Abstract

In this talk I will present the construction of a family of particle systems that converge after scaling to the solution of a non-linear SDE of Reaction-Diffusion type. More precisely: fix a finite set $V$, we can construct a family of particle systems that converge after scaling to a solution of the following Stochastic Differential Equation (SDE):

$$\begin{cases}
    d\zeta_t(x) = \left[\Delta_V \zeta_t(x) - \beta \left(\zeta_t(x)\right)^k\right] dt + \sqrt{\alpha \left(\zeta_t(x)\right)^\ell} dB_t^x \\
    \zeta_0(x) = \rho_0(x)
\end{cases}$$

where $k, \ell$ are positive integers and $\alpha, \beta$ are positive real numbers.