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Emergent non-Fermi liquid in the pseudogap phase of the underdoped cuprates TANMOY DAS, R. S. MARKIEWICZ, A. BANSIL, Northeastern University — As the cuprates approach the Mott insulator limit, they display a remarkable gossamer-like structure: the near-Fermi level dispersion remains nearly unrenormalized while the corresponding spectral weight tends to vanish at half filling[1]. This unusual behavior cannot be understood by conventional Fermi liquid theory where both features are controlled by a single renormalization factor. We find that while the fluctuation spectrum remains nearly isotropic in cuprates, the competing order pseudogap (here modelled as antiferromagnetism) breaks the crystal symmetry and thus promotes a strong momentum dependence in the self-energy term[2]. At half-filling, this yields an essentially unrenormalized quasiparticle dispersion which approaches the uncorrelated limit, while in sharp contrast the quasiparticle spectral weight renormalizes to zero. These opposing tendencies of dispersion and spectral weight renormalization conspire in such a way that the specific heat remains Fermi liquid like in character at all dopings in accord with experiments. Work supported in part by the USDOE. [1] S. Sahrakorpi, *et al.*, Phys. Rev. B **78**, 104513 (2008). [2] T. Das, *et al.*, arXiv:0807.4257.

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