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Magnetic Coupling in the multiferroic hexagonal ErMnO$_3$\textsuperscript{1}
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 ErMnO$_3$ is one of the rare earth manganites 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 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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