is particularly robust in combination with the QMC code and the variant of the maximum entropy method used within this work. The high accuracy of our method has been successfully tested by comparison with a newly established sum rule for the (real-frequency) self-energy. We have presented numerical results for $\sigma(\omega)$ of the half-filled Hubbard model with semi-elliptic DOS near the metal-insulator transition for all valid definitions, i.e., for the incoherent models, the anisotropic stacked model, and for the new isotropic "redefined Bethe lattice". Comparing the qualitative features, the Drude weight, and the f-sums, we have shown that the exact definition does matter in general, in particular for not too large interaction.

We have pointed out in the beginning of this chapter that f-sum rules as discussed above may be regarded as artifacts of the single-band assumption. While they may still be useful as approximate partial sum rules, a different, universal f-sum rule is obtained in a full model. We have only briefly touched upon additional features in $\sigma(\omega)$ which are specific to multi-band models or to non-Bravais lattices. Furthermore we had to limit the discussion of finite dimensionality to a fully local theory where the bubble formula for $\sigma(\omega)$ remains valid; vertex corrections not included in this approximation are expected to increase the static conductivity since the importance of umklapp scattering is reduced (Uhrig and Vollhardt, 1995). On the other hand, a reduction of the static conductivity and a broadening of the Drude peak is expected to result from impurities and from electron-phonon interaction, which were also neglected in this chapter.