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Spin and charge collective excitations in the multiband superconductivity of Sr2RuO4 SUK BUM CHUNG, SRINIVAS RAGHU, STEVE KIVELSON, Stanford University — Multiband superconductors with weak interband pair scattering can support soft collective modes. In the case of spin-singlet superconductivity, interband pair scattering leads to fluctuations of the relative phase of the order parameter on the different bands. However, when the superconductivity is spin-triplet, the interband pair scattering gives rise to fluctuations of both the relative phase and the relative spin on the different bands. One possible example of a multiband triplet superconductor is a recently proposed model [1] of the superconductivity in Sr_2RuO_4 in which the pairing occurs primarily on the two quasi-1D bands. We show that the collective excitations arising from relative spin fluctuations can lead to a double resonance peak in the presence of an oscillating magnetic field. We discuss how the presence or absence of such collective modes can yield clear information concerning the precise microscopic structure of the order parameter.

[1] S. Raghu, A. Kapitulnik, and S. Kivelson, Phys. Rev. Lett. **105**, 136401 (2010)

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