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Nonparametric estimation of McKean-Vlasov SDEs via deconvolution

In this talk we discuss the estimation of the interaction function W' in the drift for a class of McKean-Vlasov stochastic differential equations (SDEs). We introduce a deconvolution estimator that uses the observation at a single time T of the associated system of N interacting particles. As both N and T tend to infinity, we derive logarithmic convergence rates for the MISE of our estimator of W' within a class of functions with polynomially decaying tails. We prove that these rates can be improved to polynomial under a more restrictive assumption that W' has Gaussian tails. This is joint work with C. Amorino, D. Belomestny, M. Podolskij and S.-Y. Zhou.