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**Magnetic Phase Diagram and Specific Heat of the Quasi-Two-Dimensional  $S=1/2$  Antiferromagnet  $\text{Cs}_2\text{CuBr}_4$**  TODD E. SHERLINE, COSTEL R. ROTUNDU, BOHDAN ANDRAKA, YASU TAKANO, University of Florida, HIROYUKI TSUJII, RIKEN, TOSHIO ONO, HIDEKAZU TANAKA, Tokyo Institute of Technology — The  $S=1/2$  Heisenberg antiferromagnet on a triangular lattice is very well represented by  $\text{Cs}_2\text{CuBr}_4$  due to its small anisotropy. A unique feature of this system, as predicted by theory and borne out by experiment, is the magnetization plateau at  $1/3$  of the saturation magnetization. Previous specific heat and magnetocaloric effect measurements in DC fields of up to 20T have been used to determine the magnetic phase diagram in this regime. However, the nature of the phase diagram is unclear in higher fields. Further specific heat and magnetocaloric effect measurements have been made in DC fields up to 33T, the results of which will be presented in order to elucidate the nature of the phase diagram above the magnetization plateau.

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