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**Vortex as a probe - suggested measurement of the order parameter structure in the iron-based superconductors** EUGENIU PLAMADEALA, TAMAR PEREG-BARNEA, GIL REFAEL, California Institute of Technology — Much like an impurity, a vortex in a superconductor induces scattering processes. We suggest to use these vortex induced transitions as a probe for the order parameter structure in the iron-based superconductors. Impurities, inevitably present, induce transitions between states on the contours of constant energy which may be seen in Fourier transformed scanning tunneling spectroscopy (FT STS) . When a magnetic field is applied, vortices act as additional sources of scattering in the particle-particle channel. Whether transitions are enhanced by this channel crucially depends on the sign of the order parameter. In this work we show that while in a simple s-wave superconductor all transitions are enhanced by vortex scattering, in an s+/- superconductor only intra-pocket transitions are affected. We suggest this effect as a way to distinguish between s-wave and s+/- order parameter.

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