

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Anomalies in the thermoelectric power in cuprates from strong electron correlation SHILADITYA CHAKRABORTY, DIMITRIOS GALANAKIS, PHILIP PHILLIPS, University of Illinois at Urbana- Champaign — The thermoelectric power data in hole-doped cuprates show a sign change on increasing the hole doping from the underdoped to the overdoped regime. The origin of this anomaly is debatable, and there exist multiple explanations for it. Phonon drag is one of the more widely accepted explanations. Our approach, instead, is to investigate the behaviour of the thermoelectric power from a purely electronic perspective. We employ Cluster Dynamical Mean Field Theory (CDMFT) on a four site square plaquette to study the thermoelectric power in the 2-d Hubbard model as a function of hole doping, temperature and U/t ratio. We observe a sign change in the thermoelectric power in qualitative agreement with experimental data. The sign change vanishes for small values of U/t , suggesting that strong electron correlations are responsible for this phenomenon.

Shiladitya Chakraborty
University of Illinois at Urbana- Champaign

Date submitted: 02 Dec 2007

Electronic form version 1.4