

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Large Seebeck coefficient in frustrated doped Mott insulators

LOUIS-FRANÇOIS ARSENAULT, Université de Sherbrooke, B. SRIRAM SHASTRY, University of California, Santa Cruz, PATRICK SÉMON, ANDRÉ-MARIE TREMBLAY, Université de Sherbrooke — Since calculations based on the standard Kubo formula have proven extremely difficult for electric and thermal transport, Shastry and co-workers [1] suggested two novel approximate ways to obtain the thermopower (S) in interacting systems. One method is based on the high-frequency limit. The other, based on ideas of Kelvin, is purely thermodynamical. With these we study the Hubbard model on a 3d FCC lattice, a frustrated lattice. The high dimensionality of the problem justifies the use of dynamical mean field theory (DMFT). CTQMC in the hybridization expansion and the fast IPT are the impurity solver. The Seebeck coefficient is obtained as a function of doping and temperature for different U . Within DMFT, vertex corrections vanish for transport coefficients, hence the bubble suffices. This enables us to further assess how both approximate methods compare with each other and with the DC Kubo approach. At low T , results can be interpreted in terms of effective Fermi temperatures and carrier number.

[1] B.S. Shastry, Rep. Prog. Phys. 72, 016501 (2009)

Louis-Francois Arsenault
Universite de Sherbrooke

Date submitted: 08 Dec 2010

Electronic form version 1.4