Seminário de sistemas dinâmicos e estocásticos

IMECC - UNICAMP

Quantitative large-population asymptotics for logistic branching diffusions with mean-field interaction

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Resumo:

We obtain an explicit convergence rate for systems of mean-field interacting diffusions with logistic binary branching, towards the weak solutions of non-linear evolution equations with non-local self- diffusion and logistic mass growth, which describe their large population limit. The proof relies on an novel coupling argument for diffusions with binary branching based on optimal transport, that allows us to sharply approximate the trajectory of a branching population by certain system of independent particles with suitable random birth/death times and positions. We thus are able derive a convergence rate for the empirical measure of the system in the dual bounded-Lipschitz distance on finite measures, from the rate of convergence in Wasserstein-2 distance of empirical measures of i.i.d. samples. These result and techniques seem to be new even in the case of non-interacting binary branching diffusions. Joint work with Felipe Muñoz (Universidad de Chile and École Polytéchnique de Paris)

Data: 27/11 - 11:00 (GMT-3) - Via Zoom - Meeting ID: 994 0638 0465 - Passcode: 228577

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