

Abstract Submitted
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Sample quality dependence of the specific heat peak in solid ^4He ¹

XI LIN, Z. G. CHENG, M. H. W. CHAN, Penn State U. — We reported a broad peak in specific heat of solid ^4He [1] at a temperature near the onset of Non-Classical Rotational Inertia (NCRI). This peak is likely to be a thermodynamic signature of the supersolid phase. Since it was found that the supersolid fraction is dependent upon the sample quality[2,3], we are motivated to study the sample quality influence on solid ^4He specific heat. In our recent measurements, we have confirmed the presence of a broad peak in the specific heat of solid ^4He below $\sim 200\text{mK}$ in addition to the phonon contribution. We also show how the excess specific heat peak changes with sample quality. 1 X. Lin, A. C. Clark, and M. H. W. Chan, Nature 449, 1025 (2007). 2 A. S. C. Rittner and J. D. Reppy, Phys. Rev. Lett. 98, 175302 (2007). 3 A. C. Clark, J. T. West and M. H. W. Chan, Phys. Rev. Lett. 99, 135302 (2007).

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