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DEAN-KWASAKI DYNAMICS: PARTICULAR SOLUTIONS FOR AN ILL-POSED SPDE

Abstract:

The Dean-Kawasaki Equation is a fundamental model for fluctuating hydrodynamics in statistical physics. We show that this equation is generally ill-posed as long as the interaction potential is smooth. For singular interactions we show existence of several interesting solutions which can be obtained by means of interacting particle systems or Dirichlet form techniques in infinite dimensions.