

## **EQUATOR ASYMMETRIC CONVECTION AND DYNAMO ACTION IN ROTATING FLUID SPHERES**

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The crustal magnetic field recorded on Mars during the Mars Global Surveyor mission reveals an hemispherical magnetic field pattern, with a maximum value of magnetic field intensity much larger in the Southern hemisphere than in the Northern hemisphere. Previously explored possible causes for this pattern include the influence of a hemispherical mantle convection pattern. In this presentation, we perform a systematic study of numerical models of rotating convection and dynamo action in fluid spheres (without an inner core). Our models have homogeneous buoyancy driving, yet they exhibit a transition to a strongly equator-asymmetric convection regime where one hemisphere becomes colder than the other, which we relate to the linear instability of equator-antisymmetric convection modes. We study the impact of this transition on the properties of heat transfer in rapidly rotating convection, and on the pattern of magnetic field as it would be seen on the planet's surface. We discuss the possible implications of our result on planetary dynamos.

Dynamo, Mars, convection

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