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Numerical Results of 3-D Modeling of Moon Accumulation

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For the last time for the model of the Moon usually had been used the model of mega impact in which the forming of the Earth and its sputnik had been the consequence of the Earth's collision with the body of Mercurial mass. But all dynamical models of the Earth's accumulation and the estimations after the Pb-Pb system, lead to the conclusion that the duration of the planet accumulation was about 1 milliard years. But isotopic results after the W-Hf system testify about a very early (5-10) million years, dividing of the geochemical reservoirs of the core and mantle. In [1,2] it is shown, that the account of energy dissipating by the decay of short living radioactive elements and first of all Al26,it is sufficient for heating even small bodies with dimensions about (50-100) km up to the iron melting temperature and can be realized a principal new differentiation mechanism. The inner parts of the melted preplanets can join and they are mainly of iron content, but the cold silicate fragments return to the supply zone and additionally change the content of Moon forming to silicates. Only after the increasing of the gravitational radius of the Earth, the growing area of the future Earth's core can save also the silicate envelope fragments [3]. For understanding the further system Earth-Moon evolution it is significant to trace the origin and evolution of heterogeneities, which occur on its accumulation stage.In that paper we are modeling the changing of temperature,pressure,velocity of matter flowing in a block of 3d spherical body with a growing radius. The boundary problem is solved by the finite-difference method for the system of equations, which include equations which describe the process of accumulation, the Safronov equation, the equation of impulse balance, equation Navier-Stocks, equation for above litho static pressure and heat conductivity in velocity-pressure variables using the Businesque approach.The numerical algorithm of the problem solution in velocity - pressure variables is constructed on the base of the splitting method. The velocity field and pressure field we obtained using the checkerbroad grid. The occurring and evolution of the initial heterogeneities in the growing planets is caused by heterogeneous distribution of falling accumulated bodies. We are comparing the results which are obtained by different algorithms.
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