

Wave pinning in competition-diffusion models in variable environments

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Numerical results on conditions for the emergence of propagation failure of diffusive fronts in two-species competition models for populations with either logistic growth or strong Allee effect are presented. Particularly, the stability against environmental perturbations is investigated. Two different density dependencies of the noise intensities are considered. They mimic a differential functional response of the competitors to the variable environment. Assuming classical linearly density-dependent noise intensities, stochastic wave pinning can occur. This is an ecologically important finding regarding biological invasion as it means that the invasion speed can be reduced by environmental perturbations even yielding a reversal of the invasion wave. However, this depends on the form of the *functional per-capita noise response*, cf. [1].

- [1] Köhnke, M.C., Malchow, H., Wave pinning in competition-diffusion models in variable environments. *Journal of Theoretical Biology* **461**, 204–214 (2019).

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