

UNICAMP – IMECC
Departamento de Matemática

Seminário de Sistemas Dinâmicos e Estocásticos

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Título: A tour of the Teixeira singularity

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Resumo. The Teixeira singularity is a doorway to nonsmooth dynamical systems beyond the plane. It is generic, its geometry is simple, but its dynamics is intricate and paradoxical. I'll take you on a tour of this fascinating singularity. I give you a little history, still shrouded in mystery, I'll show you what we've learnt, and give some new results. Is it an attractor? Is it structurally stable? These questions remained a mystery for many years. We now know a lot: orbits can rotate around the singularity, finitely or infinitely many times. They have invariant surfaces that undergo the "nonsmooth diablo" bifurcation. They can go through the singularity, where determinism breaks down and a new kind of chaos is born. Do Teixeira singularities exist in physics and biology? That is a real mystery...

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