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Homogenization and influence of fragmentation on reaction-diffusion fronts

We consider a semi-linear parabolic PDE with diffusion and reaction terms depending on the spatial variable. For each $L > 0$, the model admits traveling-front solutions and a minimal speed of propagation c_L^* . We determine the homogenization limit of the minimal speeds as the period $L \rightarrow 0$. Moreover, in the case of an environment composed of “habitat” and “non-habitat” patches, we show that habitat fragmentation decreases the speed of propagation.