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Talk 2:

Population genetics, fluid flows, and the importance of diffusing faster

I will present a spatially-explicit, individual-based model describing competition between two different alleles or biological species. When competing individuals are transported by a fluid flow, as in the case of marine populations, the outcome of competition is radically altered, leading to a novel coexistence scenario. In the case where the two alleles diffuse at different speeds, but are otherwise neutral, the model predicts a noise-induced selective advantage that will be characterized mathematically.

Refs.:S. Pigolotti and R. Benzi, Phys. Rev. Lett. 112, 188102, 2014 / S. Pigolotti, R. Benzi, P. Perlekar, M.H. Jensen, F. Toschi, and D.R. Nelson, Theo. Pop. Biol. 84:72-86, 2013. / S. Pigolotti, R. Benzi, M. H. Jensen, D. R. Nelson, Phys. Rev. Lett. 108, 128102, 2012