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Three Dimensional Vortex Reconnection Dynamics in Superfluid Helium PETER MEGSON, DAVID MEICHLE, DANIEL LATHROP, University of Maryland, College Park — Liquid helium, when cooled below 2.17 K, becomes a superfluid with exotic physical properties including flow without friction. Superfluid flow is irrotational except about line-like topological phase defects with quantized circulation, known as quantum vortices. The dynamics of these vortices include events such as reconnection and Kelvin wave propagation. We observe the dynamics of particles trapped on the vortices with a newly developed 3D stereographic system. This talk will present new observations of reconnection events and analysis comparing vortex reconnection behavior in three dimensions to previous work that observed such events in two-dimensional projection. In particular, we discuss the power law scaling of vortex separation as a function of time and the effect of the initial angle of separation between the vortex filaments.

Peter Megson
University of Maryland, College Park

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