Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

An electric field-driven MIT in strongly-correlated thin-film superlattices: an inhomogeneous dynamical mean-field theory study[1]
PETAR BAKALOV, JEAN-PIERRE LOCQUET, Department of Solid-state physics, KULeuven — Using an inhomogeneous dynamical mean-field theory (IDMFT) approach to the single-band Hubbard model we investigate the properties of thin-film superlattices made up of alternating strongly (U_1) and weakly ($U_2 < U_1$) correlated regions. In particular, we study the influence of temperature, doping, interaction strengths (U_1, U_2), superlattice parameters (L_1, L_2) and transverse electric field on the correlation driven Mott-Hubbard metal-to-insulator transition. We find that when the periodicity of the superlattice is such that the strongly correlated regions are below a certain thickness, the MIT is suppressed due to proximity effects.

[1]This work was partially funded by the Flemish Fund for Scientific Research (FWO - Vlaanderen) under FWO grant G.0520.10 and by the SITOGA FP7 project. Most of the calculations were performed on KU Leuvens ThinKing HPC cluster.

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Date submitted: 08 Nov 2015 Electronic form version 1.4