Curso de Doctorado

Front propagation in nonlinear diffusion equations

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<u>Outline of the course</u>

April 4, 2011 (Mon) 11:00-14:00 **Part 1.**
Basic properties of diffusion equations
- Introduction
- Maximum principle
- Zero-number principle (Sturmian theorem)
- Traveling waves

April 5, 2011 (Tue) 12:00-14:00 **Part 2.**
Front propagation and the spreading speed
- Asymptotic spreading shape and the reflection method
- Front propagation in hyperbolic space $\mathbb{H}^n$
- Maximizing the speed of KPP fronts
- Spreading shape of KPP fronts in a stratified medium

April 6, 2011 (Wed) 12:00-14:00 **Part 3.**
Traveling waves under ergodic disturbances
- Basic concepts
- Preservation of ergodicity
- Ergodic perturbation of planar fronts
- Traveling waves in ergodic media

April 7, 2011 (Thu) 12:00-14:00 **Part 4.**
Homogenization of traveling waves in a saw-toothed cylinder
- Exixtense and non-existence of traveling waves
- Homogenization limit
- Convergence rate in the quasi-periodic case