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Probing the upper limit of the nonclassical rotational inertia[1]

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Recently, we have used torsional oscillators to study the dependence of the nonclassical rotational inertia on sample confinement, expressed as surface to volume ratio S/V [1]. When we decreased the width of annular helium sample we observed an increase of the supersolid fraction by three orders of magnitude to 20 % in a 150 μm wide annulus. As an extension of those measurements, we have built torsional oscillators with even smaller gaps down to 25 microns. We will give a brief description of the experimental setup and present the results of those measurements.

[1] A.S.C. Rittner and J.D. Reppy, Phys. Rev. Lett. **98**, 175302(2007)

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