

Abstract Submitted  
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**Quasiparticle interference (QPI) as a model-free phase sensitive tool to determining the pairing symmetry in Fe based superconductors (FeBS)** IGOR MAZIN, Naval Research Lab, PETER HIRSCHFELD, University of Florida, ILYA EREMIN, University of Bochum — QPI has been successfully used to identify the d-wave pairing in high- $T_c$  cuprates[1]. However, applying the same technique to FeBS has been confounded by difficulties not present in cuprates, where QPI is dominated by several hot spots, thus calling for a more detailed analysis. This talk aims at providing such theoretical framework and clarifying some misconceptions regarding QPI in superconductors (partially pointed out before, but not generally appreciated). We emphasize that detailed comparison of the calculated model QPI maps with the experiment, as often attempted, is hardly helpful because the result depends not only on the assumed pairing symmetry but of numerous uncontrolled approximations. Instead, we suggest that the T dependence (but not the detailed q dependence at any given T) bears clear qualitative fingerprints of the  $s_{\pm}$  (or  $s_{++}$ ) symmetry, independent of the details of impurity scattering, electronic structure etc. We propose an experiment that should unambiguously distinguish between the two symmetries in question. [1] Hanaguri et al, Science, 323, 923 (2009)

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