

Abstract Submitted
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Solid helium in rigid torsional oscillators¹ D.Y. KIM, M.H.W. CHAN, Department of Physics, The Pennsylvania State University, University Park, PA 16802, USA — In torsional oscillator experiments on solid helium, separating out the effect of shear modulus stiffening is important to measure true non-classical rotational inertia (NCRI). An increase in the shear modulus of solid helium stiffens the oscillator and causes the resonant period to drop thus mimicking NCRI. This effect can be multiplied in a torsional oscillator that is not completely rigid. We have carried out measurements in torsional oscillators specially designed to minimize the shear modulus effect. These oscillators are different from conventional ones in two aspects. Annulus sample spaces are located in the outermost part from rotational axes and all other parts consist of rigid metal. In this design, the resonant period change by loading solid helium is maximized and the effect of shear modulus change is minimized. We found a NCRI fraction on the order of 3×10^{-5} in these torsional oscillators.

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