

Abstract Submitted  
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**Linear stability analysis of natural convection in an inclined rotating cavity.**<sup>1</sup> DIANA PEREZ-ESPEJEL, RUBEN AVILA, Universidad Nacional Autonoma de Mexico — The linear stability analysis of the natural convection in an inclined rectangular cavity with rotation is presented. The critical parameters for the onset of longitudinal rolls are obtained by solving the stability equations with the Tau-Chebyshev spectral method. We report under what conditions of the inclination angle, Rayleigh and Taylor numbers, the onset of longitudinal rolls appears. The rectangular cavity with a small aspect ratio (depth/length) is heated from below, cooled from above and thermally isolated at the rest of the boundaries. The rotation axis is orthogonal to the hot and cold surfaces and passes through the center of these surfaces, while the inclination angle varies from 0 to 90°. Based on the results of the linear stability analysis, it was possible to perform non linear, three dimensional numerical simulations based on a spectral element method for a Boussinesq fluid. Our preliminary results show the effect of the rotation rate and the tilted angle on the convective patterns, temperature distribution and heat transfer rate.

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