

Abstract Submitted
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Moderate Magnetic Field Transverse Acoustics in Superfluid $^3\text{He-B}$
B. C. COLLETT, S. SASAKI, J.P. DAVIS, J. POLLANEN, W.J. GANNON, J. LI, W.P. HALPERIN — We present the results of transverse acoustics studies in superfluid $^3\text{He-B}$ at fields up to 0.1 T. Using acoustic cavity interferometry, we observe the acoustic Faraday effect^{1,2} for a transverse sound wave propagating along the magnetic field, and we measure Faraday rotations of the polarization of the sound up to 990° , significantly more extensive than has been previously reported. We use these results to extend previous calculations of the Landé g factor. We also find the field dependence of cavity interference oscillations resulting from coupling to the imaginary squashing mode (ISQ), a collective mode of the order parameter with total angular momentum $J = 2$. Measurements in large magnetic fields were performed at frequencies up to the pair breaking threshold, where there has been a recent report³ of a new collective mode with $J = 4$. The discovery of Faraday rotations coming from this new mode is reported, along with their intersection with rotations from the ISQ. Support for this work from the NSF, grant DMR-0703656, is gratefully acknowledged.

¹G.F. Moores and J.A. Sauls, *J. Low Temp. Phys.* **91**, 13 (1993).

²Y. Lee *et al.*, *Nature* **400**, 431 (1999).

³J.P. Davis *et al.*, *Nature Physics* **4**, 571 (2008).

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