

## Torsional waves in the presence of topography

The phase velocity of the torsional waves, which propagate in the Earth's core, has been revised recently upwards. It turns out that their high speed of propagation makes possible to investigate these waves from recent high quality magnetic satellite and observatory data. Their study yields an estimate for the strength of the magnetic field in the interior of Earth's core. In addition, we may eventually obtain some constraints on the partitioning of magnetic energy between small and large length scales. On the other hand, despite geodynamic and seismic evidence for topography at the core-mantle boundary, with height (valley-to-peak) in the range 1-5 km., all models for torsional waves have been derived on the basis that the fluid outer core boundaries are symmetric about the Earth's axis of rotation. I will sketch out possibilities for studying the propagation of torsional waves when the fluid cavity presents deviations from axisymmetry. For this first attempt, I have to leave aside the regions void of closed geostrophic contours near the Equator of the core and the cylindrical surface tangent to the solid inner core. Using a set of curvilinear coordinates such that geostrophic cylinders correspond to a constant value of one of the coordinates, I verify that the geostrophic pressure exerts no torque on the solid walls.