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Anisotropic mass renormalization in Sr2RuO4 E.J. ROZBICKI, A. TAMAI, P.D.C. KING, Univ. of St Andrews, W. MEEVASANA, Suranaree Univ.of Technology, A. GIBBS, D.G. SLOBINSKY, A.P. MACKENZIE, F. BAUMBERGER, Univ. of St Andrews — The layered perovskite Sr_2RuO_4 continues to attract interest as a model system of a multiband Fermi liquid. Previous dHvA and ARPES studies successfully determined its Fermi surface [1, 2] and reported a large and sheet dependent renormalization of the Fermi velocity due to electron-electron interactions with v_{band}/v_F ranging from ≈ 3 for the $d_{xz/yz}$ derived α and β sheets to ≈ 5.5 for the γ sheet with dominant dxy orbital character [1, 3]. Here, we report new high-resolution ARPES data revealing an additional strong momentum dependence of the renormalization within a single Fermi surface sheet. This effect is most pronounced in the γ band and is larger than expected from the mixing of the orbital composition along individual Fermi surface sheets induced by spin-orbit coupling [4,5]. Our observations therefore provide evidence for a genuinely momentum dependent self-energy in the vicinity of a van Hove singularity.
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