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Thermal response functions for 1D strongly correlated electron systems MICHAEL R. PETERSON, JAN O. HAERTER, B. SRIRAM SHASTRY, University of California Santa Cruz — Thermal response functions of strongly correlated electron systems are of appreciable interest to the physics community from both a theoretical and technological point of view. Here we focus on one-dimensional models, namely the Hubbard and infinitely correlated t-J models. Using exact diagonalization on finite sized systems we calculate the dynamical thermal response functions as functions of temperature, i.e., the electrical conductivity, the Peltier coefficient, and the thermal conductivity via the Kubo formulas. This in turn allows us to calculate the thermopower (Seebeck coefficient), Lorentz number, and the dimensionless figure of merit. By considering a geometrically frustrated system (inclusion of second neighbor hops into the Hubbard model) the thermopower is shown to be enhanced at intermediate temperatures. We also benchmark the finite temperature Lancos method.

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