Approximation and derivation of the SKT system

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Résumé

The SKT system is a reaction-diffusion model introduced at the end of seventies to describe the evolution of different species, and allowing to capture segregation phenomena. We will present part of the open mathematical challenges related to this system and discuss various approximation strategies, focusing in particular on a scheme proposed in 2019 by Daus, Desvillettes, and Dietert. Using a local stability estimate for the system and its reformulation in a semi-discrete framework, we will explain how this scheme can lead to a full derivation result, connecting the SKT system to a family of repulsive random walks on a discrete lattice. This is a joint work with Vincent Bansaye and Felipe Muñoz-Hernández.

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