

Abstract Submitted
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Effect of Aerogel Anisotropy in Superfluid $^3\text{He-A}$ ¹ A.M. ZIMMERMAN, J.I.A. LI, J. POLLANEN, C.A. COLLETT, W.J. GANNON, W.P. HALPERIN, Northwestern University — Two theories have been advanced to describe the effects of anisotropic impurity introduced by stretched silica aerogel on the orientation of the orbital angular momentum \hat{l} in superfluid $^3\text{He-A}$. These theories disagree on whether the anisotropy will orient \hat{l} perpendicular² or parallel³ to the strain axis. In order to examine this question we have produced and characterized a homogeneous aerogel sample with uniaxial anisotropy introduced during growth, corresponding to stretching of the aerogel. These samples have been shown to stabilize two new chiral states;⁴ the higher temperature state being the subject of the present study. Using pulsed NMR we have performed experiments on $^3\text{He-A}$ imbibed in this sample in two orientations: strain parallel and perpendicular to the applied magnetic field. From the NMR frequency shifts as a function of tip angle and temperature, we find that the angular momentum \hat{l} is oriented along the strain axis, providing evidence for the theory advanced by Sauls.

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²G. E. Volovik, *J. Low Temp. Phys.* **150**, 453 (2008).

³J. A. Sauls, arXiv:1307.7656.

⁴J. Pollanen et al. *Nature Physics*, **8**, 317-320 (2012).

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