



Seminário de Sistemas Dinâmicos da UFF

DISCRETIZATIONS OF LINEAR MAPS, AND APPLICATIONS TO DIFFEOMORPHISMS

Pierre-Antoine Guihéneuf
UFF

Data: Sexta feira DATA

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Local: Sala 407, Bloco H, Campus do Gragoatá.

Resumo

Is it possible to rotate many times a numerical image without losing too much quality? In this talk we will study this problem for the most stupid algorithm for discrete rotation: discretizations. By definition, the image of a point x by the discretization of the linear map A is the point of \mathbb{Z}^n closest from Ax . This defines an endomorphism \hat{A} of \mathbb{Z}^n , in general non injective; the default of injectivity - i.e. the loss of quality of the image - is measured by the density of the image $\hat{A}(\mathbb{Z}^n)$.

This talk will be centered on the following theorem: the density of the set $(\hat{A}_k \circ \hat{A}_{k-1} \circ \dots \circ \hat{A}_1)(\mathbb{Z}^n)$ tends to 0 as k tends to infinity, when the sequence (A_k) is generic among sequence of matrices of determinant 1. I will try to explain why this result can be applied to study discretizations of generic C^1 -diffeomorphisms, and give some ideas of the proof that involves ideas from the theory of quasicrystals.