Density Functional Theory of Thermoelectric Phenomena\textsuperscript{1} GIOVANNI VIGNALE, FLORIAN EICH, University of Missouri-Columbia, MASSIMILIANO DI VENTRA, University of California - San Diego — We introduce a non-equilibrium density functional theory of local temperatures and associated heat currents that is particularly suited for the study of thermoelectric phenomena. This theory rests on a local temperature field coupled to the energy density operator. We prove the basic theorems of the theory and discuss the construction of approximate functionals.

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