Infinite-dimensional stochastic differential equations arising from random matrix theory

Hirofumi Osada

Kyusyu University

The convergence of finite-dimensional stochastic dynamics related to random matrices such as G(O/U/S)E, Ginibre ensembles, Laguare ensembles to the unique strong solutions of infinite-dimensional stochastic differential equations(ISDEs) is proved. We prove the convergence of both of soft and bulk scaling limits for G(O/U/S)E, and solve the ISDEs related to sine and Airy random point fields. We show the SDE gap phenomena in the sense that the SDEs for finite particle dynamics and those of infinite particles are different.