Abstract submitted to the
Conference on Concepts in Electron Correlation
September 24 - 30, 2008 Hvar, Croatia

# Competing interactions and magnetic order in correlated electron systems

Thomas Pruschke, Robert Peters
*Institute for Theoretical Physics, University of Göttingen, Friedrich-Hund-Platz 1, 37077 G̈ttingen, Germany*

Submitted : 12-08-2008
*Keywords :* Strongly correlated electrons, Mott-Hubbard transitition, magnetism

We study the interplay between antiferromagnetism and the paramagnetic metal-insulator-transition (PMIT) on a Bethe lattice with nearest and next-nearest neighbor hopping $t_1$ and $t_2$, respectively. For $t_2/t_1 \to 1$ the PMIT outgrows the antiferromagnetic phase and shows a scenario wich resembles the phase diagram of the system $V_2O_3$. However, in contrast to earlier expectations we do not find a hint for an antiferromagnetic metal at half filling.

Off half filling frustration stabilizes the otherwise phase-separated antiferrmomagnet for filling $n < 1$. Around $n \approx 0.5$ we in addition are able to stabilize a ferromagnetic phase at moderate interaction. Note that on the Bethe lattice such a phase does not exist for $t_2 = 0$, even in the limit $U \to \infty$ due to missing closed loops necessary for Nagaoka's theorem.