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Interaction of ultrasound and torsional oscillation in solid ^{4}He[1]
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— A new cell for studying ultrasound (10 MHz) propagation and torsional oscillation (1013 Hz) in solid He-4 was constructed. Improvements were made in the design of the spacer for the quartz transducers and the diameter of the torsion rod containing helium fill hole to reduce the effects of the shear modulus of the solid He-4 sample on the torsional oscillator response. Sudden shifts in both the sound propagation velocity and attenuation are observed below 100 mK. The detailed response depends on the ultrasound excitation level and thermal history. Increase in torsional oscillator frequency is observed at nearly the same temperature as where the sound propagation property shifts occur. At temperatures below 50 mK, changes in the ultrasound excitation level induce changes in the torsional oscillator frequency. Interpretation of these results in terms of He-3 impurity being trapped on dislocation lines will be discussed.

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