

1124-60-50

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*The Diffusion Forecasting Method.*

I will discuss a nonparametric modeling approach for forecasting stochastic dynamical systems on smooth manifolds embedded in Euclidean space. In the limit of large data, this approach converges to a Galerkin projection of the semi-group solution of the backward Kolmogorov equation of the underlying dynamics on a basis adapted to the invariant measure. This approach, which we called the "diffusion forecast", allows one to evolve the probability distribution of non-trivial dynamical systems with an equation-free modeling. If time permitted, I will also discuss a semi-parametric modeling framework to compensate for model error by learning an auxiliary dynamical model for the unknown parameters. (Received August 19, 2016)