

Abstract Submitted  
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**Beyond Simple Bilayers in the Triangular Lattice Dimer compound  $\text{Ba}_3\text{Mn}_2\text{O}_8$**  MATTHEW STONE, MARK LUMSDEN, Oak Ridge National Laboratory, SUNG CHANG, NIST, ERIC SAMULON, Stanford University, CRISTIAN BATISTA, Los Alamos National Laboratory, KIRRILY RULE, BENSC, ERIC RESSOUCHE, BEATRICE GRENIER, ILL, IAN FISHER, Stanford University — We present single crystal inelastic neutron scattering measurements of the  $S = 1$  dimerized quasi-twodimensional antiferromagnet  $\text{Ba}_3\text{Mn}_2\text{O}_8$ . The singlet-triplet dispersion reveals nearest-neighbor and nextnearest-neighbor ferromagnetic interactions between adjacent bilayers that compete against each other. Although the interbilayer exchange is comparable to the intrabilayer exchange, this additional frustration reduces the effective coupling along the  $c$  axis and leads to a quasi-two-dimensional behavior. We also present magnetic field-dependent neutron scattering measurements examining long range order and excitations within the field-induced ordered phases in  $\text{Ba}_3\text{Mn}_2\text{O}_8$ .

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