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Interplay between electron-electron and electron-lattice interactions in the RTe3 compounds[1] ALEXANDER KEMPER, Lawrence Berkeley National Laboratory, H.-M. EITER, M. LAVAGNINI, R. HACKL, Walther Meissner Institut, Bayerische Akademie der Wissenschaften, E.A. NOWADNICK, T.P. DEVEREAUX, J.-H. CHU, J.G. ANALYTIS, I.R. FISHER, Stanford Institute for Materials and Energy Sciences, SLAC National Accelerator Laboratory, L. DEGIORGI, Laboratorium für Festkörperphysik, ETH - Zürich — Charge and spin density waves, periodic modulations of the electron and magnetization densities, respectively, are among the most abundant and non-trivial low-temperature ordered phases in condensed matter. The ordering direction is widely believed to result from the Fermi surface topology. However, several recent studies indicate that this common view needs to be supplemented. Here, we show how an enhanced electron-lattice interaction can contribute to or even determine the selection of the ordering vector in the model charge density wave (CDW) system ErTe3. We show how the electron-phonon coupling in the vicinity of band degeneracy points is strongly enhanced, leading to a CDW direction that is different from that determined by first-principles calculations. This combination of electron-electron and electron-lattice interactions may be generally relevant for driving phase transitions in other broken-symmetry ground states.

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