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Coexistence of superconductivity and spin-density wave in pnictide superconductors: Effect of a transverse Zeeman field POUYAN GHAEMI, UC Berkeley, ASHVIN VISHWANATH, UC Berkeley & LBNL — In several members of the ferro-pnictides, spin density wave (SDW) order coexists with superconductivity over a range of dopings. Contrary to naive expectations, it has been shown that extended s-wave superconductivity can coexist with a SDW. Here we study the unusual magnetic field response of this state. We focus on the effect of the Zeeman splitting, which is expected to be enhanced due to the transverse susceptibility of the SDW. On increasing the field, a strongly anisotropic reduction of superconducting gap is found. The signature of this effect in quasiparticle interference measured by STM, as well as heat transport in magnetic field is discussed. We show that it can be used as an evidence of extended s-wave gap structure in pnictide superconductors.

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