5	-7.343	7	-7.338	7	-6.209	7	-6.202	

In the degenerat	te Sh. X(v) -	alloy for T	r= 70	128324 K	one	tets:		
N(10 ¹⁷ cm ⁻³) \searrow $\xi_n \qquad \searrow$	6.72 1.880	A)	6.6108594 1.8138	/0.	6.507 1.750	, one g	5.38778352 1	2	5.3846 0.998
$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	5	-1.563	7	-1.562	7	- 1.322	7	- 1.320
ZT (ZT) _{Mott}	0.999 0.931	7	1 1	2	0.999 1.074	2	0.715 3.290	7	0.713 3.306
$VC1\left(10^{-4}\frac{v}{K}\right)$	-0.062	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-4}\frac{V}{K}\right)$	-4.321	7	0	7	4.411	7	77.488	7	77.774
$T_s \left(10^{-4} \frac{V}{K} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻³ V) -	-10.954	2	-10.961	7	-10.954	7	-9.269	7	-9.257

In the degenera	te Sn- X(x) – (alloy, for T	=79.]	154538, 01	ie gets	c		
N(10 ¹⁷ cm ⁻³)	8.058		7.9274126		7.803		6.4607611		6.457
ξn 🖌	1.880		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	5	-1.563	7	-1.562	7	- 1.322	7	- 1.320
ZT	0.999	7	1	\mathbf{N}	0.999	<u> </u>	0.715	2	0.713
(ZT) _{Mott} 7	0.931		1		1.074		3.290		3.305
$VC1\left(10^{-4}\frac{V}{K}\right)$	-0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-4}\frac{V}{K}\right)$	-4.866	7	0	7	4.974	7	87.461	7	87.780
$T_s \left(10^{-4} \frac{V}{K} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-12.364	2	-12.372	7	-12.364	7	-10.462	7	-10.449

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For x=0.5,										
In the degene	rate P- X(3	c) – a	lloy, for T=	=28.33	309 K, one	e gets:				
N(10 ¹⁷ cm ⁻³)	▶ 1.1293		1.1110493		1.0936		0.90549318		0.905	
ξ_n	1.880		1.8138		1.750		1		0.998	
$S(10^{-4}\frac{1}{K})$	-1.562	2	-1.563	7	-1.562	7	- 1.322	7	- 1.320	
ZT	0.999	7	1	\sim	0.999	2	0.715	5	0.713	
(ZT) _{Mott}	∕ 0.931		1		1.074		3.290		3.304	
$VC1(10^{-4})$	$\frac{v}{k} - 0.061$	7	0	7	0.063	7	1.105	7	1.109	
$VC2\left(10^{-4}\frac{V}{K}\right)$	-1.737	7	0	7	1.781	7	31.304	7	31.411	
$T_s \left(10^{-4} \frac{V}{K} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663	
Pt (10-3V)	-4.425	2	-4.428	7	-4.425	7	-3.744	7	-3.740	
In the degener:	ate As-X(v) — (v	allov for T	F= 20	729778 K	one o	ets:			
$N(10^{17} \text{cm}^{-3})$	1.2139	a) (1.1943437	- 27.	1.1756	oneg	0.9733780	3	0.9728	
ξ. ν	1.880		1.8138		1.750		1		0.997	
$S\left(10^{-4}\frac{V}{V}\right)$	-1.562	5	-1.563	7	-1.562	7	- 1.322	7	- 1.320	
ZT	0.999	7	1	2	0.999	5	0.715	2	0.713	
(ZT) _{Mott}	0.931		1		1.074		3.290		3.306	
$VC1\left(10^{-4}\frac{V}{K}\right)$	-0.061	7	0	7	0.063	7	1.105	7	1.109	
$VC2\left(10^{-4}\frac{v}{\kappa}\right)$) -1.817	7	0	7	1.868	7	32.850	7	32.972	
$T_s \left(10^{-4} \frac{V}{v} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663	
Pt (10-°V)	-4.644	2	-4.647	7	-4.644	7	-3.929	7	-3.924	
In the degenera N(10 ¹⁷ cm ⁻³) \searrow ξ_n \searrow	te Sb- X(x 2.214 1.880) — ai	lloy, for T= 2.1782352 1.8138	=44.3	7 8775 K , 2.144 1.750	one g	ets: 1.7752397 1		1.7742 0.998	
In the degenera $N(10^{17} \text{ cm}^{-3}) \searrow$ $\xi_n \searrow$ $S\left(10^{-4} \frac{V}{\kappa}\right)$	te Sb- X(x 2.214 1.880 -1.562) — al	lloy, for T= 2.1782352 1.8138 -1.563	=44.3 7	78775 K, 2.144 1.750 -1.562	one g	ets: 1.7752397 1 - 1.322	,	1.7742 0.998 - 1.320	
In the degenera $N(10^{17} \text{ cm}^{-3}) \searrow$ $\xi_n \qquad \searrow$ $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT	te Sb- X(x 2.214 1.880 -1.562 0.999) – ai	lloy, for T= 2.1782352 1.8138 -1.563 1	-44.3	78775 K, 2.144 1.750 -1.562 0.999	one g	ets: 1.7752397 1 - 1.322 0.715	,	1.7742 0.998 - 1.320 0.713	
In the degenera $N(10^{17} \text{ cm}^{-3}) \searrow$ $\xi_n \qquad \qquad$	te Sb-X(x 2.214 1.880 -1.562 0.999 0.931) – ai	lloy, for T- 2.1782352 1.8138 -1.563 1 1 1	-44.3	78775 K, 2.144 1.750 -1.562 0.999 1.074	one g	ets: 1.7752397 1 - 1.322 0.715 3.290	7	1.7742 0.998 - 1.320 0.713 3.305	
In the degenera $N(10^{17} \text{ cm}^{-3}) \searrow$ $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$	te Sb- X(x 2.214 1.880 -1.562 0.999 0.931 -0.061) – ai	lloy, for T: 2.1782352 1.8138 -1.563 1 1 0	=44.3 7 5 7	78775 K , 2.144 1.750 -1.562 0.999 1.074 0.063	one g	ets: 1.7752397 1 - 1.322 0.715 3.290 1.105	7 5	1.7742 0.998 - 1.320 0.713 3.305 1.109	
In the degenera $N(10^{17} \text{ cm}^{-3}) \rightarrow S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT (ZT) _{Mott} VC1 $\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ VC2 $\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$	te Sb-X(x 2.214 1.880 -1.562 0.999 0.931 -0.061 -2.720) - al	lloy, for T- 2.1782352 1.8138 -1.563 1 1 0 0	-44.3 7 5 7 7	78775 K, 2.144 1.750 -1.562 0.999 1.074 0.063 2.793	one g	ets: 1.7752397 1 - 1.322 0.715 3.290 1.105 49.036	7 5 7 7	1.7742 0.998 - 1.320 0.713 3.305 1.109 49.216	
In the degenera $N(10^{17} \text{ cm}^{-3})$ ξ_n $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $T_s\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$	te Sb-X(x 2.214 1.880 -1.562 0.999 0.931 -0.061 -2.720 -0.092) - ai	lloy, for T= 2.1782352 1.8138 -1.563 1 1 0 0 0		78775 K, 2.144 1.750 -1.562 0.999 1.074 0.063 2.793 0.094		ets: 1.7752397 1 - 1.322 0.715 3.290 1.105 49.036 1.657	7 5 7 7 7 7 7	1.7742 0.998 - 1.320 0.713 3.305 1.109 49.216 1.663	
In the degenera $N(10^{17} \text{ cm}^{-3}) \rightarrow S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT (ZT) _{Mott} VC1 $\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ VC2 $\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ T _s $\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ Pt (10^{-3}V)	te Sb-X(x 2.214 1.880 -1.562 0.999 0.931 -0.061 -2.720 -0.092 -6.932) - ai	lloy, for T: 2.1782352 1.8138 -1.563 1 1 0 0 0 -6.936	-44.3 7 7 7 7 7 7	78775 K, 2.144 1.750 -1.562 0.999 1.074 0.063 2.793 0.094 -3.932	one g	ets: 1.7752397 1 - 1.322 0.715 3.290 1.105 49.036 1.657 -5.865	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	1.7742 0.998 - 1.320 0.713 3.305 1.109 49.216 1.663 -5.858	
In the degenera $N(10^{17} \text{ cm}^{-3})$ $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ Pt (10^{-3}V)	te Sb-X(x 2.214 1.880 -1.562 0.999 0.931 -0.061 -2.720 -0.092 -6.932))-a) > > > > > > >	lloy, for T= 2.1782352 1.8138 -1.563 1 1 0 0 0 -6.936	=44.3	78775 K , 2.144 1.750 -1.562 0.999 1.074 0.063 2.793 0.094 -3.932		ets: 1.7752397 1 - 1.322 0.715 3.290 1.105 49.036 1.657 -5.865	, , , , , , , , , , , , , , , , , , ,	1.7742 0.998 - 1.320 0.713 3.305 1.109 49.216 1.663 -5.858	
In the degenera $N(10^{17} \text{ cm}^{-3})$ ξ_n $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $Pt\left(10^{-3} \text{V}\right)$ In the degenera	te Sb-X(x 2.214 1.880 -1.562 0.999 0.931 -0.061 -2.720 -0.092 -6.932 te Sn-X(x))-a	lloy, for T- 2.1782352 1.8138 -1.563 1 1 0 0 0 -6.936	=44.3 7 7 7 7 7 7	78775 K , 2.144 1.750 -1.562 0.999 1.074 0.063 2.793 0.094 -3.932 90766 K	one geore	ets: 1.7752397 1 - 1.322 0.715 3.290 1.105 49.036 1.657 -5.865 -5.865	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	1.7742 0.998 - 1.320 0.713 3.305 1.109 49.216 1.663 -5.858	
In the degenera $N(10^{17} \text{ cm}^{-3})$ $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT ZT $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $T_s\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $Pt\left(10^{-3} \text{V}\right)$ In the degenera $N(10^{17} \text{ cm}^{-3})$ V	te Sb-X(x 2.214 1.880 -1.562 0.999 0.931 -0.061 -2.720 -0.092 -6.932 te Sn-X(x 2.6548 1.870)) - a	lloy, for T= 2.1782352 1.8138 -1.563 1 1 0 0 0 -6.936 6.936 		78775 K , 2.144 1.750 -1.562 0.999 1.074 0.063 2.793 0.094 -3.932 90766 K 2.571 1.750	one ge	ets: 1.7752397 1 - 1.322 0.715 3.290 1.105 49.036 1.657 -5.865 -5.865 -5.865		1.7742 0.998 - 1.320 0.713 3.305 1.109 49.216 1.663 -5.858 2.12758 0.998	
In the degenera $N(10^{17} \text{ cm}^{-3}) \searrow$ $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ Pt (10 ⁻³ V) In the degenera $N(10^{17} \text{ cm}^{-3}) \searrow$ ξ_n	te Sb-X(x 2.214 1.880 -1.562 0.999 0.931 -0.061 -2.720 -0.092 -6.932 te Sn-X(x 2.6548 1.879)) - a	lloy, for T= 2.1782352 1.8138 -1.563 1 1 0 0 0 -6.936 -6.936 6.936 6.931 1.8138	=44.3 7 7 7 7 7 7 7 7 7 7 7 7 7	78775 K , 2.144 1.750 -1.562 0.999 1.074 0.063 2.793 0.094 -3.932 90766 K 2.571 1.750	one g 7 7 7 7 7 7 7 7 7 7 7	ets: 1.7752397 1 - 1.322 0.715 3.290 1.105 49.036 1.657 -5.865 -5.865 -5.865	7 5 7 7 7 7 7	1.7742 0.998 - 1.320 0.713 3.305 1.109 49.216 1.663 -5.858 2.12758 0.998	
In the degenera $N(10^{17} \text{ cm}^{-3}) \searrow$ $\xi_n \qquad \qquad$	te Sb-X(x 2.214 1.880 -1.562 0.999 0.931 -0.061 -2.720 -0.092 -6.932 te Sn-X(x 2.6548 1.879 -1.562))-a	lloy, for T: 2.1782352 1.8138 -1.563 1 1 0 0 0 -6.936 		78775 K , 2.144 1.750 -1.562 0.999 1.074 0.063 2.793 0.094 -3.932 90766 K 2.571 1.750 -1.562	one gy	ets: 1.7752397 1 -1.322 0.715 3.290 1.105 49.036 1.657 -5.865 -5.865 -5.877884 1 -1.322 0.715 -1.322	, , , , , , , , , , , , , , , , , , ,	1.7742 0.998 - 1.320 0.713 3.305 1.109 49.216 1.663 -5.858 2.12758 0.998 - 1.320	
In the degenera $N(10^{17} \text{ cm}^{-3}) \searrow$ $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ Pt (10 ⁻³ V) In the degenera $N(10^{17} \text{ cm}^{-3}) \searrow$ $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT	te Sb-X(x 2.214 1.880 -1.562 0.999 0.931 -0.061 -2.720 -0.092 -6.932 te Sn-X(x 2.6548 1.879 -1.562 0.999 0.931)) - a	lloy, for T: 2.1782352 1.8138 -1.563 1 1 0 0 0 -6.936 		78775 K , 2.144 1.750 -1.562 0.999 1.074 0.063 2.793 0.094 -3.932 90766 K 2.571 1.750 -1.562 0.999 1.074	one gr	ets: 1.7752397 1 -1.322 0.715 3.290 1.105 49.036 1.657 -5.865 	, S, J, J, J, J, S,	1.7742 0.998 - 1.320 0.713 3.305 1.109 49.216 1.663 -5.858 2.12758 0.998 - 1.320 0.713 3.305	
In the degenera $N(10^{17} \text{ cm}^{-3})$ ξ_n $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $T_s\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $Pt\left(10^{-3} \text{V}\right)$ In the degenera $N(10^{17} \text{ cm}^{-3})$ ξ_n $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT ZT ZT $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC1\left($	te Sb-X(x 2.214 1.880 -1.562 0.999 0.931 -0.061 -2.720 -0.092 -6.932 te Sn-X(x 2.6548 1.879 -1.562 0.999 0.931 -0.061)) - a 7 7 7 7 7 7 7 7 7 7 7 7 7	lloy, for T- 2.1782352 1.8138 -1.563 1 1 0 0 0 -6.936 		78775 K , 2.144 1.750 -1.562 0.999 1.074 0.063 2.793 0.094 -3.932 90766 K 2.571 1.750 -1.562 0.999 1.074 0.063	one gy	ets: 1.7752397 1 - 1.322 0.715 3.290 1.105 49.036 1.657 -5.865 .12877884 1 - 1.322 0.715 3.290 1.105	, s, , , , , , , , , , , , , , , , , ,	1.7742 0.998 - 1.320 0.713 3.305 1.109 49.216 1.663 -5.858 2.12758 0.998 - 1.320 0.713 3.305 1.109	
In the degenera $N(10^{17} \text{ cm}^{-3}) \searrow$ $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $T_s\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $Pt\left(10^{-3} \text{V}\right)$ In the degenera $N(10^{17} \text{ cm}^{-3}) \searrow$ $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT $(2T)_{Mott} \xrightarrow{V}$ $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$	te Sb-X(x 2.214 1.880 -1.562 0.999 0.931 -0.061 -2.720 -0.092 -6.932 te Sn-X(x 2.6548 1.879 -1.562 0.999 0.931 -0.061 -3.062))-a	lloy, for T- 2.1782352 1.8138 -1.563 1 1 0 0 0 -6.936 		78775 K , 2.144 1.750 -1.562 0.999 1.074 0.063 2.793 0.094 -3.932 90766 K 2.571 1.750 -1.562 0.999 1.074 0.063 3.151	one ge	ets: 1.7752397 1 -1.322 0.715 3.290 1.105 49.036 1.657 -5.865 	7 × 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	1.7742 0.998 - 1.320 0.713 3.305 1.109 49.216 1.663 -5.858 2.12758 0.998 - 1.320 0.713 3.305 1.109 55.543	
In the degenera $N(10^{17} \text{ cm}^{-3}) \searrow$ $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $Pt (10^{-3} \text{V})$ In the degenera $N(10^{17} \text{ cm}^{-3}) \searrow$ $S_{\text{K}} \sum$ $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT ZT $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$	te Sb-X(x 2.214 1.880 -1.562 0.999 0.931 -0.061 -2.720 -0.092 -6.932 te Sn-X(x 2.6548 1.879 -1.562 0.999 0.931 -0.061 -3.062 -0.092)) - a > 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	lloy, for T: 2.1782352 1.8138 -1.563 1 1 0 0 0 -6.936 		78775 K, 2.144 1.750 -1.562 0.999 1.074 0.063 2.793 0.094 -3.932 90766 K 2.571 1.750 -1.562 0.999 1.074 0.063 3.151 0.094	one ge	ets: 1.7752397 1 - 1.322 0.715 3.290 1.105 49.036 1.657 -5.865 .12877884 1 - 1.322 0.715 3.290 1.105 55.347 1.657		1.7742 0.998 - 1.320 0.713 3.305 1.109 49.216 1.663 -5.858 - 1.320 0.713 3.305 1.109 - 1.320 0.713 3.305 1.109 55.543 1.663	
In the degenera $N(10^{17} \text{ cm}^{-3}) \searrow$ $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $T_s\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ T In the degenera $N(10^{17} \text{ cm}^{-3}) \searrow$ $S\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ ZT $VC1\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $VC2\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$ $T_s\left(10^{-4} \frac{\text{V}}{\text{K}}\right)$	te Sb-X(x 2.214 1.880 -1.562 0.999 0.931 -0.061 -2.720 -0.092 -6.932 te Sn-X(x 2.6548 1.879 -1.562 0.999 0.931 -0.061 -3.062 -0.092 -7.824		lloy, for T: 2.1782352 1.8138 -1.563 1 1 0 0 0 -6.936 -6.936 -1.563 1 1.8138 -1.563 1 1 0 0 0 0 -0 -7.829		78775 K , 2.144 1.750 -1.562 0.999 1.074 0.063 2.793 0.094 -3.932 90766 K 2.571 1.750 -1.562 0.999 1.074 0.063 3.151 0.094 -7.824		ets: 1.7752397 1 -1.322 0.715 3.290 1.105 49.036 1.657 -5.865 		1.7742 0.998 - 1.320 0.713 3.305 1.109 49.216 1.663 -5.858 - 1.320 0.713 3.305 1.109 55.543 1.663 -6.612	

For x=1, In the degener N(10 ¹⁶ cm ⁻³)	ate P-X(x)) — a	110y, for T= 2.6660176 1.8138	:16.2 /	44123 K, 2.624 1.750	one get	ts: 2.1727774		2.1715
$S(10^{-4}\frac{V}{V})$	-1.562	2	-1.563	7	-1.562	7	- 1.322	7	- 1.320
ZT	0.999	7	1	5	0.999	5	0.715	2	0.713
(ZT) _{Mott}	↗ 0.931		1		1.074		3.290		3.306
$VC1(10^{-4} + \frac{1}{K})$) -0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-4}\frac{v}{\kappa}\right)$) -1.000	7	0	7	1.025	7	17.949	7	18.015
$T_s \left(10^{-4} \frac{v}{\kappa} \right)$	-0.092	7	0	7	0.095	7	1.657	7	1.663
Pt (10-°V)	-2.537	2	-2.539	7	-2.537	7	-2.147	7	-2.144
In the degener	ate As- X(x) –	alloy, for T	=17.	046174 K	, one g	gets:		
N(10 ¹⁶ cm ⁻³)	2.9128 1 879		2.8658864		2.821		2.3356684	4	2.3343
	1.075		10100		1.150		-		0.570
$S\left(10^{-4}\frac{v}{\kappa}\right)$	-1.562	2	-1.563	7	-1.562	7	- 1.322	7	- 1.320
ZT	0.999	7	1	2	0.999	2	0.715	2	0.713
(ZT) _{Mott}	0.931		1		1.074		3.290		3.305
	0.061	1	0		0.063		1.105		1.109
$VC2\left(10^{-4}\frac{v}{\kappa}\right)$) -1.042	7	0	7	1.069	7	18.835	7	18.904
$T_s \left(10^{-4} \frac{v}{\kappa} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻³ V)	-2.663	7	-2.664	7	-2.663	7	-2.253	7	-2.250
In the degener	ate Sb- X(к) — :	alloy, for T	=25.4	454743 I	, one g	gets:		
N(10 ¹⁶ cm ⁻³)	5.3123 1.879		5.2267826		5.145 1.750		4.259775		4.2573 0.998
$S\left(10^{-4}\frac{V}{V}\right)$	-1.562	5	-1.563	7	-1.562	7	- 1.322	7	- 1.320
ZT	0.999	7	1	5	0.999	2	0.715	2	0.713
(ZT) _{Mott}	0.931		1		1.074		3.290		3.305
$VC1(10^{-4} - \frac{1}{K})$) -0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2\left(10^{-4}\frac{V}{K}\right)$) -1.554	7	0	7	1.594	7	28.116	7	28.218
$T_s \left(10^{-4} \frac{V}{K} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻³ V)	-3.975	7	-3.977	7	-3.975	7	-3.363	7	-3.359
To the descent	ata Ca. V(allan far T	- 10 -	2056 V				
N(10 ¹⁶ cm ⁻³)	~ 6.371	x) —	6.2676966	=28.	6.169	one gei	s. 5.1081093	;	5.1052
ξ	1.880		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	2	-1.563	7	-1.562	7	- 1.322	7	- 1.320
ZT (ZT)	0.999 7 0.931	7	1	2	0.999	2	0.715	2	0.713
$VC1(10^{-4} \frac{V}{T})$) -0.061	~	0	7	0.063	7	1.105	7	1.109
$VC2(10^{-4}\frac{v}{v})$) -1.767	7	0	~	1.811	7	31.735	7	31.848
T. (10-4 ^V)	-0.092	~	0	~	0.094	,	1.657	7	1 663
-з (10 к) Pt (10-3V)	-4.486	5	-4.489	· ,	-4.486	,	-3.796	7	-3.791

Table 6p: Here, for a given T and with decreasing N, the reduced Fermi-energy ξ_p decreases, and other thermoelectric coefficients are in variations, as indicated by the arrows as: (increase: \nearrow , decrease: \searrow). One notes here that with increasing T: (i) for $\xi_p \simeq 1.8138$, while the numerical results of S present a same minimum $(S)_{min} \left(\simeq -1.563 \times 10^{-4} \frac{v}{\kappa} \right)$, those of ZT show a same maximum $(ZT)_{max} = 1$, (ii) for $\xi_p = 1$, those of S, ZT, $(ZT)_{Mott}$, VC1, and T_s present the same results: $-1.322 \times 10^{-4} \frac{v}{\kappa}$, 0.715, 3.290, $-1.105 \times 10^{-4} \frac{v}{\kappa}$, and $1.657 \times 10^{-4} \frac{v}{\kappa}$, respectively, and (iii) for $\xi_p \simeq 1.8138$, $(ZT)_{Mott} = 1$.

For x=0,									
In the degenera	ate Ga- X((x) – a	alloy, for T	[=172.	18917 K,	one ge	ets:		
N(10 ¹⁹ cm ⁻³)	v 1.950		1.9185205		1.8885		1.56357483	3	1.5627
ξ _p >	1.880		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	2	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT	0.999	7	1	5	0.999	~	0.715	5	0.713
(ZT) _{Mott}	0.931		1		1.074		3.290		3.305
$VC1\left(10^{-4}\frac{V}{K}\right)$	-0.061	7	0	7	0.063	7	1.105	7	1.109
$VC2(10^{-2}V)$	-0.105	7	0	7	0.108	7	1.902	7	1.909
$T_s \left(10^{-4} \frac{V}{K} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-2.690	2	-2.691	7	-2.690	7	-2.2758	7	-2.2731
In the degenera	te Mo-X	(v) -	allow for	T= 10 ⁴	7 42153 K	one	tetc.		
$N(10^{19} \text{ cm}^{-3})$	2 3036	(A) -	2 2664086	1- 197	2.42133 K	c, one g	1 8471001		1 84601
	1 880		1.8138		1 750		1.04/1001		0.998
- qc							-		
$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	2	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT	0.999	7	1	5	0.999	~	0.715	2	0.713
(ZT) _{Mott}	↗ 0.931		1		1.074		3.290		3.306
$VC1\left(10^{-4}\frac{V}{K}\right)$) -0.061	7	0	7	0.063	7	1.105	7	1.109
VC2(10 ⁻² V)	0.118	7	0	7	0.121	7	2.126	7	2.134
$T_{s}\left(10^{-4}\frac{V}{K}\right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-3.006	7	-3.007	7	-3.006	7	-2.5432	7	-2.5400
In the degener:	ate In-X(v) - 2	llov for T	-206	175403 K	one a	etc.		
$N(10^{19} \text{cm}^{-3})$	анс III- Л(. > 2.555	a) a	2 5136074	-200.	2 2208	, one g	2 0486370	3	2 04743
λ(10 cm) Σ	1 880		1.8138		1 750		1		0.998
Sp (1 and V)	1.000		1.0100	_	1.750	_		_	0.220
$S(10^{-4}-K)$	-1.562	2	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT	0.999	7	1	5	0.999	2	0.715	5	0.713
(ZT) _{Mott}	↗ 0.931		1		1.074		3.290		3.306
$VC1\left(10^{-4}\frac{v}{\kappa}\right)$) -0.061	7	0	7	0.063	7	1.105	7	1.109
VC2(10 ⁻² V)	-0.126	7	0	7	0.121	7	2.278	7	2.286
$T_s \left(10^{-4} \frac{V}{K} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-3.220	2	-3.222	7	-3.006	7	-2.7250	~	-2.7215

In the degenera N(10 ¹⁹ cm ⁻³)	ate Cd- X	(x) –	alloy, for 1 2.842425	T =22 3	2.79792 F	K, one	gets: 2.316547(5	2.3152
$s(10^{-4} \frac{v}{v})$	1.000		1.6136	7	1.550	7	1 3 2 2	7	1 220
	0.000	,	-1.505	(-1.302	(0.715	(0.713
(ZT) _{Mott}	0.931		1	2	1.074	2	3.290	2	3.305
$VC1(10^{-4}\frac{V}{T})$) -0.061	7	0	7	0.063	7	1.105	7	1.109
VC2(10 ⁻² V)	-0.137	7	0	7	0.141	7	2.473	7	2.482
$T_{s}\left(10^{-4}\frac{V}{T}\right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-3.495	2	-3.498	7	-3.495	7	-2.9577	7	-2.9540
For x=0.5,									
In the degenera	ate Ga- X	(x) –	alloy, for T	Γ=114	.33559 K	, one g	ets:		
N(10 ¹⁸ cm ⁻³) ξ _n ⊾	√ 7.4225 1.880		7.302887		7.1883		5.9517791 1		5.9484 0.998
$s(10^{-4}\frac{v}{v})$	-1.562	2	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT K/	0.999	7	1	2	0.999	2	0.715	2	0.713
(ZT) _{Mott}	0.931		1		1.074		3.290		3.305
$VC1\left(10^{-4}\frac{V}{K}\right)$) -0.061	7	0	7	0.063	7	1.105	7	1.109
VC2(10 ⁻² V)	-0.070	7	0	7	0.072	7	1.263	7	1.268
$T_s \left(10^{-4} \frac{v}{\kappa} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-1.786	2	-1.787	7	-1.786	7	-1.5112	7	-1.5093
In the degenera N(10 ¹⁸ cm ⁻³)	te Mg- X	(x) –	alloy, for 1	T=127	.770112 K	, one g	ets: 0310230		7 0 2 7
k(10 cm) ξ _p	1.880		1.8138		1.750		1		0.998
$S(10^{-4}\frac{v}{v})$	-1.562	5	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT	0.999	7	1	2	0.999	5	0.715	2	0.713
(ZT) _{Mott} /	0.931		1		1.074		3.290		3.305
$VC1\left(10^{-4}\frac{v}{\kappa}\right)$	-0.061	7	0	7	0.063	7	1.105	7	1.109
VC2(10 ⁻² V)	-0.078	7	0	7	0.080	7	1.412	7	1.417
$T_s \left(10^{-4} \frac{V}{K} \right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-1.996	2	-1.997	7	-1.996	7	-1.6887	7	-1.6866
T. d. A	L T V(11						
N(10 ¹⁸ cm ⁻³)	s.7685	x) — a	9.5684394	=130.9	8.492	ie gets	: 7.7981814		7.7936
E \	1 880		1 81 38		1 750		1		0.998
$s(10^{-4} V)$	-1 562		-1 563	7	-1.562	,	_1 322	7	-1 320
	0.000	7	-1.303	(0.000	1	0.715	(0.713
(ZT) _{Mott}	0.931	1	1	1	1.074	2	3.290	1	3.305
$VC1(10^{-4}\frac{v}{c})$	-0.061	7	0	7	0.063	7	1.105	7	1.109
VC2(10 ⁻² V)	-0.078	7	0	7	0.080	7	1.513	7	1.518
$T_{s}(10^{-4} \frac{v}{-1})$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-1.996	2	-2.140	7	-1.996	7	-1.8094	~	-1.8071
In the degenera	te Cd- X	(x) –	alloy, for T	[=148	592356 K,	one ge	ts:		
N(10 ¹⁹ cm ⁻³)	1.0997		1.0819748		1.065		0.8817985		0.8813
$s(10-4^{V})$	1.680		1.0130	2	1.750	2	1 200	2	1 200
3(10 -K)	-1.302	۷ ح	-1.503	(-1.302		-1.522		-1.520
(ZT) _{Mott}	0.999	1	1	7	1.074	2	3.290	7	3.305
$VC1(10^{-4} \frac{V}{-1})$	-0.061	7	0	7	0.063	7	1.105	7	1.109
VC2(10 ⁻² V)	-0.091	7	0	7	0.093	7	1.642	7	1.648
$T_{-4} (10^{-4} \frac{V}{-4})$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻² V)	-3.321	Ś	-2.322	7	-2.321	7	-1.9639	7	-1.9615
/		-		-		-			

For x=1,									
In the degenera	ate Ga- X	(x) –	alloy, for T	=71.0	521813 K, o	ne get	S:		
N(10 ¹⁸ cm ⁻³)	≥ 2.3226		2.285126		2.2493		1.8623546		1.8613
ξ _p	1.880		1.8138		1.750		1		0.998
$S\left(10^{-4}\frac{V}{K}\right)$	-1.562	2	-1.563	7	-1.562	7	-1.322	7	-1.320
ZT (ZT) _{Mott}	0.999 7 0.931	7	1 1	2	0.999 1.074	2	0.715 3.290	2	0.713 3.305
$VC1(10^{-4}\frac{v}{v})$) -0.061	7	0	7	0.063	7	1.105	7	1.109
VC2(10 ⁻³ V)	-0.438	7	0	7	0.449	7	7.914	7	7.942
$T_{g}\left(10^{-4}\frac{V}{K}\right)$	-0.092	7	0	7	0.094	7	1.657	7	1.663
Pt (10 ⁻³ V)	-11.187	2	-11.194	7	-11.187	7	-9.4663	7	-9.4546
In the degenera	ate Mg- X	((x) –	alloy, for 1	Г=80.	037437 K, c	ne ge	ts:		
N(10 ¹⁸ cm ⁻³)	2.7437		2.6994914		2.6572		2.2000582		2.1988
ξ_p $(10-4^{V})$	1.880		1.8138		1.750		1		0.998
$S(10 \frac{1}{K})$	-1.562	2	-1.503	1	-1.562		-1.522	1	-1.320
ZT (ZT)	0.999	7	1	2	0.999	2	0.715	2	0.713
$VC1 \left(10^{-4} \frac{V}{V}\right)$	0.951	7		7	0.063	~	1 105	7	1 100
$VC2(10^{-3}V)$	-0.480	2	0	<i>,</i>	0.005	~	0.044	2	0.075
$T(10^{-4}V)$	-0.469	<i>′</i> ,	0	2	0.004	2	0.044	~	1.662
			0		0.094	<i>_</i>	105706		-10 5654
D + (10 - 3V)	12 502		12 510	7	12 502				
Pt (10-°V)	-12.502	2	-12.510	7	-12.502		-10.5780		-10.5054
Pt (10 ⁻ °V)	-12.502	2	-12.510		-12.502		-10.5780		-10.5054
Pt (10 ⁻ °V)	-12.502	· · · · · · · · · · · · · · · · · · ·	-12.510	7	-12.502		-10.3780		
Pt (10 ^{-s} V)	-12.502	× (x) - :	-12.510	=85.7	-12.502	ne get	=10.3780		
Pt (10 ^{-s} V) In the degenera N(10 ¹⁸ cm ⁻³)	-12.502 -12.502 ate In- X(≥ 3.0431	(x) — :	-12.510 alloy, for T 2.9940338		-12.502	ne get	-10.3780 ts: 2.4401073		2.4387
Pt $(10^{-4}V)$ In the degeneration $N(10^{18}cm^{-3})$ $\xi_p \qquad \searrow$ $S(10^{-4}V)$	-12.502 ate In- X(3.0431 1.880		-12.510 alloy, for T 2.9940338 1.8138 -1.563	2=85.1	-12.502 758335 K, o 2.947 1.750 -1.562	ne get	-10.3786 ts: 2.4401073 1 -1 322		2.4387 0.998
Pt (10 ⁻² V) In the degenera N(10 ¹⁸ cm ⁻³) $\xi_p \qquad \searrow$ S $\left(10^{-4} \frac{V}{K}\right)$ ZT	-12.502 ate In- X(3.0431 1.880 -1.562 0.999		-12.510 alloy, for T 2.9940338 1.8138 -1.563	2=85.7	-12.502 758335 K, o 2.947 1.750 -1.562 0.999	me get	-10.3786 ts: 2.4401073 1 -1.322 0.715		2.4387 0.998 -1.320 0.713
Pt (10 ⁻² V) In the degenera: N(10 ¹⁸ cm ⁻³) ξ_p S $\left(10^{-4} \frac{V}{K}\right)$ ZT (ZT) _{Mott}	-12.502 ate In- X(3.0431 1.880 -1.562 0.999 7 0.931		-12.510 alloy, for T 2.9940338 1.8138 -1.563 1 1	2=85.7	-12.502 758335 K, o 2.947 1.750 -1.562 0.999 1.074	me get	-10.3780 2.4401073 1 -1.322 0.715 3.290	7	2.4387 0.998 -1.320 0.713 3.305
Pt $(10^{-4}V)$ In the degeneration $N(10^{18}cm^{-3})$ ξ_p $S\left(10^{-4}\frac{V}{K}\right)$ ZT $(ZT)_{Mott}$ $VC1\left(10^{-4}\frac{V}{K}\right)$	-12.502 ate In- X(3.0431 1.880 -1.562 0.999 7 0.931) -0.061	(x) : 7 7	-12.510 alloy, for T 2.9940338 1.8138 -1.563 1 1 0	 -=85.* 	-12.502 758335 K, c 2.947 1.750 -1.562 0.999 1.074 0.063	me gef	-10.3780 ts: 2.4401073 1 -1.322 0.715 3.290 1.105	7	2.4387 0.998 -1.320 0.713 3.305 1.109
$\begin{array}{c} \begin{array}{c} & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & $	-12.502 -12.502 -12.502 -12.502 -12.502 -1.562 0.999 -0.931 -0.661 -0.525	(x)	-12.510 alloy, for T 2.9940338 1.8138 -1.563 1 1 0 0	>=====================================	-12.502 758335 K, o 2.947 1.750 -1.562 0.999 1.074 0.063 0.539	me get	-10.3786 2.4401073 1 -1.322 0.715 3.290 1.105 9.476	7 2 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	2.4387 0.998 -1.320 0.713 3.305 1.109 9.510
$\begin{array}{c} \text{Pt} (10^{-4}\text{V}) \\ \hline \\ \text{In the degenera} \\ \text{N}(10^{18}\text{cm}^{-3}) \\ \xi_p \\ \text{S} \\ \left(10^{-4}\frac{\text{V}}{\text{K}}\right) \\ \text{ZT} \\ \text{ZT} \\ \text{VC1} \\ \left(10^{-4}\frac{\text{V}}{\text{K}}\right) \\ \text{VC2}(10^{-3}\text{V}) \\ \text{T}_s \\ \left(10^{-4}\frac{\text{V}}{\text{K}}\right) \end{array}$	-0.092 -12.502 ate In- X(3.0431 1.880 -1.562 0.999 7 $0.931) -0.061-0.525-0.092$	(x)	-12.510 alloy, for T 2.9940338 1.8138 -1.563 1 1 0 0 0	2=85. 7 7 7 7	-12.502 758335 K, c 2.947 1.750 -1.562 0.999 1.074 0.063 0.539 0.094	me get	-10.3786 is: 2.4401073 1 -1.322 0.715 3.290 1.105 9.476 1.657		2,4387 0,998 -1.320 0.713 3.305 1.109 9.510 1.663
$\begin{array}{c} \begin{array}{c} & \\ Pt \left(10^{-3} V \right) \\ \hline \\ \hline \\ In the degenera \\ N(10^{18} cm^{-3}) \\ \xi_{p} \\ & \\ \end{array} \\ S \left(10^{-4} \frac{V}{K} \right) \\ ZT \\ ZT \\ (ZT)_{Mott} \\ VC1 \left(10^{-4} \frac{V}{K} \right) \\ VC2 \left(10^{-3} V \right) \\ T_{s} \left(10^{-4} \frac{V}{K} \right) \\ Pt \left(10^{-3} V \right) \end{array}$	-0.092 -12.502 ate In- X(> 3.0431 1.880 -1.562 0.999 > 0.931)-0.061 -0.525 -0.092 -13.395	(x) (x)	-12.510 alloy, for T 2.9940338 1.8138 -1.563 1 1 0 0 0 0 -13.404	ア ==85. ア ア ア ア ア ア	-12.502 758335 K, o 2.947 1.750 -1.562 0.999 1.074 0.063 0.539 0.094 -13.395	me gef	-10.3780 ts: 2.4401073 1 -1.322 0.715 3.290 1.105 9.476 1.657 -11.3347		2.4387 0.998 -1.320 0.713 3.305 1.109 9.510 1.663 -11.3205
Pt $(10^{-2}V)$ In the degeneration $N(10^{18}cm^{-3})$ ξ_p $S\left(10^{-4}\frac{V}{K}\right)$ ZT $(2T)_{Mott}$ $VC1\left(10^{-4}\frac{V}{K}\right)$ $VC2(10^{-3}V)$ $T_s\left(10^{-4}\frac{V}{K}\right)$ Pt $(10^{-2}V)$ In the degeneration	-12.502 -12.502 ate In- X(> 3.0431 1.880 -1.562 0.999 > 0.931)-0.061 -0.525 -0.092 -13.395 ate Cd- X	x x x x x x x x x x x x x x x x x x x	-12.510 alloy, for T 2.9940338 1.8138 -1.563 1 1 0 0 0 -13.404 alloy, for T	7 ==85.' 7 7 7 7 7	-12.502 758335 K, o 2.947 1.750 -1.562 0.999 1.074 0.063 0.539 0.094 -13.395 080854 K o	me get	-10.3780 ts: 2.4401073 1 -1.322 0.715 3.290 1.105 9.476 1.657 -11.3347		2.4387 0.998 -1.320 0.713 3.305 1.109 9.510 1.663 -11.3205
Pt $(10^{-3}V)$ In the degenera $N(10^{18}cm^{-3})$ ξ_p $S\left(10^{-4}\frac{V}{K}\right)$ ZT $(ZT)_{Mott}$ $VC1\left(10^{-4}\frac{V}{K}\right)$ $VC2(10^{-3}V)$ $T_s\left(10^{-4}\frac{V}{K}\right)$ Pt $(10^{-3}V)$ In the degenera	-12.502 -12.502 ate In- X(> 3.0431 1.880 -1.562 0.999 > 0.931)-0.061 -0.525 -0.092 -13.395 ate Cd- X > 3.441	x x x x x x x x x x x x x x x x x x x	-12.510 alloy, for T 2.9940338 1.8138 -1.563 1 1 0 0 0 -13.404 alloy, for T 3.3855772	7 ==85.' 7 7 7 7 7	-12.502 758335 K, o 2.947 1.750 -1.562 0.999 1.074 0.063 0.539 0.094 -13.395 -13.395 -13.395	me get	-10.3780 ts: 2.4401073 1 -1.322 0.715 3.290 1.105 9.476 1.657 -11.3347 ts: 2.7592112		2.4387 0.998 -1.320 0.713 3.305 1.109 9.510 1.663 -11.3205
$\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \\ \\ \end{array} \\ \\ \end{array} \\ \\ \end{array} \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \end{array} \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \end{array} \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \\ \end{array} \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \\ \\ \end{array} \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \end{array} \\ \\ \\ \\ \end{array} \\ \\ \\ \\ \end{array} \\ \\ \\ \end{array} \\ \\ \\ \\ \\ \\ \end{array} \\ \\ \\ \\ \end{array} \\ \\ \\ \\ \\ \\ \\ \\ \end{array} \\ \\ \\ \\ \\ \\ \\ \\ \end{array} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \end{array} \\$	-12.502 -12.502 ate In- X(> 3.0431 1.880 -1.562 0.999 > 0.931)-0.061 -0.525 -0.092 -13.395 ate Cd- X > 3.441 1.880	(x) - : / / / / (x) - :		7 ==85. 7 7 7 7 7 7	-12.502 758335 K, o 2.947 1.750 -1.562 0.999 1.074 0.063 0.539 0.094 -13.395 080854 K, o 3.3325 1.750	ne get	-10.3786 1 -1.322 0.715 3.290 1.105 9.476 1.657 -11.3347 :: 2.7592112 1	7 × 7 7 7	2.4387 0.998 -1.320 0.713 3.305 1.109 9.510 1.663 -11.3205 2.7576 0.998
Pt $(10^{-3}V)$ In the degeneration $N(10^{18}cm^{-3})$ ξ_p Σ $S\left(10^{-4}\frac{V}{K}\right)$ ZT $VC1\left(10^{-4}\frac{V}{K}\right)$ $VC2(10^{-3}V)$ $T_s\left(10^{-4}\frac{V}{K}\right)$ Pt $(10^{-3}V)$ In the degenere $N(10^{18}cm^{-3})$ ξ_p Σ $S\left(10^{-4}\frac{V}{K}\right)$	-12.502 -12.502 ate In- X(> 3.0431 1.880 -1.562 0.999 > 0.931)-0.061 -0.525 -0.092 -13.395 ate Cd- X > 3.441 1.880 -1.562	(x)	12.510 alloy, for T 2.9940338 1.8138 -1.563 1 1 0 0 0 -13.404 -13.404 alloy, for T 3.3855772 1.8138 -1.563	7 ====================================	-12.502 758335 K, o 2.947 1.750 -1.562 0.999 1.074 0.063 0.539 0.094 -13.395 -13.395 -13.325 1.750 -1.562	ne get	-10.3786 ts: 2.4401073 1 -1.322 0.715 3.290 1.105 9.476 1.657 -11.3347 ts: 2.7592112 1 -1.322		2.4387 0.998 -1.320 0.713 3.305 1.109 9.510 1.663 -11.3205 2.7576 0.998 -1.320
$\begin{array}{c} \text{Pt} (10^{-s}\text{V}) \\ \hline \\ \hline \\ \text{In the degenera} \\ N(10^{18}\text{cm}^{-3}) \\ \xi_p \\ & \\ S \left(10^{-4} \frac{\text{V}}{\text{K}} \right) \\ \text{ZT} \\ \text{(ZT)}_{\text{Mott}} \\ \text{VC1} \left(10^{-4} \frac{\text{V}}{\text{K}} \right) \\ \text{VC2} (10^{-3}\text{V}) \\ \hline \\ T_s \left(10^{-4} \frac{\text{V}}{\text{K}} \right) \\ \hline \\ \text{Pt} (10^{-3}\text{V}) \\ \hline \\ \hline \\ \text{In the degener} \\ N(10^{18}\text{cm}^{-3}) \\ \xi_p \\ & \\ S \left(10^{-4} \frac{\text{V}}{\text{K}} \right) \\ \text{ZT} \end{array}$	-12.502 -12.502 ate In- X($3.04311.880-1.5620.9990.931-0.061-0.525-0.092-13.395ate Cd- X3.34411.880-1.5620.999$	(x)	-12.510 alloy, for T 2.9940338 1.8138 -1.563 1 0 0 0 -13.404 alloy, for T 3.3855772 1.8138 -1.563 1	ア ==85. ア ア ア ア ア ア ア ア ア ア ア ア ア ア ア ア	-12.502 758335 K, o 2.947 1.750 -1.562 0.999 1.074 0.063 0.539 0.094 -13.395 080854 K, o 3.3325 1.750 -1.562 0.999	nne get	-10.3786 ts: 2.4401073 1 -1.322 0.715 3.290 1.105 9.476 1.657 -11.3347 ts: 2.7592112 1 -1.322 0.715		2.4387 0.998 -1.320 0.713 3.305 1.109 9.510 1.663 -11.3205 2.7576 0.998 -1.320 0.713
$\begin{array}{c} \text{Pt} (10^{-3}\text{V}) \\ \hline \\ \text{In the degenera} \\ \text{N}(10^{18}\text{cm}^{-3}) \\ \xi_p \\ \text{S} \left(10^{-4} \frac{\text{V}}{\text{K}} \right) \\ \text{ZT} \\ \text{ZT} \\ \text{VC1} \left(10^{-4} \frac{\text{V}}{\text{K}} \right) \\ \text{VC2}(10^{-3}\text{V}) \\ \text{T}_s \left(10^{-4} \frac{\text{V}}{\text{K}} \right) \\ \hline \\ \text{Pt} (10^{-3}\text{V}) \\ \hline \\ \hline \\ \text{In the degener} \\ \text{N}(10^{18}\text{cm}^{-3}) \\ \xi_p \\ \text{S} \left(10^{-4} \frac{\text{V}}{\text{K}} \right) \\ \text{ZT} \\ \text{ZT} \\ \text{(ZT)}_{\text{Mott}} \\ \end{array}$	-12.502 -12.502 ate In- X($3.04311.880-1.5620.999\sim 0.931)-0.061-0.525-0.092-13.395ate Cd- X> 3.4411.880-1.5620.999\sim 0.931$	(x) - : 7 7 7 7 7 7 7 7 7 7 7 7 7	-12.510 alloy, for T 2.9940338 1.8138 -1.563 1 0 0 0 -13.404 alloy, for T 3.3855772 1.8138 -1.563 1 1	ア 	-12.502 758335 K, o 2.947 1.750 -1.562 0.999 1.074 0.063 0.539 0.094 -13.395 080854 K, o 3.3225 1.750 -1.562 0.999 1.074	ne get	-10.3786 I -1.322 0.715 3.290 1.105 9.476 1.657 -11.3347 I -1.322 0.715 3.290 1.105 9.476 1.657 -11.3347 I -1.322 0.715 3.290		2,4387 0,998 -1.320 0.713 3.305 1.109 9.510 1.663 -11.3205 2.7576 0.998 -1.320 0.713 3.305
Pt $(10^{-3}V)$ In the degenera $N(10^{18}cm^{-3})$ ξ_p $S\left(10^{-4}\frac{V}{K}\right)$ ZT $(2T)_{Mott}$ $VC1\left(10^{-4}\frac{V}{K}\right)$ $VC2(10^{-3}V)$ $T_s\left(10^{-4}\frac{V}{K}\right)$ Pt $(10^{-3}V)$ In the degenera $N(10^{18}cm^{-3})$ ξ_p $S\left(10^{-4}\frac{V}{K}\right)$ ZT $(2T)_{Mott}$ $VC1\left(10^{-4}\frac{V}{K}\right)$	-12.502 -12.502 ate In- X(> 3.0431 1.880 -1.562 0.999 > 0.931) -0.061 -0.525 -0.092 -13.395 ate Cd- X > 3.441 1.880 -1.562 0.999 > 0.931 2.3441 1.880 -1.562 0.999 > 0.931 -1.562 0.999 > 0.931 -0.061	x (x) - : 7 7 7 7 7 7 7 7 7 7	-12.510 alloy, for T 2.9940338 1.8138 -1.563 1 0 0 0 -13.404 -13.404 alloy, for T 3.3855772 1.8138 -1.563 1 1 0	ア ====================================	-12.502 758335 K, o 2.947 1.750 -1.562 0.999 1.074 0.063 0.539 0.094 -13.395 -1.305 1.750 -1.562 0.999 1.074 0.063	ne get	-10.3786 2.4401073 1 -1.322 0.715 3.290 1.105 9.476 1.657 -11.3347 		2.4387 0.998 -1.320 0.713 3.305 1.109 9.510 1.663 -11.3205 2.7576 0.998 -1.320 0.713 3.305 1.109
$\begin{array}{c} \text{Pt} (10^{-3}\text{V}) \\ \hline \\ \text{In the degenera} \\ \text{N}(10^{18}\text{cm}^{-3}) \\ \xi_p \\ & \\ \text{S} \left(10^{-4} \frac{\text{V}}{\text{K}} \right) \\ \text{ZT} \\ \text{ZT} \\ \text{VC1} \left(10^{-4} \frac{\text{V}}{\text{K}} \right) \\ \text{VC2} (10^{-3}\text{V}) \\ \text{T}_s \left(10^{-4} \frac{\text{V}}{\text{K}} \right) \\ \text{Pt} (10^{-3}\text{V}) \\ \hline \\ \text{In the degener} \\ \text{N}(10^{18}\text{cm}^{-3}) \\ \xi_p \\ & \\ \text{S} \left(10^{-4} \frac{\text{V}}{\text{K}} \right) \\ \text{ZT} \\ \text{ZT} \\ \text{ZT} \\ \text{VC1} \left(10^{-4} \frac{\text{V}}{\text{K}} \right) \\ \text{VC2} (10^{-3}\text{V}) \\ \end{array}$	-12.502 -12.502 ate In- X(> 3.0431 1.880 -1.562 0.999 > 0.931) -0.061 -0.525 -0.092 -13.395 ate Cd- X > 3.441 1.880 -1.562 0.999 > 0.931) -0.061 0.999 > 0.931) -0.061 -0.562 0.999 > 0.931) -0.061 -1.562 0.999 > 0.931 -1.562 0.999 > 0.931 -1.562 0.999 > 0.931 -1.562 0.999 > 0.931 -0.562 -0.092 -1.562 -0.999 -1.562 -0.092 -1.562 -0.999 -1.562 -0.999 -1.562 -0.999 -1.562 -0.999 -1.562 -0.999 -1.562 -0.999 -1.562 -0.999 -1.562 -0.999 -0.991 -1.562 -0.991 -0.562 -0.999 -0.991 -1.562 -0.999 -0.991 -0.061 -0.562 -0.999 -0.991 -0.061 -0.562 -0.991 -0.061 -0.562 -0.9931 -0.061 -0.569	(x) - : , x , y , y , (x) - : , y , y , y , y	12.510 alloy, for T 2.9940338 1.8138 -1.563 1 0 0 0 -13.404 alloy, for T 3.3855772 1.8138 -1.563 1 1 0 0 0	ア ====================================	-12.502 758335 K, o 2.947 1.750 -1.562 0.999 1.074 0.063 0.539 0.094 -13.395 0.094 -13.395 0.094 -1562 0.999 1.074 0.063 0.584	ne get	-10.3786 1 -1.322 0.715 3.290 1.105 9.476 1.657 -11.3347 -1.322 0.715 3.290 1.105 1.3290 1.105 1.0285		2.4387 0.998 -1.320 0.713 3.305 1.109 9.510 1.663 -11.3205 2.7576 0.998 -1.320 0.713 3.305 1.109 1.320 0.713 3.305
Pt $(10^{-3}V)$ In the degeneration $N(10^{18}cm^{-3})$ ξ_p $S\left(10^{-4}\frac{V}{K}\right)$ ZT $(ZT)_{Mott}$ $VC1\left(10^{-4}\frac{V}{K}\right)$ $VC2(10^{-3}V)$ T _s $\left(10^{-4}\frac{V}{K}\right)$ Pt $(10^{-3}V)$ In the degenere $N(10^{18}cm^{-3})$ ξ_p $S\left(10^{-4}\frac{V}{K}\right)$ ZT $(ZT)_{Mott}$ $VC1\left(10^{-4}\frac{V}{K}\right)$ $VC1\left(10^{-4}\frac{V}{K}\right)$ $T_{s}\left(10^{-4}\frac{V}{K}\right)$	-0.092 -12.502 ate In- X(3.0431 1.880 -1.562 0.999 0.931 -0.061 -0.525 -0.092 -13.395 ate Cd- X 3.3441 1.880 -1.562 0.999 7 $0.931-1.5620.9997$ $0.931-1.5620.9997$ $0.931-1.5620.9997$ $0.931-1.5620.9997$ $0.931-1.5620.9997$ $0.931-1.5620.9997$ $0.931-1.5620.9997$ $0.931-1.5620.9997$ $0.931-1.5620.9997$ $0.931-0.661-0.569-0.061-0.569-0.092$	(x)	12.510 alloy, for T 2.9940338 1.8138 1.563 1 0 0 0 13.404 13.404 13.404 13.404 13.404 1.563 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ア ==85. ア ア ア ア ア ア ア ア ア ア ア ア ア	-12.502 758335 K, o 2.947 1.750 -1.562 0.999 1.074 0.063 0.539 0.094 -13.395 080854 K, o 3.3325 1.750 -1.562 0.999 1.074 0.063 0.584 0.094	nne get	-10.3786 ts: 2.4401073 1 -1.322 0.715 3.290 1.105 9.476 1.657 -11.3347 ts: 2.7592112 1 -1.322 0.715 3.290 1.105 1.055 1.055 1.055 1.055		2.4387 0.998 -1.320 0.713 3.305 1.109 9.510 1.663 -11.3205 2.7576 0.998 -1.320 0.713 3.305 1.109 10.322 1.663
$\begin{array}{c} \text{Pt} (10^{-3}\text{V}) \\ \hline \\ \hline \\ \text{In the degenera} \\ \text{N}(10^{18}\text{cm}^{-3}) \\ \xi_p \\ \text{S} \\ (10^{-4}\frac{\text{V}}{\text{K}}) \\ \text{ZT} \\ \text{ZT} \\ \text{VC1} \\ (10^{-4}\frac{\text{V}}{\text{K}}) \\ \text{VC2}(10^{-3}\text{V}) \\ \hline \\ \text{T}_s \\ (10^{-4}\frac{\text{V}}{\text{K}}) \\ \hline \\ \text{Pt} \\ (10^{-3}\text{V}) \\ \hline \\ \hline \\ \text{In the degenera} \\ \text{N}(10^{18}\text{cm}^{-3}) \\ \xi_p \\ \text{S} \\ (10^{-4}\frac{\text{V}}{\text{K}}) \\ \text{ZT} \\ \text{ZT} \\ \text{VC1} \\ (10^{-4}\frac{\text{V}}{\text{K}}) \\ \text{VC2}(10^{-3}\text{V}) \\ \hline \\ \text{T}_s \\ (10^{-4}\frac{\text{V}}{\text{K}}) \\ \text{Pt} \\ (10^{-3}\text{V}) \\ \hline \end{array}$	-0.092 -12.502 ate In- X(3.0431 1.880 -1.562 0.999 0.931)-0.061 -0.525 -0.092 -13.395 ate Cd- X 3.441 1.880 -1.562 0.999 7 $0.931)-0.061-0.569-0.092-0.569-0.569-0.592-0.569-0.569-0.569-0.569-0.569-0.569-0.569-0.569-0.569-0.569-0.569-0.569-0.569-0.569-0.569-0.569-0.569-0.592-0.569-0.569-0.592-0.569-0.592-0.569-0.569-0.569-0.569-0.592-0.569-0.592-0.569-0.592$		12.510 alloy, for T 2.9940338 1.8138 1.563 1 0 0 13.404 13.404 13.404 13.404 13.8138 1.563 1 0 0 0 14.548	ア ====================================	-12.502 758335 K, o 2.947 1.750 -1.562 0.999 1.074 0.063 0.539 0.094 -13.395 1.750 -1.562 0.999 1.074 0.063 0.584 0.094 -14.539		-10.3786 I -1.322 0.715 3.290 1.105 9.476 1.657 -11.3347 S: 2.7592112 1 -1.322 0.715 3.290 1.105 1.05 1.055 1.055 1.055 1.055 1.0285 1.657 -12.3025		2,4387 0,998 -1.320 0.713 3.305 1.109 9.510 1.663 -11.3205 2.7576 0.998 -1.320 0.713 3.305 1.109 10.322 1.663 -12.2869