

Abstract Submitted
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Low field NMR in aerogel-confined superfluid ^3He ¹ YULIANG DU, H.M. BOZLER, C.M. GOULD, Univ. of Southern California — The superfluid states of bulk liquid ^3He were convincingly identified through their longitudinal and transverse NMR spectra. The order parameters of the superfluid phases of ^3He confined within aerogel have generally been assumed to be identical to those in bulk liquid. While that identification has not been contradicted by experimental data, it has not yet been tested as carefully as in bulk. Fomin has suggested that the A-like phase in aerogel could be an axiplanar state, distinct from the bulk axial state. We have tested the identification by studying low-field NMR which is more sensitive to the distinction between the candidate states. Using the dc SQUID based NMR detection system developed in our laboratory over many years we have studied both longitudinal and transverse resonance spectra in 99.5% porosity aerogel in magnetic fields of 1-4 mT, an order of magnitude lower than previous NMR work. Our work shows qualitative features similar to those found in higher magnetic fields. While we were unable to resolve the longitudinal resonance, transverse resonance measurements exhibit a characteristic field- and temperature-dependence.

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