
Anomalous spreading in a system of coupled Fisher-KPP equations

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Abstract

Anomalous spreading refers to a scenario wherein the coupling of two equations leads to faster spreading speeds in one of the components. The existence of these spreading speeds can be predicted from the linearization about the unstable state. Whether this linear speed is observed in the nonlinear regime depends on the particular parameter values being considered. We discuss mechanisms leading to these faster speeds and prove that for some parameters initial data consisting of compactly supported perturbations of Heaviside step functions spreads asymptotically with the anomalous speed. The proof makes use of a comparison principle and the explicit construction of sub and super solutions.

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