

Abstract Submitted
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Motility-induced

bacterial pattern formation in multi-species bacterial colonies AGNESE CURATOLO¹, Université Paris Diderot, YONGFENG ZHAO², NAN ZHOU³, University of Hong Kong, ADRIAN DAERR, Université Paris Diderot, JIANGDONG HUANG, University of Hong Kong, University of Hong Kong Shenzhen, Shenzhen Institutes of Advanced Technology, JULIEN TAILLEUR, Université Paris Diderot — The ability to form patterns is a feature shared by a large variety of systems: from hydrodynamics (e.g. thermal convection) to biological processes (e.g. morphogenesis), the emergence of repeated ordered structures can have very complicated and different origins. Sometimes, however, simple and general underlying principles can be found. In this talk I will present a generic mechanism by which two types of bacteria can migrate and self-organize spatially, using a mutual control of their motilities. Depending on whether each species enhances or lowers the motility of the other species, initially mixed colonies grow in a variety of patterns leading to co-localization or demixing of the two species. The rich phenomenology described by our model and the robustness of the underlying pattern-formation mechanism suggests that it could be generically encountered in Nature. Moreover, it could also be used to promote the mixing or demixing of active particles in a controlled way.

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