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Numerical Renormalization Group for Coarse Graining Field-Theoretic Fluid Models MICHAEL VILLET, GLENN FREDRICKSON, University of California, Santa Barbara — Statistical field theory models have proven to be valuable tools for studying the equilibrium behavior of polymeric fluids, but direct simulation of these field theories without use of the mean field approximation is computationally demanding. Computational resources can be extended to simulate larger systems by discretizing the field variables with a coarsely spaced lattice, but indelicate coarse graining risks truncation of important short-wavelength physics. We investigate numerical renormalization group transformations in tandem with complex Langevin simulations as a systematic approach to coarse graining field-theoretic fluid models, using a simple repulsive Yukawa fluid as a test system.

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