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Dimensional Crossover in ZnMn_2O_4 WILLIAM RATCLIFF, National Institute of Standards and Technology (NCNR), YING CHEN, GORAN GASPAROVIC, YIMING QIU, National Institute of Standards and Technology (NCNR), U. Maryland (Materials Science and Engineering), QING HUANG, JEFFREY LYNN, National Institute of Standards and Technology (NCNR), SUNMOG YEO, Rutgers University (Department of Physics), SANG CHEONG, Rutgers University (Department of Physics), PAULA PICCOLI, ARTHUR SCHULTZ, Argonne National Lab (IPNS) — ZnMn_2O_4 crystallizes at high temperatures as a cubic spinel. At lower temperatures, it undergoes a Jahn Teller distortion which lowers its symmetry to tetragonal. At lower temperatures ($T_N \sim 60$ K), the system orders magnetically. Fits to the order parameter, line shape of powder diffraction peaks, and the direct observation of rods of scattering in single crystal diffraction experiments show the system to be two dimensional. This is likely due to the interplay between orbital ordering and frustration. In this talk I discuss the magnetic structure and spin waves of this system. I will also discuss an interesting crossover in the dimensionality of the magnetism in this compound.

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