One unrealistic aspect of all LDA+DMFT(QMC) calculations presented in this chapter was the high temperature $T \approx 1160$ K. A reduction of the simulation temperature to room temperature would be desirable; such a project is clearly realistic, in particular when using an improved QMC code (cf. App. C) for which the discretization $\Delta\tau = 0.25$ is sufficiently accurate. One might also want to investigate the influence of non-uniform on-site coupling terms, the importance of hybridization terms in a full-Hamiltonian calculation, or the impact of the orthorhombic distortion.

We conclude that the LDA+DMFT(QMC) treatment is vastly superior over the sole application of LDA already at the present stage. Still, the material $La_{1\text{-}x}Sr_xTiO_3$ is less metallic at $x = 0.06$ than the theory predicts. If this finding holds up in improvements of the theoretical treatment and in experiments which are more bulk-sensitive, the remaining discrepancies may be due to disorder (which is clearly present, but should be washed out since Ti has 8 La/Sr nearest neighbors) or to (precursors of) antiferromagnetic order.