



20° SIES

Seminário Interinstitucional de estudantes de sistemas dinâmicos

Sexta-feira, 25 de abril de 2025, IME-UFF, 4º andar do bloco H no campus Gragoatá, sala 401



14:15 - 15:00

A computational approach to the study of statistical properties (João Henrique, UFRJ)

In chaotic systems the statistical properties of the dynamics are often a better object to be studied than the pointwise behavior of trajectories. Indeed, due to the initial condition sensitivity, the future behavior of initial data can be unstable and unpredictable, but statistical properties are often stable and their description simpler. With the advance of technology, computational approaches have begun to contribute to obtaining important results in mathematics. The aim of the seminar is to present a rigorous computational approach that helps in the study of statistical properties, in particular convergence to equilibrium, of piecewise expanding.

15:15 - 16:00

Entropy Rigidity for Two Dimensional Anosov Diffeomorphisms (Vitor Gomes, UFF)

When physical SRB measures are of maximal entropy? When two given systems are smoothly conjugated? The goal of this talk is to outline a beautiful (classical) rigidity result for Anosov systems in dimension two that connects these two questions. Precisely, we show that the SRB measure of f maximizes the entropy if and only if f is smoothly conjugated to its linearization along unstable leaves. The classical proof of this result (see Katok-Hasselblat) relies on thermodynamical formalism: the equilibrium states associated to different potentials must differ unless the potentials are co-homologous. Another approach can be made via Lyapunov exponent rigidity: if the push-forward of the SRB measure by the conjugacy is a measure with the same Lyapunov exponent then the conjugacy must be smooth along the leaves. In this talk, we shall present a self-contained geometrical proof based on a detailed study of conditional measures along unstable leaves for the SRB (leafwise measures) and for the MME (Margulis family).

16:15 – 17:00

Regularity of Lyapunov exponent of product of random matrices (Yingjian Liu, IMPA)

The Lyapunov exponent of product of random matrices is continuous with respect to the underlying probability distribution. We investigate its regularity. In dimension 2, it can be pointwise Lipschitz, Holder, and log-Holder according to the Lyapunov spectrum and the subgroup the support lies in.