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Nematic order in the vicinity of a vortex in superconducting FeSe DEBANJAN CHOWDHURY, EREZ BERG, SUBIR SACHDEV, Department of Physics, Harvard University — We present a phenomenological theory of the interplay between nematic order and superconductivity in the vicinity of a vortex induced by an applied magnetic field [1]. Nematic order can be strongly enhanced in the vortex core. As a result, the vortex cores become elliptical in shape. For the case where there is weak bulk nematic order at zero magnetic field, the field-induced eccentricity of the vortex core has a slow power-law decay away from the core. Conversely, if the nematic order is field induced, then the eccentricity is confined to the vortex core. We discuss the relevance of our results to recent scanning tunneling microscopy experiments on FeSe [2].

[1] D. Chowdhury, E. Berg and S. Sachdev, to appear in Phys. Rev. B, arXiv: 1109.2600 (2011).

[2] Can- Li Song et al., Science 332, 1410 (2011).

Prefer Oral Session
 Prefer Poster Session

Debanjan Chowdhury
chowdhury@physics.harvard.edu
Department of Physics, Harvard University

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