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Characterization of solid helium crystals and non-classical rotational inertia measurements[1] JOSHUA T. WEST, MOSES H. W. CHAN, Department of Physics, The Pennsylvania State University, University Park, PA 16802 — Non-classical rotational inertia (NCRI) measurements taken by several groups over the past few years all reproduce the same essential features. However, the magnitudes of the observed NCRI signals vary by three orders of magnitude! Many experiments indicate that disorder in some form (be it point defects, grain boundaries, dislocations, or a glassy phase) is either responsible for, or enhances NCRI. We will summarize the efforts to characterize the disorder in solid helium crystals. X-ray scattering experiments have been performed to look at the effects of rapid quenching. In-situ optical characterization of crystals within a torsional oscillator will be discussed.

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