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Comparison of Tunneling in Fe-based Superconductors with Multi-band MgB_2 JOHN ZASADZINSKI, Physics Department, Illinois Institute of Technology, Chicago, IL, USA, MARIA IAVARONE, Physics Department, Temple University, Philadelphia, PA, USA — MgB_2 is an s-wave, phonon coupled, multiband superconductor that exhibits novel tunneling spectra including a subtle dip feature due to quasiparticle transfer between bands. Since this feature mimics the above-gap spectral dip feature observed in Fe-based superconductors, typically attributed to a strong coupling boson, it is worthwhile to consider whether quasiparticle transfer is relevant. We first show that the dip in MgB_2 appears in the π-band, DOS (Δ =2.4 meV) and is due to quasiparticle transfer to the σ-band with Δ =7.2 meV. Reviewing the spectral dip in Fe-based superconductors, including new data on FeSe crystals, there are inconsistencies with quasiparticle transfer as the origin. The conclusion is that the spectral dip is more likely due to a boson, the resonance spin excitation, as found in cuprate superconductors.

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