79º EDAÍ   30 de novembro de 2018

Observatório do Valongo da UFRJ, Ladeira do Pedro Antônio, 43 - Centro

☞ Atenção: o EDAÍ terá lugar no centro do Rio. Acesso tranquilo pela Ladeira do Pedro Antônio e Estação Urugaiana (Metro), São Bento (VLT) ou ônibus. Também há estacionamento no observatório. https://goo.gl/maps/dFDtmyBt1iB2.

Matinê: 14h00 – 15h00
Ergodicity of hyperbolic billiards.
Gianluigi Del Magno (UFBA)

A billiard is a mechanical system consisting of a point-particle moving freely inside a domain, the billiard table. When the particle reaches the boundary of the table it bounces off so that the angle of reflection equals the angle of incidence. A billiard is hyperbolic if its trajectories behave like the orbits of a geodesic flow on a surface of negative curvature: typically two nearby trajectories diverge exponentially fast. The study of hyperbolic billiards was started by Sinai. In his seminal work, he proved that if the billiard table is a planar domain bounded by convex arcs, then the billiard is hyperbolic. Later on, Bunimovich discovered that also billiards in domains bounded by concave arcs and possibly by straight lines may be hyperbolic. All the concave arcs in Bunimovich billiards are arcs of circles though. This limitation was eventually overcome by Wojtkowski, Markarian, Donnay and Bunimovich himself who independently constructed new examples of hyperbolic billiards.
The first part of the talk is a rather informal introduction to hyperbolic billiards. In the second part, I will describe some general principles for constructing hyperbolic billiards, and address the problem of their ergodicity. The talk is based on a joint work with R. Markarian.

Palestra 1: 15h10 – 16h10
On periodic open disks for diffeomorphisms of surfaces
Salvador Zanata (IME-USP)

In this work we consider periodic open disks for certain diffeomorphisms $f : S \to S$ isotopic to the identity on closed orientable surfaces S of genus larger or equal to 1. In case of the torus (genus=1), we assume that the rotation set of f has interior and when genus is larger than 1, we assume a more technical hypothesis, which implies full homotopical complexity of orbits for f. Under these hypotheses, there exists a constant $M = M(f) > 0$ such that a periodic open disk O either has diameter bounded by M, or it is unbounded. In case the disk is unbounded, we show that there is a partition of O for which every element of this partition is wandering, with the exception of one. And if we consider the maximal periodic open disk which contains O, denoted $O_{\max}$ (it is defined in a very natural way), then when the prime ends rotation number on the boundary of $O_{\max}$ is rational, we prove, under some C^r-generic conditions (for every $r \geq 1$), that $O_{\max}$ is a basin of some attractor or of some repeller contained in $O_{\max}$. We do not know precisely what happens in the irrational case. This is joint work with Andres Koropecki.

Café: 16h10 – 16h40

Palestra 2: 16h40 – 17h40
Órbitas periódicas da Renormalização.
Pablo Guarino (UFF)

Vamos discutir o problema da existência de órbitas periódicas do operador de renormalização para mapas críticos do círculo. O objetivo é adaptar as técnicas desenvolvidas por Marco Martens na renormalização de mapas unimodais. Trabalho em andamento, em colaboração com Björn Winckler (Imperial College London).

Confraternização: Centro (local a determinar), 19h00 – ∞

☞ Para receber informações sobre e divulgar eventos de Sistemas Dinâmicos na região fluminense, inscreva-se no mailinglist: http://groups.google.com/group/DinamiCarioca ✍