

## SEMINARIO

**Jan Sieber**

*University of Exeter*

### ***Non-smooth saddle-node in a non-autonomous delay differential equation describing the Mid-Pleistocene transition***

**Abstract:** Typical models for the Earth's Climate during Ice Ages combine dynamics due to Earth's internal mechanisms (ice, carbon dioxide, ocean circulation) and quasi-periodic forcing from the Sun. A curious feature of the models and data records is a transition from smaller-amplitude high-frequency ice ages to large-amplitude relaxation oscillation type ice ages about 800,000 years ago.

We give numerical evidence for a simple delay differential equation with forcing provided by data that the underlying mechanism for this transition is a so-called non-smooth saddle-node bifurcation, based on the theory developed by Jaeger et al. for quasi-periodically forced scalar maps. I will show numerical observations in the model, outline the theory for quasiperiodically forced maps and show the connection between theory and observations.

This is joint work with Courtney Quinn, Anna von der Heydt and Tim Lenton.

**Aula 1.5, Escuela de Ingeniería Industrial - Paseo del Cauce  
Jueves 22 de Noviembre de 2018 (11:00)**

**Organiza: G.I.R. Sistemas Dinámicos**

