Handwritten annotations: Fluctuation Conductivity Above T_c

σ^{fluc}

2 Dim.

$\sigma^{fluc} \sim \dfrac{1}{\epsilon}$
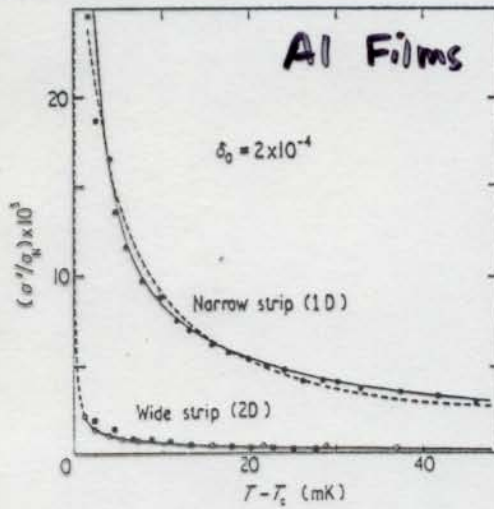
$\epsilon = \dfrac{T - T_c}{T_c}$

. Universal variation of the measured excess conductance per square due to fluctuations with reduced temperature above T_c, for a variety of amorphous films. The full curve is the Aslamazov–Larkin (AL) theory (from Glover 1969).

Al Films

$\delta_0 = 2 \times 10^{-4}$

Narrow strip (1D)

Wide strip (2D)

ł. Normalized excess conductivity observed in one-dimensional and two-dimensional sections of a very clean aluminium film versus temperature in zero field. The full curves are Patton's microscopic theory; the broken curves are the MT theory. Either theory fits the data (after Thomas and Parks 1971c).

Pb Film

Reflection

BCS Mean Field Theory (T_s/T_n)

Transmission

23.89 GHz

T_s/T_N

DC
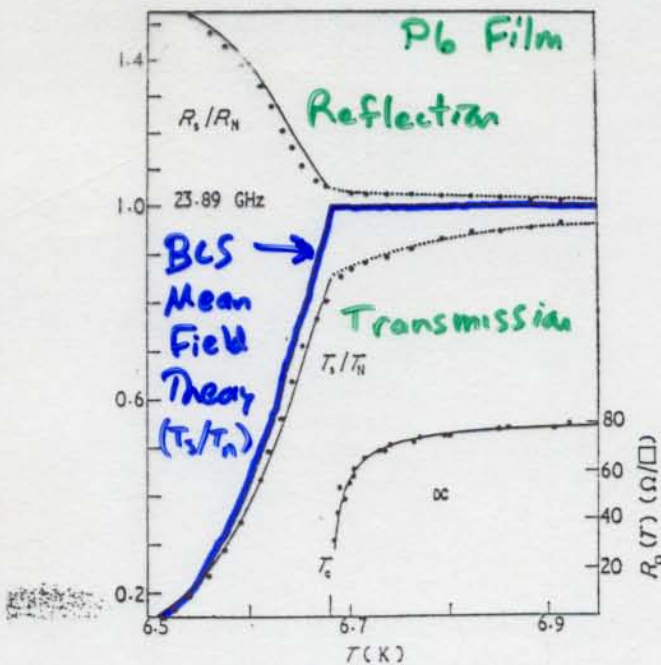
Microwave transmission and reflection coefficients and DC resistance of a thin lead film ($\simeq 35$ Å) as a function of temperature. The broken curve is the Mattis–Bardeen result (no fluctuations), while the other curves include fluctuations (from Lehoczky and Briscoe 1971).