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**Evidence for local moment magnetism in superconducting  $\text{FeTe}_{0.35}\text{Se}_{0.65}$**  GUANGYONG XU, ZHIJUN XU, JINSHENG WEN, Brookhaven National Laboratory, SONGXUE CHI, NIST Center for Neutron Research, WEI KU, GENDA GU, JOHN TRANQUADA, Brookhaven National Laboratory — We investigate the temperature evolution (from 5 K to 300 K) of low energy spin fluctuations in Fe-based superconductor  $\text{FeTe}_{0.35}\text{Se}_{0.65}$  ( $T_c \sim 14$  K) via inelastic neutron scattering. The magnetic excitation spectrum in the superconducting phase appears qualitatively similar to those observed in other Fe-based superconductors, with a spin gap (at about 5 meV) and a resonance peak at  $\hbar\omega \sim 6.5$  meV. At higher temperatures, the spectral weight of the low-temperature resonance is found to redistribute to lower energies below the spin gap. A significant moment ( $\gtrsim 0.26\mu_B/\text{Fe}$ ) is found for the integrated spectral weight below merely  $\hbar\omega \sim 12$  meV, with nearly no temperature dependence up to 300K, indicating existence of strong local moments.

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