



Elucidating the strong entanglement between spin and orbital degrees of freedom in $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$ and its Influence on magnetism.

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This comprehensive study delves into the complex magnetic properties and interactions of the perovskite-like compound $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$, employing advanced neutron diffraction and spectroscopy to explore the underlying spin-orbital coupling and single-ion anisotropy. By synthesizing high-quality single crystals and utilizing a four-circle neutron diffractometer, we capture sufficient magnetic reflections to accurately determine the magnetic structure. In-depth investigations using a neutron three-axis spectrometer reveal the exchange interactions and anisotropic energies, elucidating the spin wave spectrum and highlighting the significant role of indirect exchange interactions mediated through Ti^{4+} . This research provides crucial insights into the exchange model and magnetic interactions within $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$, contributing to a deeper understanding of its unique properties and refining the theoretical frameworks applicable to similar complex oxides.

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Sitzung Einordnung: Mounting Posters, Beer and light Dinner

Track Klassifizierung: Magnetism & Superconductivity