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COMPLEMENTS TO THE THEORY OF VARIATION 1-2021

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0. SUMMARY

In many models, including the theory of relativity, evolution is described only in terms of a few important variables. In multivariable systems, variations of all variables can contribute to evolution. In the present paper we present a model that starts from the total variation of all the explicit variables, expressing the main parameters of evolution.

1. THE EVOLUTION OF THE SYSTEMS

According to[1] the evolution form is:

$$\frac{dE}{E} = \frac{dm}{m} + \frac{d v^2}{v^2} = k.\omega$$ Any variation must have an effect on mass and/or speed.

We can have the following cases

1. $k = 0$ compact evolution with $E = m v^2 = const$

2. $k > 0$ discrete evolution with $E = c.V^k$ V being the hypervolume of the system.[1]

for example $V = V(m, v^2, x)$

1. Under Extreme conditions[1]

$V = const.e^{-pV}$ the energy amplitude will be $E = const.e^{-p.k.V}$

2. The State Of Relaxation Covers The Inertiality Conditions

$$\frac{d v^2}{v^2} = \left(\frac{dE}{E} - \frac{dm}{m}\right)$$

a. The speed of v increases

$$\frac{dE}{E} \rangle \frac{dm}{m}$$

b. The speed of v decreases

$$\frac{dE}{E} \langle \frac{dm}{m}$$

c. The Evolution of Space

In accordance with the classical canonical equiations of Hamilton, we have

$\frac{\partial V}{\partial t} = -\frac{\partial H}{\partial x}$ in our case $H = \omega = \frac{dV}{V}$ $\quad \frac{\partial V}{\partial t} = \frac{V}{t}$ $\quad V = k.\prod x_i$

$$\frac{\partial V}{\partial x} = \frac{V}{x}$$

In the end we will obtain tha real spatial evolution (not probalistic)

$$x = \left(\frac{d^2 V}{V} - \omega^2 \right).t$$

$$x = \left(\frac{d^2 V}{V} - H^2 \right).t$$

Respectively the speed will be

$$v = \frac{d^2 V}{V} - H^2$$

In the case of quantum evolution from Srodinger's equation we have

$ih\frac{\partial V}{\partial t} = H.V$ with $\frac{\partial V}{\partial t} = \frac{V}{t}$ results

$H = \frac{ih}{t}$ if we accept the above relationships we get

$$v = \frac{d^2 V}{V} + \left(\frac{h}{t} \right)^2$$

$$x = \frac{d^2 V}{V}.t + \frac{h^2}{t}$$

The relations of uncertainty express the impossibility of solving a system with an insufficient number of relations.

3. Oscillatory Evolution

$V = c.e^{-pV}$ $E = c1e^{-pkV}$ amplitudes

$$V = c.e^{-pV} e^{j\omega t} = c.e^{-pV + j\omega t}$$

$$E = c1.e^{-pkV} \cdot e^{j\omega t} = c1.e^{-pkV + j\omega t}$$

at the resonance $\omega = 1$

The variation theory relations represent a unitary treatment of the material and geometric aspects of the studied systems.

4. Preserving The Form Of Evolution Relations

In classical physics, Hamiltonian relations are preserved.

Similar to Hamiltonian relations in variation theory relative variation is used.

$$\omega = \frac{dV}{V}$$

When composing 2 systems

$H = H_1 + H_2$ or $\omega = \omega_1 + \omega_2$ which come from

$V = V_1 . V_2$ $\omega = \frac{dV}{V}$ amplitudes $c.e^{-p_1 V_1 - p_2 V_2 + j(\alpha_1 + \alpha_2)t}$

In quantum mechanincs we also have the simultaneous probability of 2 achievements

$$P \neq P_1 + P_2$$

5. Relaxation Surfaces

Starting from the first fundamental square shape of the surface in differential geometry

$$d s^2 = Ed u^2 + 2Fdu.dv + G\, d v^2$$

It can be shown around the $M(u,v)$ point

there is a relaxing surface form:

$$s^2 = -const1.u^3 \cdot v^2 \quad \text{or} \quad s^2 = -const2.u^2 \cdot v^3$$

The theory of relativity does not require dimensional homogeneity.

6. The Interaction

Starting from the Bolyai Lobacewsky relationship

$$\operatorname{mod} F = \frac{G.m.M}{k^2 sh^2 \frac{r}{k}}$$

a. In case of relaxation we have

$$\frac{G}{k^2} = 1$$

$$\operatorname{mod} F = \frac{m.M}{sh^2 \frac{r}{\sqrt{G}}}$$

b. Extreme case

$$\frac{dF}{F} = -1 \quad \text{with}$$

$$\frac{G}{k^2 r} \ln \frac{c.m.M}{sh^2 \frac{r}{k}} = -1$$

7. The Spread of Waves

Starting from Alambert's law of wave spread

$$\Delta\psi = -\frac{1}{c^2}\frac{\partial^2 \psi}{\partial t^2} \quad \text{we have}$$

a. In case of relaxation (inertial)[1]

$$\psi_x' = \psi_y' = \psi_z' = -\frac{1}{c^2}\psi_t' \quad \text{results}$$

$$\psi_x' + \psi_y' + \psi_z' = -\frac{3}{c^2}\psi_t'$$

b. In the case of extreme evolution.[1]

$\frac{dF}{F} = -1$ we get

$$\nabla\psi = -\frac{1}{c^2}\psi_t'$$

8. Evolutions At Low And High Speed Phase Speed, Group Speed

$$v_f = c.\frac{\Delta\lambda}{\lambda} \qquad v_g = v_f - \lambda.\frac{dv_f}{d\lambda}$$

a. $\Delta\lambda = \frac{\lambda_0}{n} \quad \lambda = \lambda_0\frac{n+1}{n}$

$$v_f = \frac{c}{n} \qquad \frac{dv_f}{d\lambda} = \frac{c}{\lambda_0}$$

$$v_g = -c$$

b. $\Delta\lambda = n.\lambda_0 \qquad v_f = c.n \qquad \frac{dv_f}{d\lambda} = \frac{c}{\lambda_0}$

$$\lambda = (n+1)\lambda_0$$

$$v_g = c.n - c.\frac{\lambda}{\lambda_0} = -c$$

With critical points in resonance state.

Between critical points the communication is at very high speeds, some researchers say that at such speeds there would be the so-called spontaneous communication between living species.

We can generate such speeds with $n \geq 0$

At speeds lower than the speed of light the speed limit is c, due to the expansion the group speed can exceed the phase speed.

At speeds higher than the speed of light the group speed decreases at the level of light speed, there is no expansion. Some experts dispute the validity of the theory at low speeds.

The expression of the hypervolume allows the inclusion of all the variables in the model, their variations obtaining a more accurate model.

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