Abstract Submitted
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Quantum turbulence in effective low dimensional formulation[1]
SAPTARSHI SARKAR, Washington State University — Cold atomic gases provides a new platform for understanding nonlinear fluid dynamics. If there is a non-linear term in the energy-density, then the high number-density region has a larger k-vector or moves faster than a low density region. This causes the high density fronts to form a very sharp slope as a wavepacket propagates outward which can cause the energy density to diverge. Such extreme behavior is regulated by the viscous term in a dissipative (viscous) theory and the gradient in the kinetic energy term in a dispersive theory. We show that an axial model, which turns it into an effective 2D simulation, can reduce computational time while providing agreement with the experiment.

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