

Abstract Submitted
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Effect of the in-plane magnetic field on the neutron spin resonance in optimally doped FeSe_{0.4}Te_{0.6} and BaFe_{1.9}Ni_{0.1}As₂ superconductors¹ XINGYE LU, SHILIANG LI, MENG WANG, HUIQIAN LUO, Institute of Physics, Chinese Academy of Sciences, Beijing, 100190, China, PENGCHENG DAI², Department of Physics and Astronomy, The University of Tennessee, Knoxville, Tennessee 37996-1200, USA, PANDA, FRM II COLLABORATION³, IN22, ILL COLLABORATION⁴, NIST COLLABORATION⁵ — We use inelastic neutron scattering to study the effect of an in-plane magnetic field on the magnetic resonance in optimally doped superconductors FeSe_{0.4}Te_{0.6} (T_c = 14 K) and BaFe_{1.9}Ni_{0.1}As₂ (T_c = 20 K). While the magnetic field up to 14.5 T does not change the energy of the resonance, it partially suppresses T_c and the corresponding superconductivity-induced intensity gain of the mode. However, we find no direct evidence for the field-induced spin-1 Zeeman splitting of the resonance. Therefore it is still unclear if the resonance is the long-sought singlet-triplet excitation directly coupled to the superconducting electron Cooper pairs.

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