Local Quasiparticle Density of States of Superconducting $SmFeAsO_{1-x}F_x$ Single Crystals: Evidence for Spin-Mediated Pairing

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We probe the local quasiparticles density of states in micron-sized $SmFeAsO_{1-x}F_x$ single crystals by means of scanning tunnelling spectroscopy. Spectral features resemble those of cuprates, particularly a dip-hump-like structure developed at energies larger than the gap that can be ascribed to the coupling of quasiparticles to a collective mode, quite likely a resonant spin mode. The energy of the collective mode revealed in our study decreases when the pairing strength increases. Our findings support spin-fluctuation-mediated pairing in pnictides.