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Universal bulk charge-density-wave (CDW) correlations in the cuprate superconductors[1] WOJCIECH TABIS, Univ of Minnesota — The recent observation of bulk CDW order in $YBa_2Cu_3O_{8+\delta}$(YBCO) in competition with superconductivity is a significant development [1,2]. Using Cu L-edge resonant X-ray scattering, we also observe bulk CDW order in $HgBa_2CuO_{4+\delta}$(Hg1201; T_c =72K). The correlations appear below T_{CDW} ≈200K, well below the pseudogap temperature T^* ≈320K associated with unusual magnetism [3], but coincident with the onset of Fermi-liquid-like charge transport [4,5]. In contrast to YBCO, we observe no decrease of the CDW amplitude below T_c, and the correlation length is short and temperature independent. CDW correlations therefore are a universal property of underdoped cuprates, enhanced by low structural symmetry and a magnetic field [1,2], but fundamentally not in significant competition with superconductivity. We also discuss the relationship between the CDW modulation wave vector and the Fermi surface area extracted from QO experiments [6].

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