

## **Twisted excitations in entangled quantum magnets**

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One of the simplest quantum many-body systems is the spin-1/2 Heisenberg antiferromagnetic chain, a one-dimensional array of interacting magnetic moments. Its exact ground state is a macroscopic singlet entangling all the spins of the array.

The elementary excitations of this entangled ground state are called spinons, they are topological (twisted) spin-1/2 quasiparticles created and detected in pairs by neutron scattering. Inelastic neutron scattering measures the spin-pair correlations in space and time and detects the characteristic signatures of the twisted excitations.

Neutron scattering experiments on materials that realize the spin-1/2 Heisenberg antiferromagnetic chain or related entangled ground states are reported and compared to theory.