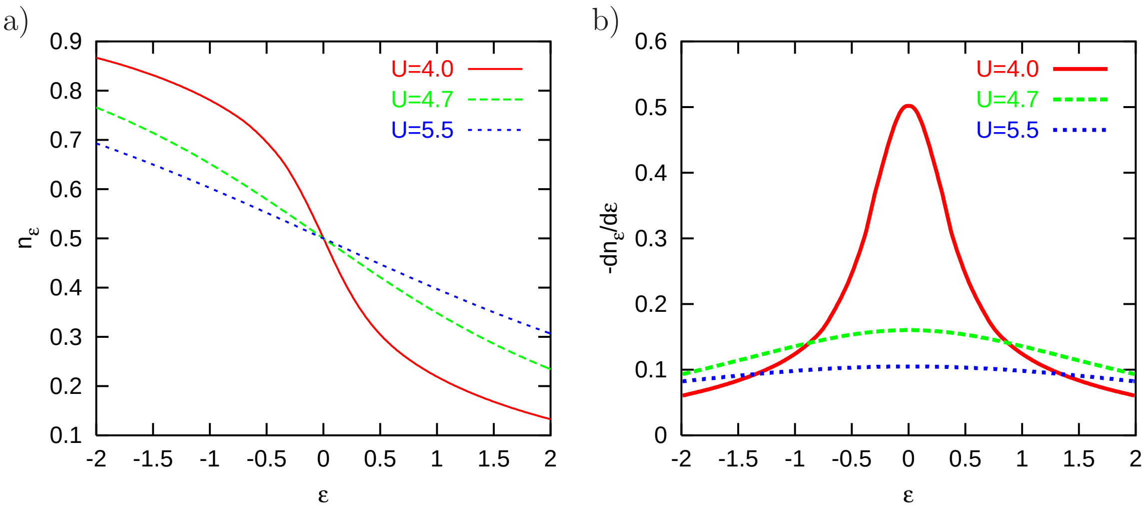

Figure 4.45: a) Momentum distribution function n_ϵ as defined in (4.79) and **b)** (minus) its derivative.

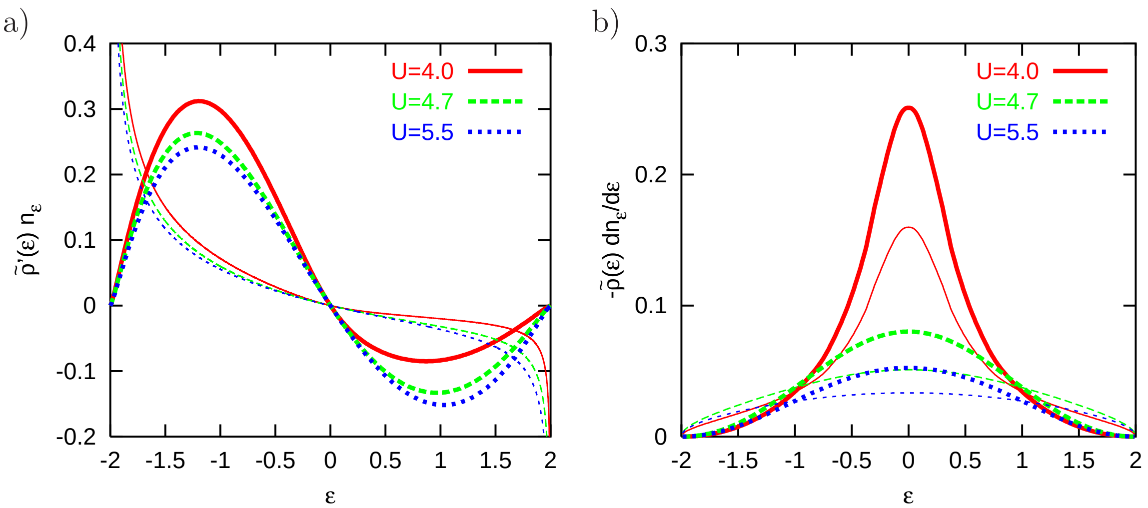

Figure 4.46: Contributions to the f-sum as a function of "momentum" ϵ for the redefined Bethe lattice (thick lines) and the stacked Bethe lattice (thin lines) corresponding to the equivalent formulations **a)** (4.86) and **b)** (4.87) of the f-sum rule.

4.7 Conclusion

In this chapter, we have presented studies of the optical conductivity $\sigma(\omega)$ and its f-sum rule in high dimensions with particular focus on "the Bethe lattice", i.e., a class of lattices with semi-elliptic density of states (DOS).

Initially, the project of computing numerical estimates of $\sigma(\omega)$ on the basis of quantum Monte Carlo (QMC) solutions of the half-filled Hubbard model with a semi-elliptic DOS seemed straightforward: The formalism had already been worked