

Mean-field-type limits of interacting particle systems for multiple species

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Abstract : The aim of this talk is the rigorous derivation of cross-diffusion systems from stochastic, moderately interacting many-particle systems for multiple species. Applications include animal populations and neuronal ensembles. The mean-field limit leads to nonlocal cross-diffusion systems, while the limit of vanishing interaction radius gives local cross-diffusion equations. This allows for the derivation of fluid-type models that can be found in neuronal networks and of Shigesada-Kawasaki-Teramoto population models. The derivation uses the techniques of Oehlschläger. The entropy structure of the limiting models is discussed and some numerical experiments are presented.