

Abstract Submitted
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Field induced spin density and spiral phases in a layered antiferromagnet¹ MATTHEW STONE, MARK LUMSDEN, VASILE GARLEA, Quantum Condensed Matter Division, Oak Ridge National Laboratory, BEATRICE GRENIER, ERIC RESSOUCHE, INAC-SPSMS, CEA Université Grenoble Alpes, ERIC SAMULON, IAN FISHER, Department of Applied Physics and Geballe Laboratory for Advanced Materials Stanford University, LISA DEBEERSCHMITT, Chemical Engineering Materials Division, Oak Ridge National Laboratory, ALEXANDER HRISTOV, Department of Applied Physics and Geballe Laboratory for Advanced Materials Stanford University, JORGE GAVILANO, Paul Scherrer Institute, Villigen, Switzerland — We will present neutron scattering measurements examining the low-field ordered magnetic phases of the $S = 1$ dimerized antiferromagnet $\text{Ba}_3\text{Mn}_2\text{O}_8$. We have found that for magnetic both spin density wave order with incommensurate wave vectors and a higher field spiral phase with incommensurate wave vectors only along the $[hh0]$ direction. For both field induced ordered phases, the magnetic moments are lying in the plane perpendicular to the field direction. The nature of these two transitions is fundamentally different: the low-field transition is a second order transition to a spin-density wave ground state, while the one at higher field, toward the spiral phase, is of first order. More recent SANS measurements of the magnetic phases with $\text{H} \parallel \text{c}$ will be presented if available at the time of the meeting.

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