Universidade Federal de São Carlos
Departamento de Matemática

# Colóquios do DM-UFSCar

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Falará sobre

## Some examples of Topological Structural Stability

A semilinear parabolic problem with Neumann conditions in a Dumbbell domain $\Omega_\epsilon$ and with Dirichlet conditions in a domain $\Omega$ discretized by a family of subdivisions $\{\mathcal{T}^h\}_{h\in(0,1]}$ has nonlinear semigroups associated $T_\epsilon(\cdot)$ in $U^p_\epsilon$ and $T_h(\cdot)$ in $X^{1/2}_h$, respectively, where $U^p_\epsilon := L^p(\Omega_\epsilon)$ y $X^{1/2}_h := \{\mathcal{I}^h v : v \in C(\overline{\Omega}), v|_{\partial\Omega} = 0\}$. In this work, we will analyze the topological structural stability for families of nonlinear semigroups $T_\epsilon(\cdot)$ and $T_h(\cdot)$ on Banach spaces $U^p_\epsilon$ and $X^{1/2}_h$, respectively. In addition, we will study the robustness of the internal dynamics of the families of global attractors $\mathcal{A}_\epsilon \subset U^p_\epsilon$ and $\mathcal{A}_h \subset X^{1/2}_h$ on small perturbations of $\epsilon$ and $h$, respectively.

**References** [1] Arrieta, J. M.; Carvalho, A. N.; Lozada-Cruz, G. J. (2006) Dynamics in dumbbell domains I: continuity of the set of equilibria. **J. Differential Equations**, New York, v. 231, n. 2, p. 551–597.

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