

SUMMER SCHOOL IN SEPTEMBER 2012

# BANDSTRUCTURE MEETS MANY BODY THEORY

VIENNA, AUSTRIA | 18. – 22. SEPTEMBER 2012

organized by K. Held (Vienna University of Technology) & G. Kresse (University of Vienna)

A particular challenge of computational materials science is the calculation of materials in the presence of strong electronic correlations and exchange. In this case, the local density approximation (LDA) or generalized gradient approximation to the exchange correlation potential often yields unreliable results. In recent years we have seen tremendous progress in this field: The aim of the Summer School is to educate the next generation of scientists in both, bandstructure and many body theory. To this end, we will have lectures in the morning and hands-on tutorials in the afternoon on the following topics:

- ◆ Local Density Approximation (LDA)
- ◆ Exact Exchange
- ◆ Quantum Chemistry Approaches (CI and active space techniques)
- ◆ GW
- ◆ Density Matrix Renormalization Group (DMRG)
- ◆ Quantum Monte Carlo (QMC)
- ◆ Dynamical Mean Field Theory (DMFT)
- ◆ Combining Methods: LDA+DMFT and GW+DMFT

## Invited Speakers:

S. Biermann (Paris, GW+DMFT), P. Blaha (Vienna, LDA, LDA+U Tutorial), R. Godby (York, GW), E.K.U. Gross (MPI Halle, TDDFT), M. P. Head-Gordon (Berkeley, Quantum Chemistry), J. Kunes (Prague, Wannier Functions Tutorial), R. Noack (Marburg, DMRG), G. Sangiovanni (Würzburg, DMFT Tutorial), R. T. Scalettar (Davis, Lattice QMC), A. Toschi (Vienna, Quantum Field Theory), M. Towler (Cambridge, QMC), D. Vollhardt (Augsburg, DMFT)

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