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On the pseudogap in high temperature superconductors¹

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The “pseudogap,” a suppression of the density of states observed in at least some high temperature copper-oxide superconductors at carrier concentrations lower than that which maximizes the superconducting transition temperature, presents a long-standing and still unresolved problem in condensed matter physics. Basic questions including whether it is a signature of a new phase of matter or a consequence of thermal or quantum disordering of a superconducting or spin density wave state, remain unresolved. This talk will summarize the present status of the problem, including what is known about the form of the low temperature gap function (one gap or two), the role of thermal scattering in the formation of “fermi arcs” and the significance of recent recent high-field quantum oscillation experiments.

References:

- “Gapless pairing and the Fermi arc in the cuprates” A. V. Chubukov, M. R. Norman, A. J. Millis, and E. Abrahams Phys. Rev. **B76**, 180501 (2007).
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