Faculdade de Ciências da Universidade de Lisboa
cmafcio@fc.ul.pt Tel. (+351) 21 750 00 27

SEMINÁRIO DE SISTEMAS DINÂMICOS

Dia 5 de Dezembro (quarta-feira), às 11h30, sala 6.1.27

Symbolic dynamics of piecewise contractions

Benito Pires

(Universidade de São Paulo)

Abstract:

A map $f : [0,1] \to [0,1]$ is a *piecewise contraction* if locally f contracts distance, i.e., if there exist $0 < \lambda < 1$ and a partition of $[0,1]$ into intervals $I_1, I_2, \ldots, I_n$ such that $|f(x) - f(y)| \leq \lambda |x - y|$ for all $x, y \in I_i$ $(1 \leq i \leq n)$. Piecewise contractions describe the dynamics of many systems such as traffic control systems, queueing systems, outer billiards and Cherry flows. Here I am interested in the symbolic dynamics of such maps. More precisely, we say that an infinite word $i_0 i_1 i_2 \ldots$ over the alphabet $\mathcal{A} = \{1, 2, \ldots, n\}$ is the *natural coding* of $x \in [0,1]$ if $f^k(x) \in I_{i_k}$ for all $k \geq 0$. The aim of this talk is to provide a complete classification of the words that appear as natural codings of injective piecewise contractions.

Seminário financiado por Fundos Nacionais através da FCT – Fundação para a Ciência e a Tecnologia no âmbito do projeto UID/MAT/04561/2013

Local: FCUL – Edf. C6 - Piso 1, 6.1.27