

Abstract Submitted
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Modulated rotating convection: Quenching wall modes ANTONIO RUBIO, JUAN LOPEZ, Arizona State University, FRANCISCO MARQUES, Universitat Politècnica de Catalunya — The onset of thermal convection in an enclosed rotating cylinder when the rotation is Coriolis force dominated is to wall modes – precessing hot/cold thermal plumes rising and descending in the sidewall layer of the cylinder. If the cylinder rotation is modulated with a frequency about twice its rotation frequency, an oscillatory large scale circulation is established which quenches the three-dimensional wall mode of convection, leaving an oscillatory axisymmetric convective state, even when the modulation amplitude is small. The associated physical mechanism leading to the quenching of the wall modes is explored numerically using the Navier-Stokes-Boussinesq equations.

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