

Abstract Submitted  
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**Antiferromagnetic spin correlations in the tetragonal phase of  $\text{CaFe}_2\text{As}_2$**  R.J. MCQUEENEY, S.O. DIALLO, J.L. ZARESTKY, Ames Laboratory, US DOE and Iowa State University, C. BROHOLM, Johns Hopkins University, T.G. PERRING, Rutherford Appleton Laboratory, S.L. BUD'KO, N. NI, A. KREYSSIG, P.C. CANFIELD, A.I. GOLDMAN, Ames Laboratory, US DOE and Iowa State University — We present neutron scattering measurements of magnetic excitations in the tetragonal phase of  $\text{CaFe}_2\text{As}_2$ . Below  $T_S = 173$  K,  $\text{CaFe}_2\text{As}_2$  undergoes a first-order transition to an orthorhombic structure with columnar antiferromagnetic ordering with a wavevector  $\mathbf{Q}_{AFM} = (101)$ . This phase is characterized by strong magnetic interactions giving rise to steep spin waves. In the tetragonal phase above  $T_S$ , broad quasi-elastic excitations are observed near  $\mathbf{Q}_{AFM}$  that display a weak dependence on  $L$ , indicating two-dimensional antiferromagnetic correlations. These correlations are observed to persist up excitation energies of  $\sim 50$  meV and temperatures of at least 300 K. Our results indicate that strong magnetic interactions exist above  $T_S$ , and ordering is likely suppressed by magnetic frustration.

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