A single electro dynamical force field with gradients of electrical potential and gas dynamic pressure for all known interactions in condensed and non-condensed matter with examples of exact and numerical solutions

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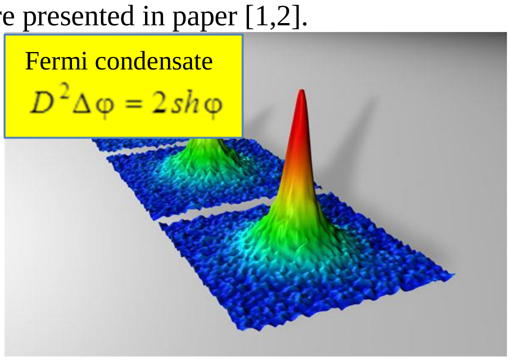
The paper presents some results of a single electro dynamical force field simulation in condensed and non-condensed matter. Our single force field theory for all known interactions base on modern experimental achievements, first of all, on two revolutionary experimental discoveries of the second half of the XX century, have made after the development of the general theory of relativity and the quantum mechanics. The first discovery is the registration of the final temperature of the microwave background radiation (MBR) in the outer free space with the temperature $T_0 = 2.735\ K$, the second discovery is the detection of "hidden mass" of the Universe (also called dark matter (DM)) in the volume of 96% of the total amount of matter.

The single force field theory with the electro dynamical interaction bases on an equilibrium of gradients for plasma dynamic potential and gas dynamic pressure in DM. It uses Newton's physics, Coulomb's law, Maxwell's electrodynamics, Boltzmann's kinetics and for the gravitation and electroweak fields extremely small differences in the distribution of potentials near the "point" electric charges in the centers of proton and electron. The presence of this charge generates a force interaction in the external and internal particle space. The force field is described by the mutual influence of forces determined by the electrical potential gradient and the gradient of the gas dynamic pressure. A mathematical description for such model of interaction is given for the stationary case by the quasi linear Poisson equation [1] for potential φ

$$D^2 \Delta\varphi = 2sh\varphi \qquad (1)$$

Here $D = sqrt(\varepsilon_0 kT / q \cdot n_0)$ is the Debye shielding radius, which determines the screen space size, T – temperature, n_0 - typical DM particle concentration in the considered medium.The equation (1) describes the single force field simulation in condensed and non-condensed matter for any interaction (electromagnetics, electroweak, strong, gravitation).We would like to show two results for solutions of equation (1) in the case of Fermi condensate matter and near the Earth (Fig.1). Additional numerical data for solutions of equation (1) in cases of weak and strong interactions were presented in paper [1,2].



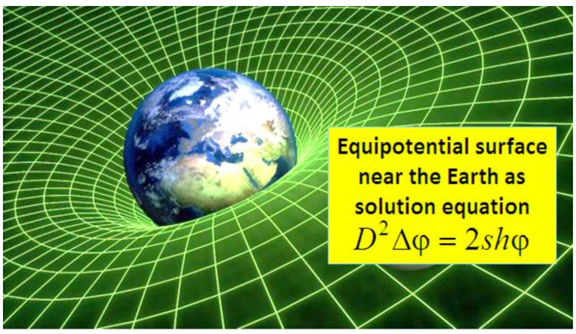


Fig.1.Potential distributions for the Fermi condensate matter and near the Earth.

This work opens up a new area of research on the fundamental gravitational properties of cosmos, galactic structures, black holes, protons, neutrons and nuclei, which can provide access to their physical radii, the internal shear forces acting on the matter and their pressure distributions.

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