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Magnetic Excitations in the Kondo Insulator SmB6

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SmB6 is a Kondo insulator with surface conductivity that was recently proposed to be topologically protected. I shall describe an inelastic neutron scattering experiment probing magnetic excitations over a wide energy range in a single crystal of SmB6 at low temperatures. Consistent with previous findings by Alekseev et al., a resonant mode near 14 meV is observed at low temperatures near the X and R points of the Brillouin zone. The overall dispersion of the excitation is less than 1 meV. The intensity falls rapidly in higher Brillouin zones as the 5d electron form factor. The comprehensive inelastic scattering data provide indirect information about the underlying, putative topological, hybridized band structure. Work at IQM was supported by the U.S. Department of Energy, office of Basic Energy Sciences, Division of Materials Sciences and Engineering under Award DE-FG02-08ER46544. Work at ORNL was supported by LDRD 06576.

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