

Abstract Submitted
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A Variable Path Length Cell for Transverse Acoustic Studies of Superfluid ^3He ¹ C.A. COLLETT, J.I.A. LI, A.M. ZIMMERMAN, W.J. GANNON, W.P. HALPERIN, Department of Physics and Astronomy, Northwestern University, Evanston, IL 60208, USA — Transverse acoustic cavities have recently been shown to provide a probe for the surface bound states of superfluid $^3\text{He-B}$.¹ These states are predicted to have Majorana characteristics in the specular scattering limit. We have developed an acoustic cavity which allows continuous in-situ variation of the path length in order to more fully explore the surface states and to quantify the relative attenuation observed from bulk and surface helium. The variable path length cavity will also allow us to reduce the cavity length down to several microns, sufficient to search for propagating transverse sound modes in the normal state, as predicted by Landau.² We report the progress we have made in constructing and implementing this new sample cell.

1. J.P. Davis *et al.*, Nature Physics **4**, 571-575 (2008).
2. L.D. Landau, Sov. Phys. JETP **32**, 59 (1957).

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