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The Phase Diagram of the Quantum Magnet SrCu2(BO3)2 SARA HARAVIFARD, University of Chicago / Argonne National Lab, ARNAB BANERJEE, University of Chicago, JONATHAN LANG, GEORGE SRAJER, Argonne National Lab, DANIEL SILEVITCH, University of Chicago, STEFAN KLOTZ, University P&M Curie, BRUCE GAULIN, McMaster University, THOMAS HANSEN, Institut Laue-Langevin, HANNA DABKOWSKA, McMaster University, THOMAS ROSENBAUM, University of Chicago — SrCu2(BO3)2(SCBO) is one of the few real-world materials that corresponds to the Shastry-Sutherland model, with corner-sharing Cu S=1/2 dimers lying on a square lattice. The application of pressure can be used to tune the ground state of the system. High-resolution x-ray synchrotron experiments on SCBO at pressures up to 6 GPa reveal new structural peaks as a result of lattice distortions at low temperatures that we associate with long-range antiferromagnetic order. Additionally we have conducted high-pressure neutron diffraction measurements at pressures up to 7 GPa investigating the magnetic structure of SCBO and its link to structural distortions as a function of temperature.

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