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## Magnetic phase diagram in rare-earth orthoferrite $\text{HoFeO}_3$ from single crystal neutron diffraction in external magnetic field.

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$\text{HoFeO}_3$  is one of the most interesting representatives of the  $\text{RFeO}_3$  family with orthorhombic structure. We concentrated on the evolution of the magnetic order on Fe and Ho with external magnetic field applied along crystallographic c direction. Using the deflection and extrema points from different peaks the phase boundaries could be traced, resulting in a reach magnetic phase diagram with multiple phases.

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