

Abstract Submitted
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Frequency Dependence of Ultrasound Attenuation in Superfluid ^3He in Aerogel¹ BYOUNG HEE MOON, University of Florida, NAOTO MASUHARA, NHMFL, PRADEEP BHUPATHI, MIGUEL GONZALEZ, MARK MEISEL, YOONSEOK LEE, University of Florida, NOBERT MULDER, University of Delaware — Longitudinal ultrasound measurements have been performed in superfluid ^3He impregnated in 98% aerogel. The attenuation measured at four frequencies between 3.69 and 11.3 MHz shows an interesting feature in the zero temperature limit. Due to the limitation of the mean free path by the aerogel, the first sound regime persists to zero temperature, following the natural expectation of ω^2 -dependence of the attenuation for the entire temperature range. However, deviations from the ω^2 -dependence were observed, exhibiting progressive development towards higher pressure and lower temperature. We argue that this feature is directly related to the impurity states in the gap of the superfluid ^3He in aerogel and expect that the measurements in a finer and wider frequency range could reveal the details of the gap structure in this system.

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