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Calorimetric determination of magnetic phase diagram of $Ba_3CoSb_2O_9$[1] NATHANAEL FORTUNE, Department of Physics, Smith College, SCOTT HANNAHS, JU-HYUN PARK, National High Magnetic Field Laboratory, HAIDONG ZHOU, Department of Physics and Astronomy, University of Tennessee - Knoxville, CHRISTOPHER AOYAMA, YASUMASA TAKANO, Department of Physics, University of Florida — We report heat capacity measurements as a function of temperature, magnetic field, and field angle for the spin 1/2 triangular antiferromagnet $Ba_3CoSb_2O_9$, for fields up to the saturation field of 32.5 T and temperatures down to 0.1 K. The system behaves as a frustrated Heisenberg antiferromagnet with weak xy anisotropy. For magnetic fields applied along the a axis, 3 main magnetic phases are expected [1], each corresponding to a different spin arrangement: a low field "Y" phase, an intermediate "up - up - down" phase, and a high field 'V' phase. We find instead 5 distinct magnetic phase transitions with increasing field, suggesting that the "Y' and "V" phases split into alternating and non-alternating co-planar subphases.

[1] A.V. Chubukov & D.I. Golosov, J.Phys.Cond.Mat 3, 69 (1991).

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