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Fermi-surface reconstruction by stripe order in cuprate superconductors

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The origin of pairing in a superconductor resides in the underlying normal state. In the cuprate high-temperature superconductor YBCO, application of a magnetic field to suppress superconductivity reveals a ground state that appears to break the translational symmetry of the lattice, pointing to some density-wave order [1,2,3]. In another cuprate, Eu-LSCO, the onset of stripe order - a modulation of spin and charge densities - at low temperature is well established [4]. By a comparative study of thermoelectric transport in the cuprates YBCO and Eu-LSCO, we show that the two materials exhibit a very similar process of Fermi-surface reconstruction as a function of temperature and doping [5,6]. This strongly suggests that Fermi-surface reconstruction is caused by stripe order in both cases, compelling evidence that stripe order is a generic tendency of hole-doped cuprates.

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