Response of a Mechanical Oscillator in Solid ^{4}He

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We present the first measurements of the response of a mechanical oscillator in solid ^{4}He. We use a lithium niobate tuning fork operating in its fundamental resonance mode at a frequency of around 30 kHz. Measurements in solid ^{4}He were performed close to the melting pressure. The tuning fork resonance shows substantial frequency shifts on cooling from around 1.5 K to below 10 mK. The response shows an abrupt change at the bcc-hcp transition at around 1.46 K. At low temperatures, below around 100 mK, the resonance splits into several overlapping resonances.

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