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Spin correlations and magnetic excitation spectrum of electron-doped $Nd_{2-x}Ce_xCuO_{4\pm\delta}$ near the magnetic quantum critical point EUGENE MOTOYAMA, GUICHUAN YU, YUAN LI, Stanford Univ., DANIEL PETITGRAND, LLB, France, KLAUDIA HRADIL, Univ. Gottingen, Germany, RICHARD MOLE, Forschungsneutronenquelle Heinz Maier-Leibnitz, Germany, PATRICK MANG, INNA VISHIK, Stanford Univ., OWEN VAJK, Univ. of Missouri-Columbia, MARTIN GREVEN, Stanford University — One of the most intriguing issues in the field of high-T_c superconductivity is the electron-hole asymmetry: the hole- or electron-doping of the parent Mott insulators leads to superconductors with differing properties. For the comparatively less-studied electron-doped materials, the antiferromagnetic phase extends much further with doping and appears to overlap with the superconducting phase. Our previous inelastic neutron scattering measurements show that in the compound $Nd_{2-x}Ce_xCuO_{4\pm\delta}$, genuine long-range antiferromagnetism does not extend as far as previously thought, and may not coexist with bulk superconductivity; the system features a magnetic quantum critical point at x$\sim$0.13, very close to the composition above which superconductivity is first observed [Motoyama *et al.*, Nature **445**, 186 (2007)]. Here we present new measurements for the instantaneous spin correlations and the magnetic excitation spectrum that aim to refine our understanding of the physics in this interesting doping regime.

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