Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

**Accuracy of the downfolding scheme for multiorbital Hubbard models** HIROSHI SHINAOKA, ETH Zurich, PHILIPP WERNER, The University of Fribourg, MATTHIAS TROYER, ETH Zurich — Deriving an effective low-energy model from *ab initio* calculations is a grand challenge in condensed matter physics. Recently, the so-called constrained random phase approximation (RPA) has been developed. In that scheme, screening effects by high-energy bands are taken into account in the RPA level to derive screened Coulomb interactions in the low-energy model. The method has been applied to various strongly correlated electronic systems such as transition metal oxides and organic compounds in combination with *ab initio* band calculations. However, the accuracy of the scheme still needs to be clarified. In this talk, we discuss the accuracy of this scheme using a multi-orbital Hubbard model. We first derive a low-energy effective single-orbital Hubbard model using the constrained RPA scheme. We then solve both models using dynamical mean-field theory, compare the results and discuss the accuracy of the downfolding scheme.

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Date submitted: 14 Nov 2013 Electronic form version 1.4