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FRG analysis of the pseudogap opening in the 2D Hubbard model at finite doping

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We apply the functional renormalisation group to the two-dimensional Hubbard model to investigate the pseudogap opening. Extending previous applications at half filling [Phys. Rev. Research 2, 033068 (2020)], we here explore the physics in the more relevant finite-doping regime. In particular, we present a systematic analysis of the different contributions to the self-energy by performing a fluctuation diagnostics. Besides the quasiparticle weight, we show results for the correlation-induced shape of the Fermi surface. We identify the (incommensurate) antiferromagnetic fluctuations to be responsible for the pseudogap opening also at finite doping and provide a physical understanding of the observed momentum-selective behavior.

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