Quantum critical behaviour of heavy Fermion CeNi$_2$Ge$_2$\textsuperscript{1} BILAL ZOGHBI, Kent State University, ALMUT SCHROEDER, Kent State University, COLLIN BROHOLMS, Johns Hopkins University — Neutron scattering data of CeNi$_2$Ge$_2$ collected at SPINS at NIST will be presented to characterize the magnetic correlations and dynamics close to an antiferromagnetic quantum critical point (AF QCP). The dynamical susceptibility $\chi''(q,E)$ has been measured in a temperature range $0.1\text{K}<T<30\text{K}$. While the $q$-independent fluctuations remain unchanged for $T<30\text{K}$, the enhanced susceptibility $\Delta\chi''$ close to the wavevector $q=(0.5,0.5,0)$, shows a relaxation rate following the absolute temperature $k_BT$ down to 5K but then remains finite towards the lowest $T = 0.1 \text{ K}$. The Lorentzian linewidth is reduced to about 0.4 meV, a factor of ten smaller than the rate observed in the $q$-independent spectrum. The energy, $q$, and $T$ dependence of $\Delta\chi''$ shows characteristics of the fluctuations expected close to an AF QCP in 3 dimensions, stating that CeNi$_2$Ge$_2$ lies beside the AF QCP.

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