

Intrinsic tunnelling data for Bi-2212 mesas and implications for superconducting fluctuations in cuprate superconductors above T_c .¹

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I will summarise the main points of some high-quality intrinsic tunnelling data for overdoped Bi2212 crystals[1] with $T_c = 80$ K, including recent progress in understanding them more clearly. One of the conclusions so far is the direct evidence for the inelastic scattering of quasi-particles in the superconducting state. I will show how a simple model incorporating inelastic scattering above T_c gives a reasonably good description of the unusual exponential attenuation of Gaussian superconducting fluctuations above about $1.1 T_c$. This effect was first identified by studies of the electrical conductivity of YBCO crystals with various doping levels[2] in high magnetic fields, then by measurements of their magnetic anisotropy[3] in lower fields and most recently by similar torque measurements of an overdoped Tl2201 crystal with $T_c = 62$ K[4].

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