

Anna Ghazaryan, University of Kansas

Nonlinear convective instability of fronts in reaction-diffusion systems

ABSTRACT:

Fronts are traveling waves in spatially extended systems that connect two different spatially homogeneous rest states. If the rest state behind the front becomes unstable, then the front will also destabilize. On the linear level there exists an exponentially weighted norm that stabilizes the front, in other words, the instability of the front in the co-moving frame is convective since perturbations are pushed away from the interface of the front. At the same time, for most of the nonlinearities, introducing a weight complicates the nonlinear analysis: the nonlinear stability cannot be simply inferred from the linear stability. I will demonstrate how the interplay of norms with and without weight can be used to prove the convective character of the instability on the nonlinear level.