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Probable heat capacity signature of the supersolid transition[1]

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We report our heat capacity measurements [1] of solid ^{4}He down to 40mK, well into the apparent supersolid region of the phase diagram. We observed a broad peak in the specific heat centered near 75mK in ^{4}He samples containing 1ppb, 0.3ppm, and 10ppm ^{3}He impurities. In addition, our measurements of samples containing 10ppm and 30ppm of ^{3}He have revealed a temperature-independent contribution to the heat capacity that scales with the number of isotopic impurities. New measurements with higher resolution are in progress.

[1] Nature (London) 449, 1025 (2007).

[1]Experiment carried out in collaboration with A. C. Clark and M. H. W. Chan with support from NSF under grants DMR-0207071 and DMR-0706339.