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Title

Precession dynamo and dynamical tides

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Abstract

I will report my recent results of two projects. The first one is about the planetary magnetic fields driven by precession. The interaction of convection and precession is numerically studied and it is found that the two driving mechanisms destabilize each other such that the presence of precession facilitates the onset of dynamo action. The second one is about nonlinear and magnetic effects on dynamical tides. The effect of nonlinear inertial force on dynamical tides is numerically studied and it is found that the nonlinear effect tends to suppress the tidal response and dissipation near the resonant frequency. The effect of magnetic fields on dynamical tides is analytically studied under the WKB approximation and it is found that even week fields will have a significant contribution to tidal dissipation.