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**Electronically-driven orthorhombic distortion in FeSe**[1]
MATTHEW WATSON, NATHANIEL DAVIES, AMIR HAGHIGHIRAD, ARJUN NARAYANAN, Clarendon Laboratory, Department of Physics, University of Oxford, Parks Road, Oxford OX1 3PU, TIMUR KIM, MORITZ HOERSCH, Diamond Light Source, Harwell Campus, Didcot, OX11 0DE, SAMUEL BLAKE, AMALIA COLDEA, Clarendon Laboratory, Department of Physics, University of Oxford, Parks Road, Oxford OX1 3PU — FeSe is structurally the simplest of Fe-based superconductors, and exhibits a tetragonal-to-orthorhombic structural transition at $\sim$ 90 K, but no long-range magnetism at any temperature. We report measurements of the resistivity anisotropy in FeSe above Ts finding a large and divergent response to an applied strain, with a comparable magnitude and temperature-dependence to measurements in $Ba(Fe_{1-x}Co_x)_2As_2$, but opposite sign. We compare this data with literature reports on NMR and our own ARPES data, which taken together indicate that the structural transition is electronically-driven with orbital degrees of freedom playing a central role.

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