Some property of infinite-dimensional Dyson's model with multiple tails

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In this talk, I will talk about some property of infinite-particle systems and explain that this property is essential to strong uniqueness of a solution of infinite-dimensional stochastic differential equations.

Take a translation invariant random point field. Then, for almost sure configurations, this has a density (correct limit of particle number over volume). We consider the (configuration space valued) diffusion which is reversible with respect to the random point field. This diffusion is an unlabeled dynamics of infinite particle system. I will show that the diffusion preserves density at the capacity level, that is, does not change the density of the system over the time evolution of the process. We say this property density preservation.

Density preservation is needed to prove strong uniqueness of a solution of some type of infinite-dimensional stochastic differential equations. In my talk, for example, I will take up infinite-dimensional Dyson's model with multiple tails. Using density preservation, we can prove that this model has the unique strong solution.