



Semiparametric estimation of McKean-Vlasov stochastic differential equations

Mark Podolskij¹; Denis Belomestny²; Vytaute Pilipauskaite¹

¹ University of Luxembourg

² University of Duisburg-Essen

Abstract:

In this talk we investigate semiparametric estimation of a class of McKean-Vlasov stochastic differential equations. The probabilistic properties of the model have been studied in the probabilistic literature and our analysis is based upon the propagation of chaos result. We show that the convergence rate of our estimator is logarithmic under a polynomial behaviour of the non-parametric part of the interaction function and the presence of a parametric polynomial component. We further prove that the obtained rate is optimal in the minimax sense.

Keywords:

Diffusion models; McKean-Vlasov SDEs; semiparametric estimation; minimax bounds; deconvolution problems