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Linear magnetic field dependence of the specific heat in underdoped YBCO[1] JONATHON KEMPER, Florida State University and National High Magnetic Field Laboratory, OSKAR VAFEK, Florida State University and NHMFL, SCOTT RIGGS, Stanford University, JON BETTS, FEDOR BALAKIREV, ALBERT MIGLIORI, Los Alamos National Laboratory and NHMFL, RUIXING LIANG, WALTER HARDY, DOUG BONN, University of British Columbia, GREGORY BOEBINGER, Florida State University and NHMFL — We report the observation of two distinct regimes in the field dependence of the low temperature electronic heat capacity (C) of $YBa_2Cu_3O_{6.47}$. Measurements were performed in applied magnetic fields (H) up to 34.5 T and at temperatures between 1 and 8 K. Below 10 T we observe C$\sim H^{1/2}$ attributable to a d-wave superconducting gap. Above 10 T, C approaches a nearly linear-in-field form. All behavior is clearly observable well below the field-induced resistive transition, and thus, likely closely tied to the nodes in the gap. We rule out the suppression of the superconducting gap by the magnetic field as a possible explanation through a comparison with specific heat data from other dopingsof underdoped YBCO.

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