Geodynamo simulation with Ek=O(10E-7): (2) Parameter dependences

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We performed geodynamo MHD simulation with Ekman number Ek=O(10E-7).We found that the convection pattern becomes thin sheet plume and the current structure becomes helical coils. The details are reported in our companion talk by Kageyama and Miyagoshi.

In this paper we report parameter dependences of convection, current, and magnetic field structures. In low Rayleigh number case (about half), convection structure also becomes thin sheet plume but the length of the sheet to the radial direction becomes slightly short. The zonal flow region near the core-mantle boundary becomes larger than that of the high Rayleigh number case. In high Ekman number case (about 8 times), the wavelength of the sheet to longitude direction becomes large. The sheet is not straight to the radial direction. Current coils are also formed near the inner core.