

Abstract Submitted
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Extended d-wave superconductivity¹ RONNY THOMALE, Univ of Wuerzburg — Characterizing the superconducting pairing function beyond its irreducible lattice representation has been vital in understanding the nature of unconventional superconductivity in multi-orbital systems such as iron pnictides. There, extended s-wave has proven suitable to explain a significant body of experimental evidence. In my talk, I argue that multi-orbital superconductivity in the pnictides lends itself to a similarly important distinction between d-wave and extended d-wave. For the former, the dominant d-wave gap function takes the form $\Delta(k) = \cos k_x - \cos k_y$, while the latter yields $\Delta_{\pm}(k) = \cos 2k_x - \cos 2k_y$, with important consequences on the nature of the superconducting state. I will report on theoretical indication from functional RG and RPA as well as experimental evidence from sub-gap Raman spectroscopy in favour of an extended d-wave state in the iron pnictides.

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