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Local interactions in stochastic differential equations

This talk with be based on joint work with Tom Kurtz and Jie Xiong.

An infinite system of real-valued stochastic differential equations for particle locations is considered. The particles exhibit local interactions through drift coefficients that depend upon other particles within a fixed distance. Strong existence and uniqueness is proved for this particle system with potentially discontinuous, local interactions. Current related work in stochastic partial differential equations will be discussed if time permits.