



Research of the structure and thermal Earth's evolution at the stage of it's accumulation in a frame of 2-d model

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In the paper [Anfilogov,Khachay,2005] a new accumulation model for planets of the Earth's group is suggested, which is based on the contemporary results of estimations of content of the few living radioactive isotopes, first of all Al^{26} in the matter of the proto planet cloud in the zone of Earth's group planets. Using that data it had been obtained principally new estimations of temperature distribution in the growing proto planet bodies in the zones of growing. We used two models for the description of the conditions of heat-mass transfer in the proto planet on the stage of it's accumulation. First, we suggested a system of convection in a pressed gravity fluid with variable viscosity, which differs by an additional equation for the hydrostatic pressure. We had investigated the natural convection. In a frame of 2-D model of the medium we did numerical experiments, which showed the up and down matter flows of varying configuration. Second, the matter flow is approximated by the effective thermal conductivity and then we solve the boundary problem for the equation of thermal conductivity in the growing body. The growing mass (and radius) is described by the equation.

The numerical modeling of the temperature distribution in the initial bodies of the growing proto planet allows to prove that if that bodies achieve the radius about 100 km by the decay of the radioactive isotope ^{26}Al the temperature in it's central envelope is higher, than the melting iron temperature. By further growth the inner melting part increases and the other hardhead upper envelope decreases. As a result for that parent bodies: their melted inner parts become together. But the masses of the bodies are too small to hold of the cold silicates of the smoothing upper envelope and they are mostly lousing. Hence we have proved a principally new mechanism of matter dif-

ferentiation on the early stage of planer accumulation of the Earth's group (radius of the bodies the first 100 km).That mechanism of accumulation achieve the formation of mainly iron core and silicate mantle still at the stage of the planet accumulation. It is achieved a solution for the problem of fast differentiation of a system wolfram-hafnium and of the early establishing of the mechanism of generation of the Earth's geomagnetic field.