Supersolid Measurements using a Two-Mode Torsional Oscillator

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The frequency-dependence of the response is vital for understanding the nature of the supersolidity observed in solid ^{4}He. We have made measurements using an oscillator optimized for widely-spaced resonances, where the antisymmetric mode frequency is five times that of the symmetric mode. We report supersolid measurements using this oscillator. These are interpreted within the Nussinov-Balatsky formalism[1]. We also compare and discuss other double-frequency measurements.

[1]Z. Nussinov, A. V. Balatsky, M. J. Graf, S. A. Trugman, Phys. Rev. **B. 26** 014530 (2007)