Participants presentations: posters

1 **María Anguiano, Sevilla**:
Title: The Kneser Property for reaction-diffusion equations in some unbounded domains

Abstract: Several aspects of reaction-diffusion equations are being analyzed over the last years. The study of reaction-diffusion equations without uniqueness of solutions in a bounded domain or in an unbounded domain in the autonomous case, or in the non-autonomous one but with strong uniformity properties on the time-dependent terms, can be found for instance in 2), 3) and 4).
Our aim is to consider a more general problem: a reaction-diffusion equation in an unbounded domain, with a continuous nonlinearity and a non-autonomous forcing term with values in the space H^{-1} which does not have uniqueness of solutions.

We prove the Kneser property (i.e., the connectedness and compactness of the attainability set at any time) for this problem.

In 1) it is shown the existence of a pullback attractor. However, the question about the connectivity of this attractor was not solved there.

In this work, using the Kneser property we obtain that the pullback attractor of this problem is connected.

References:
1)M. Anguiano, T. Caraballo, J. Real & J. Valero *Pullback attractors for reaction-diffusion equations in some unbounded domains with an H^{-1}-valued non-autonomous forcing term and without uniqueness of solutions*, DCDS series B, (2010), to appear.

2)A.V. Kapustyan, *Global attractors of a nonautonomous reaction-diffusion equation*, Diff. Uravnenya, **38**, (2002), 1378-1381.

3)F. Morillas & J. Valero *On the Kneser property for reaction-diffusion systems on unbounded domains*, Topology Appl., **156**, (2009), no.18, 3029-3040.

4)J. Valero, *Attractors of parabolic equations without uniqueness*, J. Dynamics Differential Equations, **13**, (2001), 711-744.

2 **Caroline Bauzet, Pau**
Title: On the stochastic Barenblatt-Sobolev equation

3 **Ewelina Zatorska, Warsaw**
Title: The existence of solutions to the compressible Navier-Stokes system via time discretization

Abstract: The poster presents the existence result for Navier-Stokes equations via time discretizatrion. Using the technique introduced by P.B.Mucha and M.Pokorny for the stationary case it is possible to get the L^∞ estimate for a density (for the fixed time step) in easier way, moreover we can estimate the growth of this norm when the length of time step goes to 0.

4 **Rafal Celinski, Wroclaw**
Title: Asymptotics behaviour in one dimensional model of interacting particles

5 **Francisco Suarez-Grau, Sevilla**
Title: On the Navier boundary condition for viscous fluids in a thin domain covered by very small asperities
The purpose of this talk is to show some results on the asymptotic behaviour of a viscous fluid governed by the Navier-Stokes system near a rough wall.

The most usual boundary condition for a viscous fluid surrounded by an impermeable wall is the adherence condition which establishes that the velocity of the fluid vanishes on the boundary. On the contrary, we assume the slip or Navier's boundary condition that may seem more adequate from a physical point of view. This condition asserts that the normal component of the velocity is zero (i.e. the fluid can not across the wall) and that the wall exerts a tangential friction force.

We consider the case of a fluid contained in a domain that has height one and the case of a fluid contained in a thin domain of small height. In each case, we show that three different behaviours are possible due to the existence of a critical size that depends on the period and amplitude of the asperities as well as on the height of the domain.

References:
1)D. Bucur, E. Feireisl and S. Necasova, Boundary behaviour viscous fluids: Influence of wall roughness and friction-driven boundary conditions, to appear in Arch. Rational Mech. Anal.

2)J. Casado-Diaz, E. Fernandez-Cara, J. Simon, Why viscous fluids adhere to rugose walls: a mathematical explanation. J. Diff. Equ. 189, 526–537 (2003).

3) J. Casado-Diaz, M. Luna-Laynez, F.J. Suarez-Grau, Asymptotic behaviour of a viscous fluid with slip boundary conditions on a slightlyx rough wall, Math. Mod. Meth. Appl. Sci. 20, 121–156 (2010).

4) J. Casado-Diaz, M. Luna-Laynez, F.J.- Suarez-Grau, A viscous fluid in a thin domain satisfying the slip condition on a slightly rough boundary, C.R. Acad. Sci. Paris I 348, 967–971 (2010).

6 **Diana Stan, Madrid**
Title: to be announced

7 **Jochen Abhau, Linz**
Title: A numerical study of time-splitting spatial discretizations for nonlinear Schrödinger equations: Spectral approximations versus finite elements

8 **Lubomira Softova, Naples**
Titel: Cauchy-Dirichlet problem for divergence form parabolic equations in Reifenberg flat domains