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On a reaction-diffusion model with nonlocal viscosity. Existence, regularity, attractors and robustness

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We analyze the (global) existence of solutions for a scalar reaction-diffusion problem with a nonlocal viscosity term. The problem can be seen as a non-standard diffusion model with quick aggregation or oppositely, the necessity to leave crowded zones, depending on the choice of the viscosity function. To better model certain situations with rough viscosity terms only continuity is assumed for the viscosity function. This leads to a result where uniqueness is unknown. Besides that, the long-time behavior of solutions is analyzed via multi-valued dynamical systems and the existence of attractor ensured. Regularity issues will lead to address the questions of attractor in a more regular norm and robustness w.r.t. certain parameters, which will be answered successfully.

This is a joint work with Tomas Caraballo and Marta Herrera-Cobos (Universidad de Sevilla).

References:

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