

Abstract Submitted  
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**Visualization and characterization of superfluid vortices in liquid helium**<sup>1</sup> DANIEL LATHROP, GREGORY BEWLEY, University of Maryland, KATEPALLI SREENIVASAN, International Center for Theoretical Physics — In superfluid helium 4, quantum vortices have been studied indirectly for nearly fifty years. We have discovered that micron sized solid hydrogen particles suspended within superfluid helium are attracted to and trapped by the vortex filaments and thereby make it possible to see individual vortex lines. The ability to produce the fine solid hydrogen particles is key to this new technique. We compare the line density in a steadily rotating superfluid with the Feynman prediction. Oscillating modes of the vortex array are also observed and characterized. Our observations also include periodic particle spacing on lines at low particle density, as well as complex vortex branching and networks. Our visualization technique makes it possible to observe the dynamics and geometry of vortices both in superfluid turbulence and in quench conditions passing through the phase transition.

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