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Pressure Dependence of the Phase Diagram of Superfluid ^{3}He in Negatively Strained Aerogel A. M. ZIMMERMAN, M. D. NGUYEN, W. P. HALPERIN, Northwestern University — Many recent experimental and theoretical studies of the unconventional superfluid phases of ^{3}He have shown that the introduction of confinement and impurity scattering on the scale of the superfluid coherence length can be used to engineer the superfluid phase diagram, altering the relative phase stability and nucleating entirely new phases not present in bulk superfluid ^{3}He. One such system which has been proven to be particularly interesting is $\approx 98\%$ porosity silica aerogel. In previous experiments, it was shown that the isotropic superfluid B-phase was stabilized by scattering from isotropic aerogel, while introducing anisotropic scattering by positively straining the aerogel strongly favored the anisotropic A-phase.[1,2] Interestingly, anisotropy induced by applying negative strain to the aerogel stabilizes the isotropic B-phase, requiring a magnetic field greater than a critical value to produce the A-phase. Here we report the results of recent investigations of the pressure dependence of of the phase diagram in these negatively strained silica aerogels.Research was supported by the NSF DMR-1103625.

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2. J. Pollanen *et al*, Phys. Rev. Lett., **107**, 195301, (2011).

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