

Abstract Submitted  
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**Magnetic Coupling in the multiferroic hexagonal  $\text{ErMnO}_3$** <sup>1</sup>

HUIBO CAO, Quantum Condensed Matter Division, Neutron Sciences Directorate, Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA, JUN ZHAO, Lawrence Berkeley National Lab, Berkeley, CA 94720-8197, TAO HONG, JIE MA, BRYAN CHAKOUMAKOS, Quantum Condensed Matter Division, Neutron Sciences Directorate, Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA — Hexagonal  $\text{ErMnO}_3$  is one of the rare earth manganites  $\text{RMnO}_3$  and has attracted renewed interest due to its multiferroic properties. Understanding the coupling between spin, charge, and lattice degrees of freedom is crucial to explore and design strong magnetic-ferroelectric coupled materials. We measured the crystal and magnetic structures of  $\text{ErMnO}_3$  at selected temperatures and magnetic fields by single crystal neutron diffraction. Combined with planned inelastic neutron scattering measurements, the magnetic-magnetic and magnetic-lattice interactions will be discussed.

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Huibo Cao  
Quantum Condensed Matter Division, Neutron Sciences Directorate,  
Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA

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