



Monism of nonlocal matterspace



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Type of the Paper (Proceedings) Igor Bulyzhenkov

Monism of nonlocal matterspace with instant all-unity instead of particle-field duality with retarded interactions

Abstract: The metric self-organization of matterspace-time implies a nonlocal correlation of its affine connections and the fulfillment of volumetric conservation of energy-momentum under shifts of coordinate time. Geodesic forces-accelerations in metric fields of General Relativity correspond to local pushes by the Lomonosov gravitational liquid but not to the retarded interactions between distant bodies. Mathematics of Russian Cosmism for the monistic all-unity of ethereal matter-space with the continuous distribution of mass-energy replaces Newtonian gravity 'from there to here' with the local kinetic stresses 'from here to there' due to the spatial asymmetry of inertial densities within a nonlocal whole. The inverse square law for ethereal pushes of concentrated (visible) masses can be controlled locally by subtle resonant intervention in their polarized densities.

Keywords: Mobile ether; kinetic monism, metric inertia, self-acceleration, instant correlations, advanced wave, nonlocal mass-energy, telekinesis



Critical point of the modern particle physics is the millennium problem of the Ancient Greeks

Is space empty in physical reality?



$$\vec{F} = q \frac{Q \hat{r}}{r^2} \equiv q E(r) \hat{r}$$

$$\text{div}[E(r) \hat{r}] = \frac{1}{r^2} \partial_r [r^2 E(r)] \equiv \frac{1}{r^2} \partial_r Q \equiv 0$$

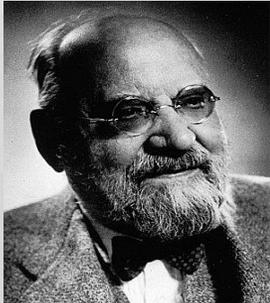


Now all textbooks say Yes, space is empty due to the laws of Newton and Coulomb, where $\text{div } E = 0$ for dual physics of fields and charges



But:

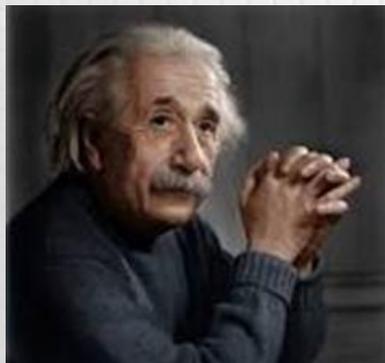
René Descartes (1596—1650) *empty space is impossible - the primary characteristic of matter is extension (res extensa)*



Gustav Mie (1868-1957) *space is not empty and $\text{div } E = f(|E|) \neq 0$ for continuous sources in nondual physics of charged material fields*

*Drawing by Rea Irvin;
1929 The New Yorker
Magazine, Inc.*

*A 1929 cartoon:
"People slowly accustomed
themselves to the idea that
the physical states of space
itself were the final physical
reality."
Professor
Albert Einstein*



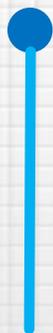
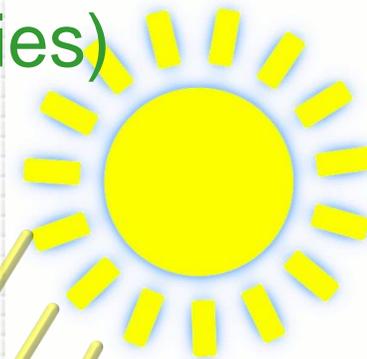
- “A coherent field theory requires that all elements be continuous... And from this requirement arises the fact that the material particle has no place as a basic concept in a field theory. Thus, even apart from the fact that it does not include gravitation, Maxwell’s theory cannot be considered as a complete theory.”

A.Einstein
and L.Infeld.
Evolution of
Physics. 1938.





Point matter (leading to singularities)
has been postulated from
practice rather than from
logic or analytical math



Point particle -
operator δ -density
Newtonian paradigm

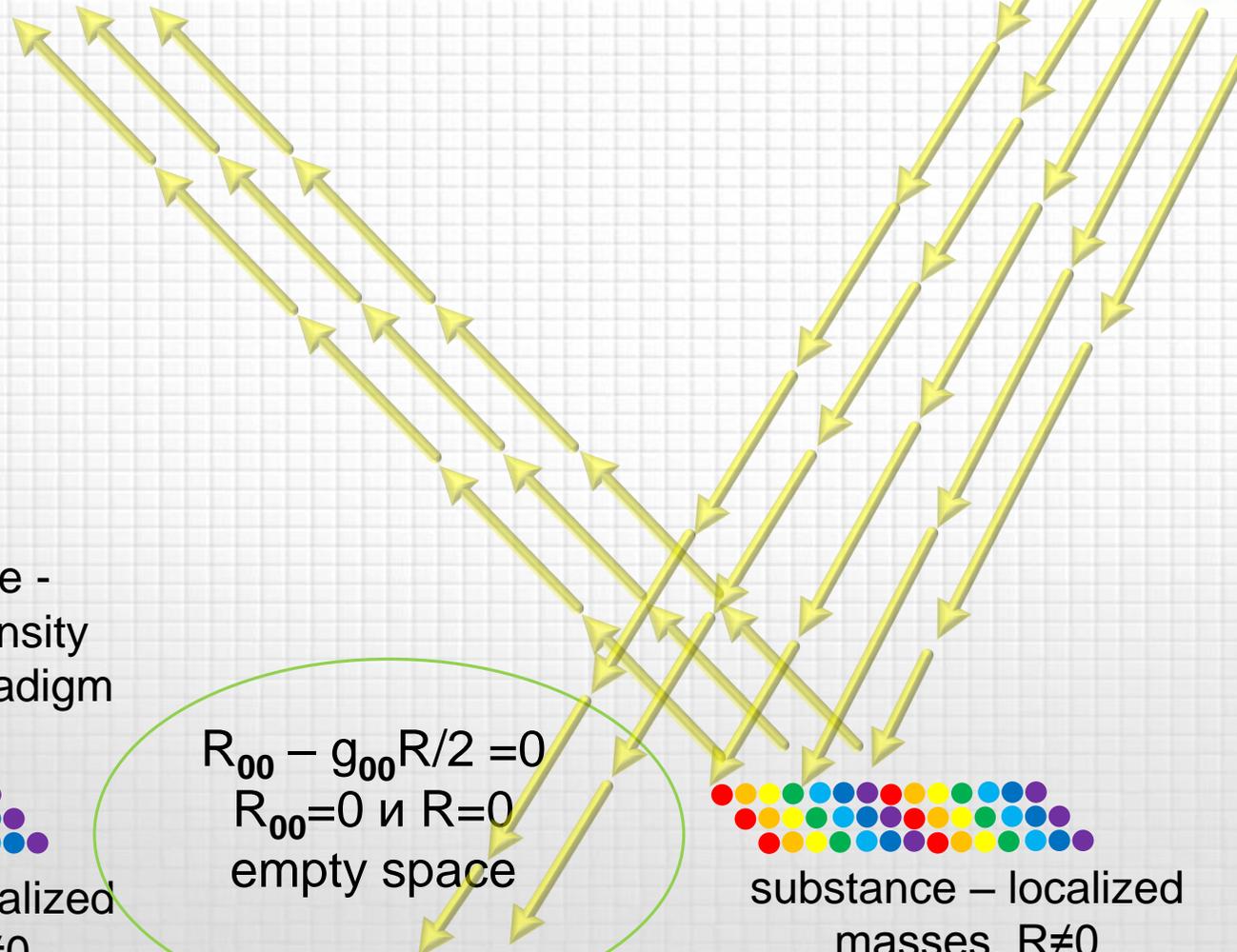


substance – localized
masses, $R \neq 0$

$R_{00} - g_{00}R/2 = 0$
 $R_{00} = 0$ и $R = 0$
empty space

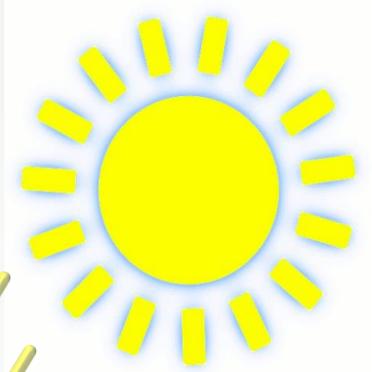


substance – localized
masses, $R \neq 0$



Material space in Russian Cosmism

- same observations and measurements



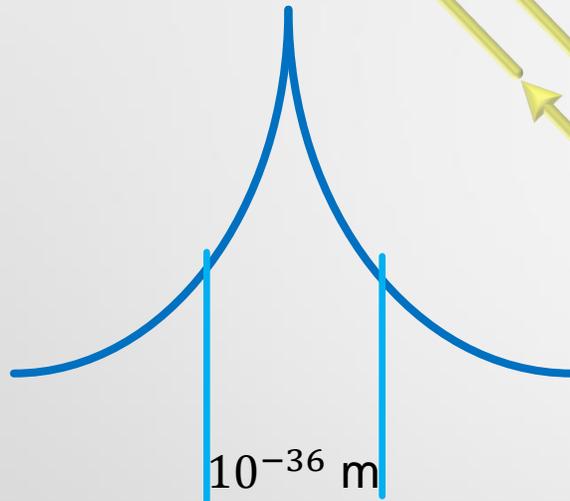
Einstein's curvature $R_{00} - g_{00}R/2 = 0$ at $R \neq 0$

- **metrics solutions without singularities**

Aristotle-Descartes-Lomonosov

Kant-Hegel-Mie-Einstein-Infeld

24 centuries



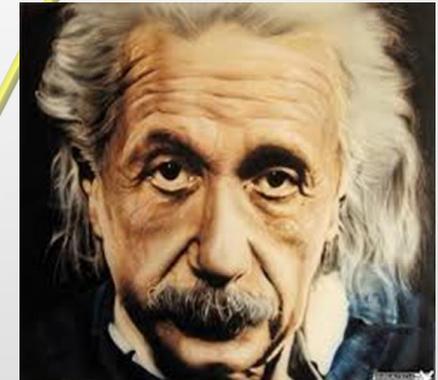
Extended material vortex for Cartesian non-empty space



High mass density: $R \neq 0$

Very low mass density: $R \neq 0$

High mass density: $R \neq 0$



4 stages in the theory of inertia/gravity

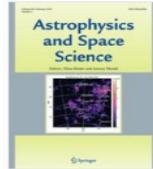
Stage 1. 1687 – 1908. Philosophiae Naturalis Principia Mathematica, Newton (flat empty space)
4 notions: space + time + forces+ substance

Stage 2. 1908 – 1916. Minkowski spacetime (flat empty space)
3 notions: spacetime + field + substance

Stage 3. 1916 – today. GR with Schwarzschild metric (curved empty space)
2 notions: field-spacetime + substance  *dual physics*

Monistic alternative: Russian Cosmism + GR of Einstein-Infeld (curved 4D spacetime with flat 3D material section)
1 notion: charged material field  *nondual physics*

Relevant publications



[Astrophysics and Space Science](#)
February 2018, 363:39 | [Cite as](#)

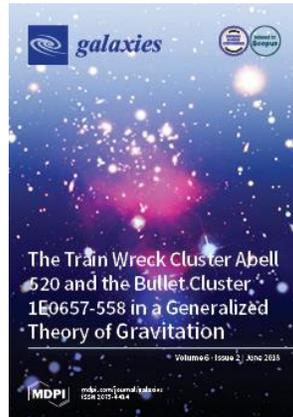
Gravitational attraction until relativistic equipartition of internal and translational kinetic energies

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I. E. Bulzhenkov 

Galaxies **2018**, 6(2), 60; <https://doi.org/10.3390/galaxies6020060>

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Cartesian Material Space with Active-Passive Densities of Complex Charges and Yin-Yang Compensation of Energy Integrals

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Thomson 4/3 problem leads to nonlocal continuous charges with Poincaré radial stresses and zero electromagnetic inertia

Igor E. Bulzhenkov 

Research Article

Metric inertia for eddy densities of nonlocal matter-space

I. É. Bulyzhenkov

Pages 623-639 | Received 23 Jan 2021, Accepted 01 Jul 2021,

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dual physics of Euler/NS
$$\partial_t \mathbf{v} = -\frac{\partial p}{\mu} - \partial \left(\varphi + \frac{v^2}{2} \right) + \mathbf{v} \times \mathit{curl} \mathbf{v} + \frac{\eta \partial^2 \mathbf{v}}{\mu} + \left(\zeta + \frac{\eta}{3} \right) \frac{\partial \mathit{div} \mathbf{v}}{\mu} + \frac{\mathbf{f}^{ext}}{\mu}$$

or the monistic modification of NS equation for adaptive inertial densities:

$$\partial_t \mathbf{v} = \frac{\mathbf{f}^{ext}}{\mu} - \partial \left(\varphi + \frac{v^2}{2} \right) + \left[c^2 \partial^2 \mathbf{v} - \partial_{tt} \mathbf{v} - \partial \left(\partial_t \varphi + \frac{\partial_t v^2}{2} + c^2 \mathit{div} \mathbf{v} \right) - \partial \varphi \times \mathit{curl} \mathbf{v} \right] \times \frac{\mathit{curl} \mathbf{v}}{4\pi G\mu}$$



Coulomb Force from Non-Local Self-Assembly of Multi-Peak Densities in a Charged Space Continuum

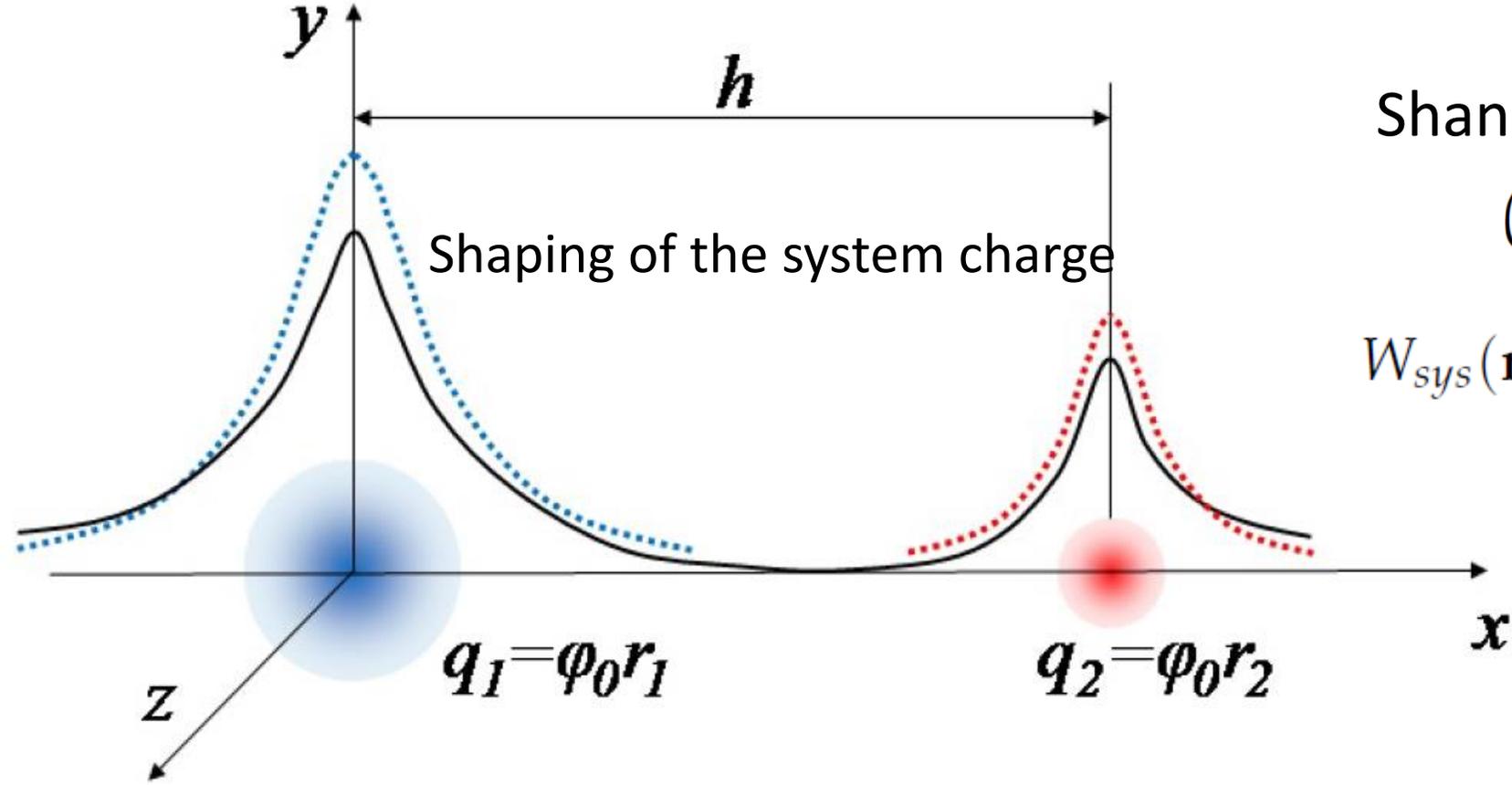
Igor É. Bulyzhenkov

Particles **2023**, *6*, 136–143. <https://doi.org/10.3390/particles6010007>

Abstract: Maxwell's electrodynamics admits radial charge densities of the elementary organization with one vertex of the spherical symmetry. A multi-vertex distribution of sharply inhomogeneous charge densities can also be described by monistic field solutions to Maxwell's equations–equalities. Coulomb–Lorentz forces are exerted locally to correlated electric densities in their volume organization with the fixed self-energy integral. The long-range Coulomb interaction between the dense peaks of the charged space continuum can be described quantitatively through bulk integrals of local tensions within observable bodies in favor of the monistic all-unity in the material space physics of Descartes and Russian cosmists.

Keywords: self-assembling; continuous charge; non-locality; local stresses; material space; monistic worldview

Nonlocal self-assembly of the charged field



Shannon's information potential

$$C(N_0) = w \log_2 [1 + (P/wN_0)]$$

$$W_{sys}(\mathbf{r}, \mathbf{h}) = \varphi_0 \ln \left(1 + \frac{r_1}{|\mathbf{r}|} + \frac{r_2}{|\mathbf{r} - \mathbf{h}|} \right)$$

$$\mathbf{E}_{sys}(\mathbf{h}) \equiv -\nabla W_{sys}(\mathbf{h}) = \frac{\varphi_0}{1 + \frac{r_1}{|\mathbf{r}|} + \frac{r_2}{|\mathbf{r} - \mathbf{h}|}} \left(\frac{\mathbf{r}r_1}{|\mathbf{r}|^3} + \frac{(\mathbf{r} - \mathbf{h})r_2}{|\mathbf{r} - \mathbf{h}|^3} \right) \equiv \mathbf{E}_1 + \mathbf{E}_2$$

$$\rho_{sys} \equiv \text{div} \mathbf{E}_{sys} / 4\pi = (\text{div} \mathbf{E}_1 / 4\pi) + (\text{div} \mathbf{E}_2 / 4\pi) \equiv \rho_1 + \rho_2$$

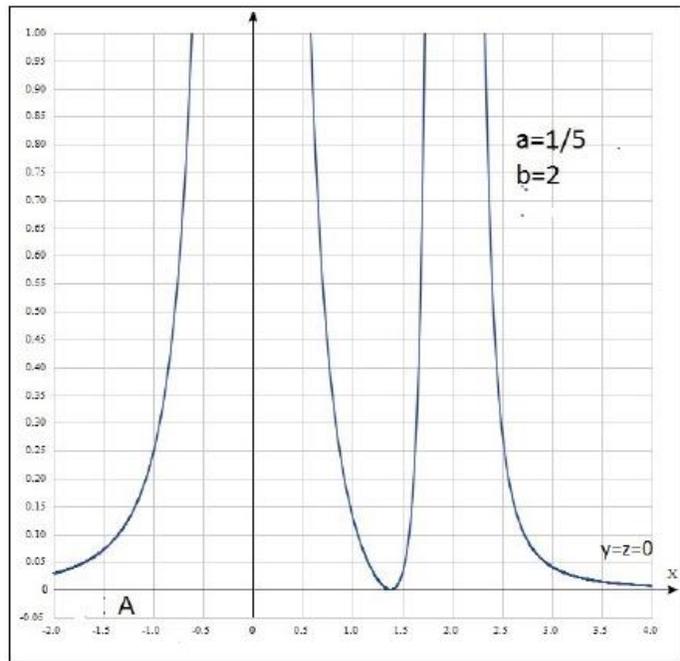
$$q_1 \equiv \varphi_0 r_1 = \int \rho_1(\mathbf{x}, 0) d^3x > 0 \qquad q_2 \equiv \varphi_0 r_2 = \int \rho_2(\mathbf{x}, h) d^3x > 0$$

$$\varphi_0 \equiv c^2 / \sqrt{G}$$

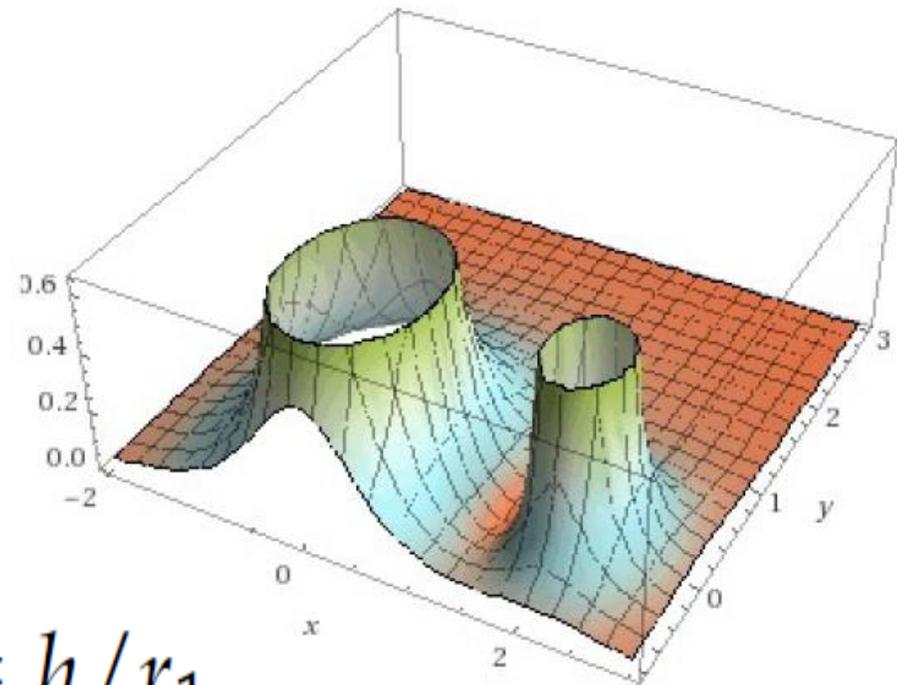
$$\rho_{q_{sys}} \equiv \frac{\mathbf{E}_1^2}{4\pi\varphi_0} + \frac{\mathbf{E}_1 \mathbf{E}_2}{2\pi\varphi_0} + \frac{\mathbf{E}_2^2}{4\pi\varphi_0} = \frac{\varphi_0 \left(\frac{r_1^2}{|\mathbf{r}|^4} + \frac{2r_1 r_2 \mathbf{r}(\mathbf{r}-\mathbf{h})}{|\mathbf{r}|^3 |\mathbf{r}-\mathbf{h}|^3} + \frac{r_2^2}{|\mathbf{r}-\mathbf{h}|^4} \right)}{4\pi \left(1 + \frac{r_1}{|\mathbf{r}|} + \frac{r_2}{|\mathbf{r}-\mathbf{h}|} \right)^2} \geq 0$$

$$\rho_{q_1} \equiv \frac{\mathbf{E}_1^2 + \mathbf{E}_1 \mathbf{E}_2}{4\pi\varphi_0} = q_1 \left(\frac{r_1}{|\mathbf{r}|^4} + \frac{r_2 \mathbf{r}(\mathbf{r}-\mathbf{h})}{|\mathbf{r}|^3 |\mathbf{r}-\mathbf{h}|^3} \right) / 4\pi \left(1 + \frac{r_1}{|\mathbf{r}|} + \frac{r_2}{|\mathbf{r}-\mathbf{h}|} \right)^2$$

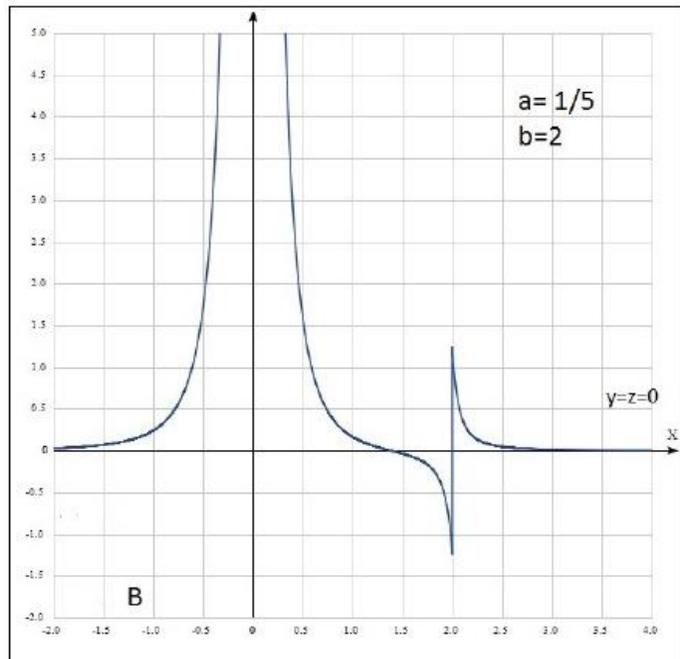
$$\rho_{q_2} \equiv \frac{\mathbf{E}_2^2 + \mathbf{E}_1 \mathbf{E}_2}{4\pi\varphi_0} = q_2 \left(\frac{r_2}{|\mathbf{r}|^4} + \frac{r_1 \mathbf{r}(\mathbf{r}-\mathbf{h})}{|\mathbf{r}|^3 |\mathbf{r}-\mathbf{h}|^3} \right) / 4\pi \left(1 + \frac{r_1}{|\mathbf{r}|} + \frac{r_2}{|\mathbf{r}-\mathbf{h}|} \right)^2$$



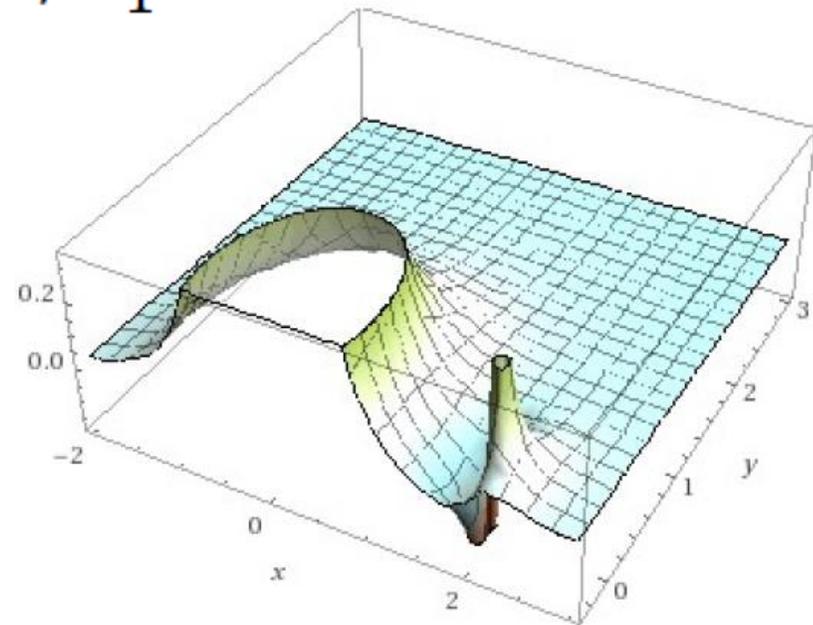
$$\rho_{sys}(x, y, 0) / \frac{q_1}{4\pi r_1^3}$$



$$a \equiv r_2/r_1, \quad b \equiv h/r_1$$



$$\rho_1(x, y, 0) / \frac{q_1}{4\pi r_1^3}$$

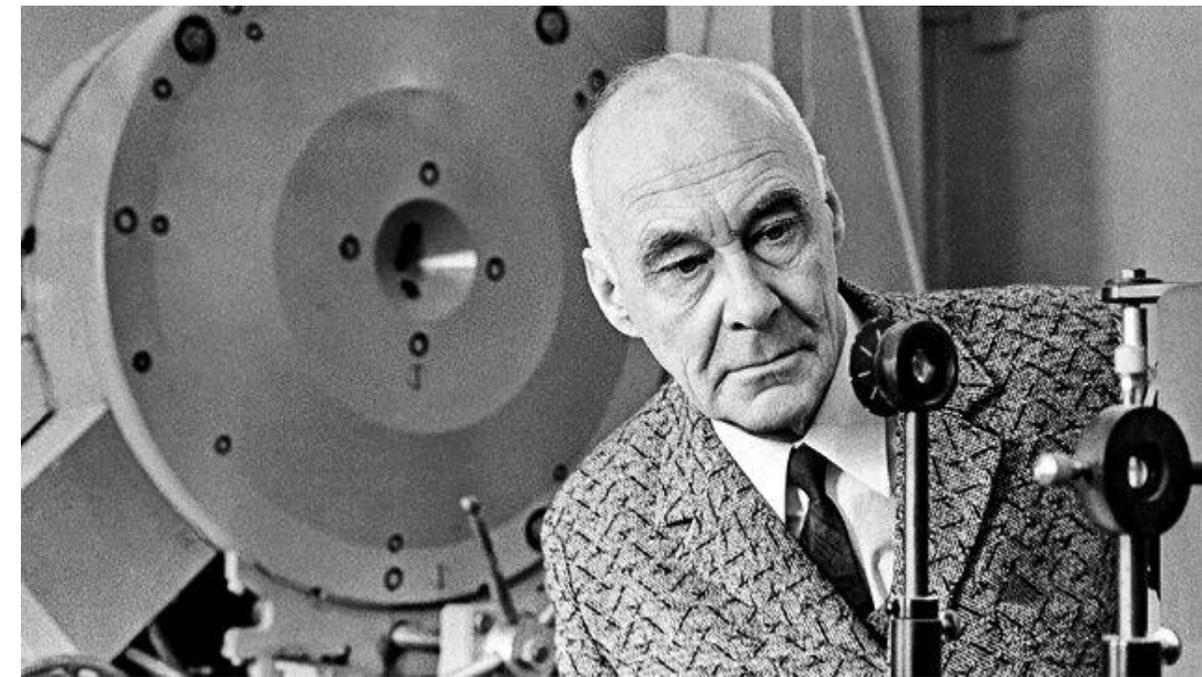


Conservation of extended charges under replacements:

$$\left\{ \begin{array}{l} \int \frac{d^3x}{4\pi} \mathbf{E}_1^2 + \int \frac{d^3x}{4\pi} \mathbf{E}_1 \mathbf{E}_2 = \varphi_0^2 r_1 \left(1 - \frac{r_2}{h}\right) + \frac{\varphi_0^2 r_1 r_2}{h} = q_1 \varphi_0 = \text{const}, r_1, r_2 \ll h \rightarrow \infty, \\ \int \frac{d^3x}{4\pi} \mathbf{E}_1^2 + \int \frac{d^3x}{4\pi} \mathbf{E}_1 \mathbf{E}_2 = \frac{\varphi_0^2 r_1^2}{r_1 + r_2} + \frac{\varphi_0^2 r_1 r_2}{r_1 + r_2} = q_1 \varphi_0 = \text{const}, r_1, r_2 \gg h \rightarrow 0. \end{array} \right.$$

Local self-pushing from “here to there”: $|q_1| / \varphi_0 \ll \Omega_1^{1/3} \ll h$.

$$\begin{aligned} F_{\Omega_1}^x &= \int_{\Omega_1} \rho_{\text{sys}} E_{\text{sys}}^x dx dy dz = \int_{\Omega_1} \frac{dx dy dz}{4\pi \varphi_0} (\mathbf{E}_1^2 + 2\mathbf{E}_1 \mathbf{E}_2 + \mathbf{E}_2^2) (E_1^x + E_2^x) \approx \\ &\int_{\Omega_1} \frac{dx dy dz}{4\pi \varphi_0} (\mathbf{E}_1^2 E_1^x + 2\mathbf{E}_1 \mathbf{E}_2 E_1^x + \mathbf{E}_1^2 E_2^x) = -\frac{\varphi_0^2 r_1 r_2}{h^2} \left(\frac{1}{6} + \frac{1}{3} + \frac{1}{2} \right) = -\frac{q_1 q_2}{h^2}. \end{aligned}$$



Nikolay Kozyrev (1908 – 1983) **three directions for signals**

the macroscopic nonlocality of cosmic systems, it is important to distinguish dissipative exchanges of retarded/advanced waves from instantaneous correlations (7)–(8) of elastic fields. The ethereal physics of the non-local whole can reasonable describe all three signals (retarded, instantaneous, advanced) in Kozyrev's telescopic experiments [9].

9. Kozyrev, N.A. Flare Stars. In Proceedings of the Byurakan Symposium, Yerevan, Russia, 5–8 October 1976; pp. 209–227.

