*Frequency Dependent Ultrasound Attenuation in Superfluid ^{3}He in Aerogel**

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Ultrasound attenuation measurements in the *B*-like phase of superfluid ^{3}He embedded in 98% porosity aerogel have been performed at four frequencies between 3.6 and 11.3 MHz. At all of the pressures studied 14, 25, and 33 bar, the attenuation exhibits nontrivial frequency dependences that progressively deviate from the hydrodynamic behavior as the temperature decreases. These results are interpreted in terms of the presence of impurity states inside the gap which possess unusual spectrum in energy.

Considering the unique aspects of aerogel originating from its structure, correlation and finite size, the nature of the pair-breaking scattering is expected to lie in an interesting territory between impurity and surface scattering. The details of impurity states depend on the type of pairing mechanism and scattering. Therefore, the full understanding of sound propagation in this system is complicated and should be explored by extensive theoretical and experimental studies.

Frequency dependent ultrasound could be a tool that can be refined to elucidate the details of the structure of the gap in superfluid ^{3}He.

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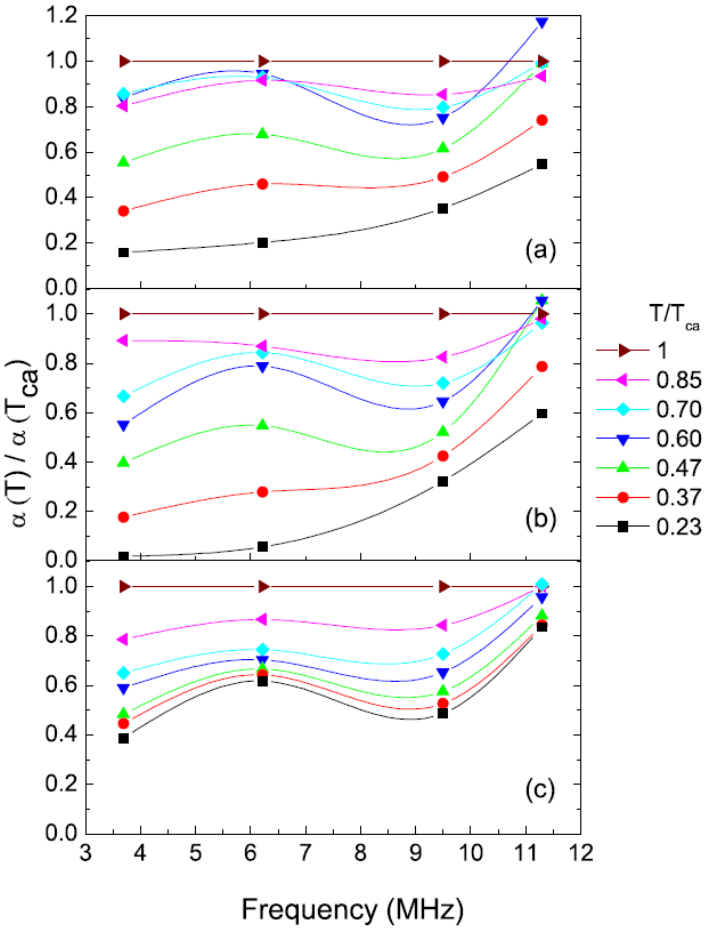

Sound attenuation as a function of frequency for select reduced temperatures at (a) 33 bar, (b) 25 bar, and (c) 14 bar. The sound attenuation is normalized by the attenuation at *Tca*. The lines going through the data points are guides for eyes.