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Realization of thermal Convection into the initial Earth's Core on the Stage of planetary Accumulation

Yurie Professor Khachay
Institute of Geophysics, Ural's Department RAS, Yekaterinburg, Russian Federation (yu-khachay@yandex.ru)

Convection in the Earth's core is not only the main mechanism of heat-mass transfer, but the significant component of the MHD mechanism of geomagnetic field generation. However the research of different convection forms on the Earth's accumulation stage had been so far not produced. Regarding the convection realization into the initial core of the growing proto planet we can distinguish some qualitative different stages. The earliest from them for the area of the planets of the Earth's group had been realized in to the pre planetary bodies, when the energy dissipation by the decay of the short living radioactive, first of all 26Al, provided the melted state of the inner areas of the proto planet. By that the masses and relative velocities of body's impacts during the process of accumulation had been small. That stipulated the low temperature values of the growing proto planetary surface [1] and the background of Raleigh heat convection realization. On the next stage of the planetary accumulation the contribution of short living isotopes to the energetic process during the decay 26Al decreased, but the energy contribution from the body's impact increased. The balance of the energy on the surface of the proto planet leaded to the melted state of the upper envelope and to the inelastic character of the impact. Further during the increase of the proto planetary mass, increase of the pressure and the melting temperature with the depth and decrease of the intensity of the dissipate energy by the body's impact, which became more elastic because of the silicate part, the background of the Raleigh heat convection can be realized [2]. However the falling of accumulated bodies can lead to the random distribution of the heat anomalies, which we could research only in the frame of the 3-D model [3-4]. For researching of the MHD mechanism of geomagnetic field generation developing yet on the stage of Earth's accumulation in that paper are presented the results of numerical modeling of PT- conditions and revealed the conditions, when the random distribution of 3D thermal heterogeneities does not destroy the thermal convection into the forming outer Earth's core.

Reference

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