

Abstract Submitted  
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**Neutron Scattering Study on the Spin-Orbital Coupling in  $\text{Mn}_{1-x}\text{Co}_x\text{V}_2\text{O}_4$  ( $x=0.2, 0.4, \text{ and } 0.6$ )**<sup>1</sup> JIE MA, MASA AKI MATSUDA, HUIBO CAO, Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA, HAIDONG ZHOU, Department of Physics and Astronomy, University of Tennessee, Knoxville, TN 37996, USA, QUANTUM CONDENSED MATTER DIVISION, OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TN 37831, USA TEAM, DEPARTMENT OF PHYSICS AND ASTRONOMY, UNIVERSITY OF TENNESSEE, KNOXVILLE, TN 37996, USA COLLABORATION — Two consecutive magnetic transitions have been reported in  $\text{MnV}_2\text{O}_4$  compounds: the first transition is collinear and is from paramagnetic to ferrimagnetic state; The second transition, which is noncollinear, is accompanied by a tetragonal distortion, which produces an excitation gap in the magnetic spectrum [1]. However, the V-V distance is interfered with Co doping, and there is no structural phase transition observed in  $\text{CoV}_2\text{O}_4$  down to 10 K [2]. In order to study the Co-doping effects on the structural and magnetic properties of  $\text{Mn}_{1-x}\text{Co}_x\text{V}_2\text{O}_4$ , elastic and inelastic neutron scattering is applied in our experiments and the interaction between magnetism and orbital will be discussed.

[1] V. O. Garlea, et al., Phys. Rev. Lett. **100**, 066404 (2008);

[2] A. Kismarahardja, et al., Phys. Rev. Lett. **106**, 056602 (2011)

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