

The conference is supported by the National Laboratory for Health Security project RRF-2.3.1-21-2022-00006

Nonlinear semigroups for nonlocal conservation laws

Mihály Kovács

Pázmány Péter Catholic University/Budapest University of Technology and Economics, Hungary/Chalmers University, Sweden
kovacs.mihaly@itk.ppke.hu

We investigate a class of nonlocal conservation laws in several space dimensions, where the continuum average of weighted nonlocal interactions are considered over a finite horizon. We establish well-posedness for a broad class of flux functions and initial data via semigroup theory in Banach spaces and, in particular, via the celebrated Crandall-Liggett Theorem. We also show that the unique mild solution satisfies a Kružkov-type nonlocal entropy inequality. Similarly to the local case, we demonstrate an efficient way of proving various desirable qualitative properties of the unique solution. Finally, we also prove some perturbation results.

This is a joint work with M. A. Vághy (Pázmány Péter Catholic University).