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Gap structure and mean-field T_c in HTS cuprates[1] JEFFERY TALLON, Industrial Research Ltd, JAMES STOREY, JOHN LORAM, Cambridge University — We show that phase and amplitude fluctuations set in simultaneously in high-Tc cuprates and determine the mean-field transition temperature T_c^{mf} which is found to increase substantially above T_c in optimal and underdoped cuprates (by up to 60 or 70K). We find $\Delta/k_BT_c^{mf}$=2.5, little more than the weak-coupling BCS d-wave value. On the other hand the pseudogap T^* has a distinct doping dependence from T_c^{mf} and correlates with the pseudogap energy E_g. The gap structure for Δ and E_g are characterised and shown to be distinct.

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