lattice properties is quantitatively important also in this limit and that simplifying assumptions made in a previous study on the impact of frustration lead to large errors. We point out the ambiguities associated with any DMFT calculation of transport properties for "the Bethe lattice" and review the possible concepts for making the problem well-defined; among these choices, the model defined in chapter 2 will be seen to have the most desirable properties. We then present accurate numerical results for the optical conductivity which are based on the MEM spectra computed in chapter 3.

In chapter 5, we give an introduction to the density functional theory and its local density approximation and introduce the recently developed hybrid LDA+DMFT scheme. We discuss the construction and simplification of the resulting multi-band Hubbard model and its solution within the DMFT as well as the extraction of photoemission and x-ray absorption spectra. In addition to numerical results obtained in a collaboration with Anisimov's group, we present new calculations and quantify the QMC discretization error. We also apply the formalism developed in chapter 2 in order to derive a definition of the optical conductivity which is compatible with the LDA DOS and present corresponding numerical results.

With the exception of the following introductory part, each chapter is supplemented by a conclusion. A brief overview over the results and new insights obtained in this thesis is given in the Summary. Finally, some aspects not directly within the main scope of this thesis are treated in the appendices.