SEMINARIO DE ANÁLISIS MATEMÁTICO Y MATEMÁTICA APLICADA

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INERTIAL MANIFOLDS, EXPONENTIAL DICHOTOMY AND THE SADDLE POINT PROPERTY: A UNIFIED THEORY

Inertial manifold theory, saddle point property and exponential dichotomy have been treated as different topics in the literature with different proofs. As a common feature, they all have the purpose of 'splitting' the space to understand the dynamics. We give a unified proof for the inertial manifold theorem that, as a consequence, yields the roughness of exponential dichotomy (global in nature) and the saddle-point property and the fine structure within the stable and unstable manifolds (local in nature). In particular, we use these tools in order to establish the hyperbolicity of certain global solutions for a non-autonomous one dimensional scalar parabolic partial differential equations.

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