Abstract Submitted
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Three Dimensional Characterization of Quantum Vortex Dynamics in Superfluid Helium DAVID MEICHLE, DANIEL LATHROP, University of Maryland — Vorticity is constrained to line-like topological defects in quantum superfluids, such as liquid Helium below the Lambda transition. We have invented a novel method to disperse fluorescent nanoparticles directly into the superfluid which become trapped on the vortex cores, providing optical tracers. Using a newly constructed multi-camera stereographic microscope, we present data dynamically characterizing vortex reconnections and the subsequent emission of Kelvin waves fully in three dimensions. Statistics of thermally driven counterflow will be compared in 3D to previous measurements in projection.

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