Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

New Phases Stabilized by Anisotropic Impurity in ^{3}He A.M. ZIMMERMAN, J.I.A. LI, Northwestern University, J. POLLANEN, California Institute of Technology, C.A. COLLETT, W.P. HALPERIN, Northwestern University — We have introduced anisotropic impurity into superfluid ^{3}He using well-characterized silica aerogel samples negatively strained by mechanical compression along the cylinder axis by $\approx 10\%$, 20%, and 30%. Using NMR measurements, we determined the temperature-magnetic field phase diagrams for these amounts of strain. In previous work it was found that in the presence of negative strain of $\approx 20\%$ the superfluid A-phase is only stable above a critical magnetic field, H_c.[1] We have found H_c^2 increases linearly with strain. By comparing the measured NMR longitudinal resonance frequency to results from unstrained isotropic aerogel, we have determined that in the presence of negative strain the B-phase evolves into a new anisotropic phase. This new anisotropic phase is more stable than the A-phase for fields below H_c. This work was supported by the National Science Foundation, DMR-1103625.

[1]J.I.A. Li *et al.*, Phys. Rev. Lett. **112**, 115303 (2014).

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Date submitted: 14 Nov 2014 Electronic form version 1.4