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72º EDAÍ 24 de novembro de 2017

Instituto de Matemática, UFRJ - Bloco C do CT (sala C116) – Ilha do Fundão

Matinê: 13h30 – 14h30

**Sobre a conjectura da estabilidade para fluxos geodésicos sem pontos conjugados
(e sem closing lemma ..)**

Rafael Ruggiero (PUC-Rio)

A conjectura da estabilidade para fluxos geodésicos é um problema em aberto até o momento pela ausência de uma versão satisfatória do closing lemma para fluxos geodésicos. Faremos um breve histórico de resultados recentes relativos ao tema e mostramos, sem o closing lemma, a conjectura da estabilidade do ponto de vista do Mañé para fluxos geodésicos em 3-variedades compactas sem pontos conjugados quasi-convexas. A demonstração envolve assuntos bem diversos como a teoria de controle e um lema de Franks para perturbações do tipo de Mañé, uma noção de "faixa flat" generalizada e a teoria de geometrização de Thurston. Em dimensões superiores mostramos a conjectura em variedades chamadas de posto um generalizado.

Palestra 1: 14h40 – 15h40

On Takens' Last Problem: time averages for heteroclinic attractors

Alexandre Rodrigues (FC Universidade do Porto, Portugal)

In this talk, after introducing some technical preliminaries about the topic, I will discuss some properties of a persistent family of smooth ordinary differential equations exhibiting tangencies for a dense subset of parameters. We use this to find dense subsets of parameter values such that the set of solutions with historic behaviour contains an open set. This provides a partial affirmative answer to Taken's Last Problem (F. Takens (2008) Nonlinearity, 21(3) T33–T36). A limited solution with historic behaviour is one for which the time averages do not converge as time goes to infinity. Takens' problem asks for dynamical systems where historic behaviour occurs persistently for initial conditions in a set with positive Lebesgue measure.

The family appears in the unfolding of a degenerate differential equation whose flow has an asymptotically stable heteroclinic cycle involving two-dimensional connections of non-trivial periodic solutions. We show that the degenerate problem also has historic behaviour, since for an open set of initial conditions starting near the cycle, the time averages approach the boundary of a polygon whose vertices depend on the centres of gravity of the periodic solutions and their Floquet multipliers. In addition, further open questions will be discussed.

This is a joint work with I. Labouriau (University of Porto).

Reference: I.S. Labouriau, A. A. P. Rodrigues, On Takens' Last Problem: tangencies and time averages near heteroclinic networks, Nonlinearity 30(5), 1876-1910, 2017

Café: 15h40 – 16h10

Palestra 2: 16h10 – 17h10

Maximal measures of diffeomorphisms with circle fiber bundle

Jiagang Yang (UFF)

In this paper, we study the maximal measures of partially hyperbolic diffeomorphisms whose center bundle is 1-dimensional and forms a circle bundle. We show that for any such C^2 diffeomorphism which is accessible, and is not of 'rotation type', the maximal measures can be identified by skeleton, a set of finite number of saddles. Moreover, the maximal measure has exponential decay of correlations for Holder observables.

This is a joint work with Raul Ures and Marcelo Viana.

Confraternização: 19h00 – ∞



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