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Dynamics of the Lattice Array Formation in Superfluid Helium KRISTINA GAFF, University of Maryland, College Park, ENRICO FONDA, Universitá di Trieste; University of Maryland at College Park, MATTHEW PAOLETTI, DANIEL LATHROP, University of Maryland, College Park, KATEPALLI SREENI-VASAN, International Centre for Theoretical Physics; University of Maryland at College Park — In 1955, Feynman theorized that the lowest energy state of rotating superfluid helium would result in a lattice structure of quantized vortices. In 1979, Yarmchuk *et. al.* observed a small lattice array of up to eleven vortices using clusters of ions, and later experiments observed the lattice array in superfluid ⁴He perpendicular to the axis of rotation using hydrogen ice particles (Bewley *et. al.* 2006). Yet, the formation and dynamics of these arrays remain otherwise unexplored experimentally. Now, by visualizing sub-micron particles trapped on quantized vortices, we characterize the lattice array formation in superfluid helium. Our study investigates the lattice formation by independently varying rotation rate and temperature.

Kristina Gaff University of Maryland, College Park

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