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Fluctuations and stability in front propagation.

Propagating fronts arising from bistable reaction-diffusion equations are a purely deterministic effect, and are important in many contexts in cell biology. However, within cells, populations are small, and fluctuations are important. Stochastic reaction-diffusion processes also show front propagation which coincides with the deterministic effect in the limit of small fluctuations (large populations). However, for larger fluctuations propagation can be affected.

We give an example where the direction of wave propagation, i.e., the relative stability of two phases, can be *reversed* by fluctuations.

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