Mês de: Junho 2011

SEMINÁRIO DE SISTEMAS DINÂMICOS

Dia 16 de Junho (quinta-feira), às 15h, na Sala B1-01

"Interaction of two systems with saddle-node bifurcation on invariant circle"

Claude Baesens

(Warwick Mathematics Institute)

Abstract:

The saddle-node bifurcation on an invariant circle (SNIC) is one of the codimension-one routes to creation or destruction of a periodic orbit. It governs the transition from resting to periodic spiking in many class 1 neurons, for example. Here, the effect of weak coupling between two systems with a SNIC is analysed. The global bifurcation diagrams are obtained for the principal cases.

Dia 16 de Junho (quinta-feira), às 16h, na Sala B1-01

"Renormalizing the pendulum after Galileo's observation"

Alberto Adrego Pinto

(LIAAD-INESC Porto LA and Universidade do Porto)

Abstract:

We study the dynamics of a family of mechanical systems which includes the pendulum, on small neighbourhoods of an elliptic equilibrium and for long intervals of time using the next term, after Galileo's observation, in the Taylor's expansion of the period map. We characterize the dynamical behaviour of such family through a renormalization scheme acting on the dynamics of this family of mechanical systems. The main theorem states that the asymptotic limit of this renormalization scheme is universal: it is the same for all the elements in the considered class of mechanical systems. As a consequence we obtain a universal asymptotic focal decomposition for this family of mechanical systems. Furthermore, we obtain that the asymptotic trajectories have a Hamiltonian character and compute the action of each element in this family of trajectories. This is joint work with C. A. A. de Carvalho, M. M. Peixoto and D. Pinheiro.

Dia 16 de Junho (quinta-feira), às 17h30, na Sala B1-01

"Hubble's law without a bing bang"

Robert MacKay

(Warwick Mathematics Institute)

Abstract:

Hubble's law, that the redshift of distant galaxies grows with their luminosity distance, is one of the main pieces of evidence for the big bang. But one can obtain Hubble's law in space-times with no singularity if they have positive cosmological constant. One of the ingredients is that time-like geodesic flow in de Sitter space is Anosov. Joint work with Colin Rourke.

Local:
COMPLEXO INTERDISCIPLINAR
Av. Prof. Gama Pinto, 2
1649-003 Lisboa