



Universidad  
Carlos III de Madrid

## Seminario del Instituto Gregorio Millán

### **Transient laminar opposing mixed convection in a differentially and asymmetrically heated vertical channel of finite length**

**Prof. César Treviño**

Universidad Nacional Autónoma de México

#### **Resumen**

In this talk, the transient laminar mixed convection in an differentially heated finite length vertical channel subject to an opposing buoyancy is investigated by solving the unsteady two-dimensional Navier-Stokes and energy equations. Results are particularly presented to illustrate the effects of buoyancy strength or Richardson and Reynolds numbers on the overall flow structure and the nondimensional heat flux (Nusselt number) from the heated surface. Final steady or oscillatory flow response is obtained, depending on the Reynolds and Richardson numbers. The critical value of the buoyancy strength between the two regimes strongly depends on the value of the Reynolds number. The effect of the heat losses to the channel walls is also studied in this work. For relatively large values of the Richardson number, for a given Reynolds number, numerical results show that by increasing the heat losses to the channel walls, the flow structure changes from a multi-spectral flow response to an harmonic flow with a well defined oscillation frequency. The results for the cases of asymmetric and symmetric heating are presented.

- **DÍA: Jueves 18 de junio de 2009 (ATENCIÓN: DÍA INUSUAL)**
- **HORA: 15:00 (ATENCIÓN: HORA INUSUAL)**
- **LUGAR: Edificio Sabatini. Aula 2.1.D04**