



DEPARTAMENTO DE  
MATEMÁTICA APLICADA



## Seminario

**Masayasu Mimura**

**Meiji Institute for Advanced Study of Mathematical  
Sciences, Meiji University, Tokyo (Japón)**

### **“Modeling of smoldering combustion in microgravity”**

#### **ABSTRACT:**

In this lecture I propose a mathematical model for the slow and partial combustion (smoldering) process of a sheet of paper ignited on one side and in the presence of a flow of air confined in a narrow gap above the paper. The model, which is described by a reaction-diffusion system, induces mass and thermal balance for the various components. After having introduced some simplifications, a suitable rescaling is performed. We show that the model generates various complex patterns, depending on the air flow velocity. In particular, two cases of traveling wave solutions are analysed, corresponding to the opposite cases of a sufficiently large or a moderate air flow.

**Organizado por el Departamento de Matemática Aplicada y el IMI**

**5 de octubre de 2010, a las 11.00 horas**

**Seminario Alberto Dou**

**Facultad de Ciencias Matemáticas, UCM**