Quantitative propagation of chaos for a class of one-dimensional particle systems.

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We study a class of one dimensional particle systems, which include Kac’s model and some equations for wealth distribution in a simplified economy. We obtain an explicit rate of convergence in Wasserstein distance, as the total number of particles goes to infinity, for the law of a particle to its limit law, which depends linearly on time. The proof is based on a novel coupling between the particle system and a suitable system of non-independent nonlinear processes, which is constructed using techniques of optimal coupling.