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94º EDAÍ 14 de abril de 2023
Comemorando os 15 anos do EDAÍ
Auditório do bloco G, Campus do Gragoatá, UFF

Palestra 1: 10h30 – 11h30

Hedgehogs and pseudo-foliations of surface homeomorphisms without periodic points
Alejandro Kocsard (IMPA)

The dynamics of circle homeomorphisms without periodic orbits can be rather easily described: such a map has an irrational rotation number, admits a unique minimal set and is a topological extension of the corresponding irrational rotation. In dimension 2, the torus is the only connected orientable compact manifold admitting periodic point free homeomorphisms, but the dynamical description of these systems is much more complicated. In this talk we shall discuss the rotation theory of these maps paying especially attention to minimal homeomorphisms. We will also introduce two families of topological objects, hedgehogs and pseudo-foliations, that play a fundamental role in these works.

Coffee break: 11h30 – 11h50

Palestra 2: 11h50 – 12h50

15 years of EDAÍ, 30 years of Billiards
Sonia Pinto de Carvalho (UFMG)

The billiards problem consists of the straight-line motion of a particle within the region bounded by a curve, making elastic reflection on impacts with the edge, i.e., exactly what is imagined, except that the table does not have pockets, nor does it have to be rectangular. This problem defines a very special class of discrete, two-dimensional, conservative dynamical systems. In 2014, at the EDAI meeting in Juiz de Fora, I presented the first results we had on the genetic dynamics of flat billiards. In this new talk I will tell what the team has done in the last nine years, with new results on flat billiards, on billiards on surfaces, and on random billiards, and some of the problems we are working on today. Our team has grown and today is composed of Cássio Morais (postdoc UFMG), Cláudia Ferreira (IFET MG), Geraldo Gonçalves (UFOP), José Pedro Gaivao (Univ. Lisboa), Josué Damasceno (UFOP), Luciano Coutinho dos Santos (CEFET/MG), Mário Jorge Dias Carneiro (UFMG), Rafael Pereira (postdoc UFMG), Reginaldo Batista (UFJF), Sylvie Oliffson Kamphorst (UFMG), Túlio Ferreira (UFU), Vitor Almeida (PUC Minas) and myself.

Almoço: 12h50 – 14h30

Palestra 3: 14h30 – 15h30

A criterion of robust transitivity for endomorphisms on the torus
Martin Andersson (UFF)

In this talk we will present a new criterion for the robust transitivity of partially hyperbolic endomorphisms of T^2 whose action in homology has two integer eigenvalues greater than one. The criterion says that if the Jacobian at every point is larger than the spectral radius of the action in homology, then the endomorphism is robustly transitive. To obtain this result we introduce Blichfeldt's Theorem as a tool to extract dynamical information from the action of a map in homology. This is a joint work with Wagner Ranter.

Palestra 4: 15h40 – 16h40

Singular Baker's maps and Lorenz's Pretzels

Isabel Rios (UFF)

We present a family of non-uniformly hyperbolic transformations, which we call singular baker's maps, or SBM, on the unit square. The SBMs are, on a residual full-measure (for "almost all" ergodic measures) subset of the space, topologically conjugated to a shift of bilateral sequences on two symbols. From this conjugacy we get transitivity and density of hyperbolic periodic points for the SBM. We then describe a singular differentiable semi-flow in dimension 3 having a transitive compact invariant set with nonempty interior, in which closed hyperbolic orbits are dense and accumulate in a hyperbolic singularity. We call this set a Lorenz's pretzel. It is a joint work with Romulo Rosa.

Café: 16h40 – 17h10

Palestra 5: 17h10 – 18h10

Deformations of one-dimensional dynamical systems

Daniel Smania (ICMC-USP)

Perhaps one of the main features of one-dimensional dynamics (either real or complex) is that the theory of deformations is rich. By this we mean that the topological classes of such maps often are infinite dimensional manifolds, but with finite codimension. They are kind of "almost" structurally stable! Moreover for smooth families of maps inside a given topological class the associated family of conjugacies also moves in a smooth way. There are various applications in the study of renormalisation theory and linear response theory. There is a nice theory in complex dynamics but for real maps on the interval our current understanding is far behind the complex setting. We will discuss the recent developments obtained in joint work with several collaborators: Viviane Baladi, Amanda de Lima and more recently Clodoaldo Ragazzo. Ergodic theory will be a crucial tool.

Confraternização: Botequim Canto Do Peixe, 18h30 – ∞



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