Abstract Submitted
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Vortex recombination and energy dissipation in Fermionic superfluids[1] KHALID HOSSAIN, Washington State University, MICHAEL FORBES, Washington State University, University of Washington, KONRAD KOBUSZEWSKI, Warsaw University of Technology, PIOTR MAGIERSKI, GABRIEL WLAZOWSKI, Warsaw University of Technology, University of Washington — The dynamics of quantized superfluid vortices underlies quantum turbulence. An accurate characterization of these can be obtained from a model called time-dependent Superfluid Local Density Approximation (TDSLDA). TDSLDA is computationally too expensive to simulate fermionic systems with macroscopic volume. To study dynamical processes like vortex recombination and energy dissipation, we propose using simpler Gross-Pitaevskii (GPE) like model called an Extended Thomas-Fermi (ETF) model. In this work, we simulate the Unitary Fermi Gas (UFG) with particular attention to energy dissipation and validate to what extent ETF can describe the dynamics.

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