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Natural convection in a partially heated cylindrical container JOSE NUÑEZ, Universidad de la Cienega del Estado de Michoacan de Ocampo, EDUARDO RAMOS, Universidad Nacional Autonoma de Mexico — In this contribution, we study the stability of the natural convection flow in a vertical cylinder heated from below and cooled from above and with partial heating on the lateral wall with a numerical model. A mixed Fourier Galerkin- Finite volume method was used for the numerical integration. The results indicate that for small Rayleigh numbers the flow is axisymmetric with the motion confined to the upper part where the temperature gradients are concentrated. At Ra=1.5e+4 the axisymmetric flow loses stability to a non-axisymmetric motion with an azimuthal mode k=1, through a pitchfork bifurcation. Further increase in the Rayleigh number results in a time dependent flow with alternate flows with modes k=2, 3.

Jose Nuñez
Universidad de la Cienega del Estado de Michoacan de Ocampo

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