Variational and Topological Methods for Differential Equations

Saturated fronts in crowds dynamics

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We consider a degenerate scalar parabolic equation, in one spatial dimension, of flux-saturated type. The equation also contains a convective term. We study the existence and regularity of traveling-wave solutions; in particular we show that they can be discontinuous. Uniqueness is recovered by requiring an entropy condition, and entropic solutions turn out to be the vanishing-diffusion limits of traveling-wave solutions to the equation with an additional non-degenerate diffusion. Applications to crowds dynamics, which motivated the present research, are also provided.

This is a submission for a contributed session