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Momentum-dependent pseudogaps in the half-filled two-dimensional Hubbard model NILS BLUEMER, DANIEL ROST, ELENA GORELIK, Institute of Physics, Johannes Gutenberg University, Mainz, Germany, FAKHER ASSAAD, Institute of Theoretical Physics and Astrophysics, Julius Maximilian University, Würzburg, Germany — We compute unbiased spectral functions of the two-dimensional Hubbard model by extrapolating Green functions, obtained from determinantal quantum Monte Carlo simulations, to the thermodynamic and continuous time limits. Our results clearly resolve the pseudogap at weak to intermediate coupling, originating from a momentum selective opening of the charge gap. A characteristic pseudogap temperature T^*, determined consistently from the spectra and from the momentum dependence of the imaginary-time Green functions, is found to match the dynamical mean-field critical temperature, below which antiferromagnetic fluctuations become dominant. Our results identify a regime where pseudogap physics is within reach of experiments with cold fermions on optical lattices.

D. Rost, E. V. Gorelik, F. Assaad, N. Blümer, Phys. Rev. B **86**, 155109 (2012).

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