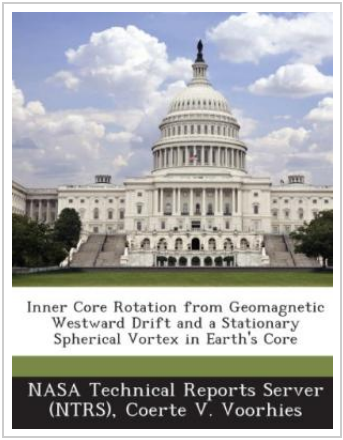

Inner Core Rotation from Geomagnetic Westward Drift and a Stationary Spherical Vortex in Earths Core

By Coerte V. Voorhies

Bibliogov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 24 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.The idea that geomagnetic westward drift indicates convective leveling of the planetary momentum gradient within Earths core is pursued in search of a differentially rotating mean state, upon which various oscillations and secular effects might be superimposed. The desired state conforms to roughly spherical boundary conditions, minimizes dissipative interference with convective cooling in the bulk of the core, yet may aid core cooling by depositing heat in the uppermost core and lower mantle. The variational calculus of stationary dissipation applied to a spherical vortex within the core yields an interesting differential rotation profile, akin to spherical Couette flow bounded by thin Hartmann layers. Four boundary conditions are required. To concentrate shear induced dissipation near the core-mantle boundary, these are taken to be: (i) no-slip at the core-mantle interface; (ii) geomagnetically estimated bulk westward flow at the base of the core-mantle boundary layer; (iii) no-slip at the inner-outer core interface; and, to describe magnetic locking of the inner core to the deep outer core; (iv) hydrodynamically stress-free at the inner-outer core boundary. By boldly assuming the axial core angular momentum anomaly to...

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