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Numerical simulation of Rayleigh-Bernard convection in a cylindrical container[1] NORMA Y. SANCHEZ-TORRES, ERICK J. LOPEZ-SANCHEZ, SERGIO HERNANDEZ-ZAPATA, GERARDO RUIZ-CHAVARRIA, Universidad Nacional Autonoma de Mexico — The heat transport by natural convection is a central mechanism in the explanation of many natural phenomena. Despite many works that treat the Rayleigh-Benard convection, most of them describe the phenomenon by making a two-dimensional approach. The purpose of this work is to use a cylindrical geometry. The study further extends to convection driven by evaporation which actually is an open subject. In this work we use a numerical methods to solve the Navier-Stokes, continuity and energy equations: a finite differences method for time, r and z coordinates; and a Fourier spectral method for the angular coordinate. In this manner the numerical code can be parallelized. The boundary conditions are the usual on solid walls, i.e. non-slip for velocity. The system starts at rest. The results are compared with experimental results and data reported in the literature.

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