

Abstract Submitted  
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**Shear Modulus of Solid Helium Confined in Aerogel**<sup>1</sup> ARIF RAB-BANI, JOHN BEAMISH, University of Alberta — Torsional oscillator experiments on  $^4\text{He}$  show supersolid behavior which appears to be associated with disorder. However, confining helium in the pores of an aerogel does not enhance the supersolid decoupling, even though x-ray measurements confirm that the crystals are highly disordered. Solid helium's shear modulus also shows anomalous behavior below 150 mK, stiffening as mobile dislocations are pinned by  $^3\text{He}$  impurities at low temperatures. A highly porous material such as aerogel should also provide effective pinning sites for dislocations. We have made shear modulus measurements on solid  $^4\text{He}$  grown in a 95% porosity aerogel. We see large modulus decreases as the samples are warmed but these occur at much higher temperatures and over a broader range than in bulk  $^4\text{He}$ . The frequency dependence of the modulus and dissipation are consistent with a thermally activated process. The activation energies are roughly 10 to 15 K and may be associated with vacancy motion.

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