Abstract Submitted
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Nerst and Seebeck magneto-transport properties of LaFeAsO from first principles[1] FABIO BERNARDINI, CNR-IOM and University of Cagliari, 09042 Monserrato, Italy, FEDERICO CAGLIERIS, ILARIA PALLECCHI, PIETRO MANFRINETTI, ALESSIA PROVINO, GIANRICO LAMURA, MARINA PUTTI, CNR-SPIN and University of Genova, via Dodecaneso 33, 16146 Genova — Iron based superconductors such as $Ba(FeAs)_2$ and LaFeAsO share with graphene the presence of Dirac cone (DC) states whose existence was confirmed by the linear dependence of the magneto-resistance behavior at low temperature. The formation of DCs is due to the presence of a spin density wave (SDW) ordered state below the the Neel temperature. The Nerst and Seebeck effects have recently proven to be sensitive probes for detecting unusual normal state properties of unconventional superconductors. In particular Nerst effect may sensitively detect Fermi reconstructions that are connected to a SDW ordered state. Here we focus on the LaFeAsO compound whose ground state exhibits static stripe order. The presence of a SDW leads to a large Nerst response. Experiments so far have not yielded a unified picture on the trend in temperature of the Nerst and Seebeck coefficients. To shed light on the experiments we computed the Nerst and Seebeck coefficients for LaFeAsO from first principles in the framework of density functional theory and Bloch-Boltzmann equations. Our results help to understand the trend in temperature of both Nerst and Seebeck effects.

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