Abstract Submitted
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Measuring Nematic Susceptibilities from the Elastoresistivity Tensor[1] A. T. HRISTOV, M. C. SHAPIRO, Stanford University, PATRICK HLOBIL, Karlsruher Institut fr Technologie, AKASH MAHARAJ, JIUN-HAW CHU, IAN FISHER, Stanford University — The elastoresistivity tensor m_{ijkl} relates changes in resistivity to the strain on a material. As a fourth-rank tensor, it contains considerably more information about the material than the simpler (second-rank) resistivity tensor; in particular, certain elastoresistivity coefficients can be related to thermodynamic susceptibilities and serve as a direct probe of symmetry breaking at a phase transition. The aim of this talk is twofold. First, we enumerate how symmetry both constrains the structure of the elastoresistivity tensor into an easy-to-understand form and connects tensor elements to thermodynamic susceptibilities. In the process, we generalize previous studies of elastoresistivity to include the effects of magnetic field. Second, we describe an approach to measuring quantities in the elastoresistivity tensor with a novel transverse measurement, which is immune to relative strain offsets. These techniques are then applied to BaFe2As2 in a proof of principle measurement.

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