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Lattice distortion in the spin liquid phase of $Tb_2Ti_2O_7$
STEPHANIE CURNOE, Memorial University of Newfoundland — The Tb ions in the pyrochlore antiferromagnet $Tb_2Ti_2O_7$ form a corner-shared tetrahedral network. It has been shown that the quantum anti-ferromagnetic ground state of a single tetrahedron accounts for short wavelength correlations observed in inelastic neutron scattering experiments. A bulk $k = 0$ lattice distortion, specifically an A_{2u} displacement of the Tb ions, can account for the isolation of single tetrahedra in the tetrahedral network. Such a distortion results in a space group reduction $Fd\bar{3}m \rightarrow F\bar{4}3m$ which is consistent with experimental observations.

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