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The Normal State Pseudogap in Underdoped Cuprates: Precursor Pairing vs. Competing Order?

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The "pseudogap" in the normal state of underdoped High T_c cuprates refers to a set phenomena associated with the loss of low energy spectral weight in various spectroscopies, starting at a temperature $T^*(x)$, much higher than $T_c(x)$ and with a completely different doping dependence. Understanding the unusual phenomena in the pseudogap regime, which lies in between the Mott insulator and the optimally doped superconductor, is an important challenge for any theory of high T_c superconductivity. I will first review some of the main experimental facts about the pseudogap, focusing in particular on recent angle-resolved photoemission (ARPES) data. I will then critically examine which aspects of the data can be qualitatively understood in terms of theories of precursor pairing or those based on a competing order parameter.