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Abstract Submitted
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Orbitally resolved superconductivity within FLEX: doping evolution of the FeSe monolayer[1] ANDREAS LINSCHEID, Department of Physics, University of Florida, Gainesville, YAN WANG, Department of Physics and Astronomy, University of Tennessee, SAURABH MAITI, Department of Physics, University of Florida, Gainesville, STEVEN JOHNSTON, Department of Physics and Astronomy, University of Tennessee, PETER HIRSCHFELD, Department of Physics, University of Florida, Gainesville — FeSe-derived materials have been studied by several recent experiments concerning a number of phenomena that still lack a concise explanation. First, the nature of the pairing in materials with only electron pockets at the Fermi level is still under debate, with proposed explanations by both electronic s_{++} and $s_{\pm}$ and/or phononic pairing. Second, the effective quasi particle mass at the Fermi level is very orbital dependent which likely affects the pairing and may require to solve the superconducting (SC) pairing in the space of orbitals. The effective mass is bound to have consequences for the spin- and charge fluctuations and the problem should therefore be solved self-consistently. In this work, we extend our previous study [PRL 117, 077003] and describe the electron doped FeSe in an orbitally resolved microscopic model. Starting from the normal state DFT band structure, we apply orbitally resolved FLEX to study the system in the SC state, as well as in the magnetic phase. By retaining full momentum resolution, we can also include strong forward scattering by phonons in the FeSe/STO system and discuss the self-consistent influence of the orbitally-resolved quasi particle mass on SC as a function of doping.

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Andreas Linscheid
Department of Physics, University of Florida, Gainesville, Florida 32611, USA

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