Duality and domain wall dynamics in a twisted Kitaev chain

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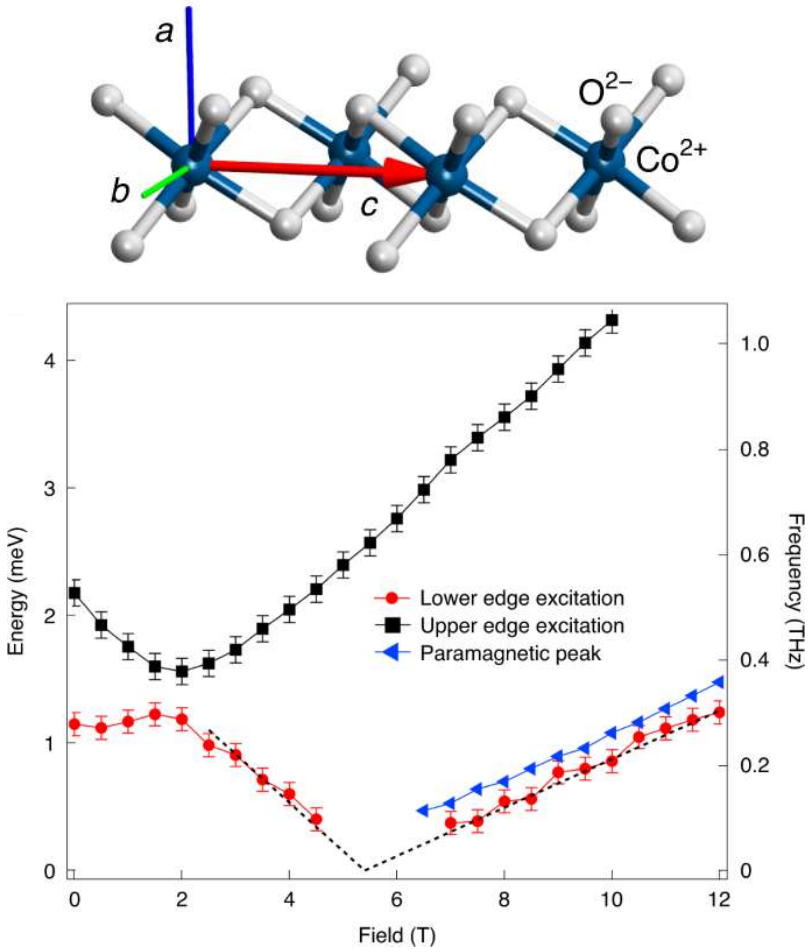

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Scientific Achievement

By combining synthesis, THz spectroscopy, and theory, we show $CoNb_2O_6$ is a "twisted Kitaev chain" with bond dependent anisotropic interactions similar to those of the honeycomb Kitaev spin liquid.

Significance and Impact

Magnets with Kitaev interactions are candidates for quantum spin liquids. Our work shows such interaction exists in Co^{2+} magnets, which therefore are fertile ground in the search for quantum spin liquids.

Research Details

- ❑ Frequency dependent susceptibility was measured by THz spectroscopy
- ❑ Symmetry constrained analytical and numerical calculations describe many features in the data.
- ❑ The gap in the FM closes at twice the rate of the PM, which demonstrates the Kramers–Wannier duality between domain walls and spin flips.