

Abstract Submitted  
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**Superfluid  $^3\text{He}$  in Anisotropic Aerogels**<sup>1</sup> JOHANNES POLLANEN, JOHN P. DAVIS, BENJAMIN REDDY, KENT R. SHIRER, HYOUNG-SOON CHOI, WILLIAM J. GANNON, CHARLES A. COLLETT, WILLIAM P. HALPERIN, Northwestern University — Anisotropic quasiparticle scattering has been predicted to modify the properties of superfluid  $^3\text{He}$  in high porosity silica aerogels.<sup>2</sup> For example, anisotropic scattering produced by axial compression (or elongation) of the aerogel has been predicted to stabilize the axial (or polar) state of superfluid  $^3\text{He}$ . We have used a transverse acoustic impedance method to determine the phase diagram of superfluid  $^3\text{He}$  in a 98% porous silica aerogel subjected to 17% axial compression. We have found that this uniform axial anisotropy does not increase the stable region of A-like phase but does inhibit the nucleation of the B-phase at low pressure. We have performed optical cross-polarization experiments<sup>3</sup> to verify the presence and uniformity of the anisotropy in the aerogel samples. Additionally, we are performing nuclear magnetic resonance experiments on superfluid  $^3\text{He}$  in aerogels with anisotropy introduced with either axial or radial compression.

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<sup>2</sup>K. Aoyama and R. Ikeda, Phys. Rev. B **73**, 060504(R) (2006).

<sup>3</sup>J. Pollanen *et al.*, J. of Non-Crystalline Solids **354**, 4668 (2008).

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