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Interpretation of the planets' and satellites' atmosphere parameters applying a new theory of the Solar System formation

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It was discovered by analysis of the orbital motion of the Earth, the Moon and other planets and their satellites that all the Solar System bodies have a common dynamical effect. Namely, they are moving with the first cosmic velocity of their protoparents. The mean orbital velocity of each planet is equal to the first cosmic velocity of the Protosun, the radius of which radius equal to the semi-major axis of the planet's orbit. The mean orbital velocity of each satellite is equal to the first cosmic velocity of the corresponding protoplanet which radius is equal to the semi-major axis of its satellite's orbit. All the small planets, comets, other bodies and the Sun itself follow this law. The finding is proved by the astronomical observations and theoretical solution based on the Jacobi dynamics. The nature of the Kepler's laws and the meaning of the Newton's gravitational force follow from the discovered effect. The obtained dynamical effect means that all the planets and satellites were launched by the first cosmic velocity of the self-gravitating Protosun and protoplanets after their outer shells acquired weightlessness. It was found that the process of evolutionary loss of the body's energy by emission leads to redistribution and differentiation of the mass density, which increases in the inner and decreases in the outer shell due to dilution by the light components. In general, because of the process of accumulation of the less dense matter in the outer shell its density decrease up to the weightlessness state and results by creation of a secondary self-gravitating body. The process of the outer shell separation appears to be the mechanism of the contraction (volume decrease and increase of the density) of a body during its evolution.

Thus, the bullet point of creation and orbiting of the Solar System bodies is the inner energy generation by the elementary particles interaction of the protoparents. The creation and orbiting conditions of the planets and their satellites are similar to the conditions of the launching artificial satellite, which is orbiting upon reaching the weightlessness. The indicator of the body's weightlessness is its first cosmic velocity in orbital motion, which represents the energy of the outer force field of the parental body at a given height. So, all the planets appear to be weightlessness relative to the Sun and move on their orbits by the solar outer gravitational field. All the satellites are also weightlessness relative to their planets' gravitational fields and move along the orbits with first cosmic velocities developing by the inner energy of the planets' interacted masses. Dynamical equilibrium of their orbits' motion is guaranteed by their own outer force field, which is generated by the body's masses.

On the basis of the discovered dynamical effect and applying the Jacobi dynamics the problem of the Solar System formation obtained its resolution including explanation of the existing contradiction between the Sun and the planets related to their masses and moments of momentum. The physics and mechanism of the Solar System formation explains also the appearance of the gaseous Jupiter group and silicon Earth group of planets. The same approach to explanation is valid for interpretation of the observable atmospheric chemistry and physical parameters of the Earth group planets and Titan. Moreover, the planet's and satellite's data of the atmospheres can be used for determination of the initial and evolutionary conditions of the Protosolar, protoplanetary and protosatellite gaseous clouds.

For more information see our works: Ferronsky V.I., S.A. Denisik and S.V. Ferronsky (2011). Jacobi Dynamics, Springer, Dordrecht; Ferronsky V.I. and S.V. Ferronsky (2013). Formation of the Solar System, Springer, Dordrecht.