Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

On the Thermoelectric Properties of Layered Cobaltates[1] QIANG LI, Brookhaven National Laboratory — A study on the thermoelectric properties of layered cobaltates is presented, based on the dynamic mean field theory for strongly correlated electron systems. Electron correlation results in a crossover from coherent quasi-particle excitation at low temperature to incoherent excitation at high temperatures in cobaltates. With an extremely narrow quasi-particle bandwidth ($\hbar\omega_c \sim$ 50 meV), the thermal destruction of Fermi-liquid occurs at the moderate crossover temperature T_M ($\sim$ 200 K), and suggests a new scaling for thermoelectric power S of cobaltates ($S \sim kT/\hbar\omega_c \sim T/T_M$) at low temperatures. At high temperatures, the dominating incoherent excitation leads to a weak temperature dependent S, and electric resistivity ρ approaches the Mott-limit $ha/e^2 \sim$ a few mΩ·cm for cobaltates, where a is a lattice constant.

[1]The work was supported by the U. S. Dept. of Energy, Office of Basic Energy Science, under contract No. DE-AC-02-98CH10886.

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Date submitted: 23 Nov 2005 Electronic form version 1.4