Superconductivity and the Pseudogap in the 2d Hubbard model

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Fri Apr 27 14:00 2012
(Seminar Room)

Abstract

Using a numerically exact continuous-time quantum Monte Carlo impurity solver and the DCA cluster dynamical mean field method with cluster sizes up to 16, we have been able to access the superconducting phase of the two dimensional Hubbard model for parameters believed to be relevant to high temperature copper oxide superconductivity. We present results for the phase diagram, the gap to transition temperature ratio, and the interplay of the pseudogap and the superconducting gap. The gap results are obtained by direct inference from imaginary frequency data and analytically continued spectral functions.
Work done in collaboration with Olivier Parcollet and Andrew J. Millis