Spectral functions: Dynamical Mean-Field Theory as a challenge

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In this talk, I will focus on the (potential) marriage between dynamical mean-field theory in its more advanced incarnations (multiband, dynamical cluster approximation, non-equilibrium DMFT) and matrix-product state based methods for the inevitable impurity solver which is needed to provide equilibrium and non-equilibrium Greens functions. I will highlight the pros and cons of this approach and show that a key ingredient for success is a careful rethinking of the conceptual foundations of matrix product states.
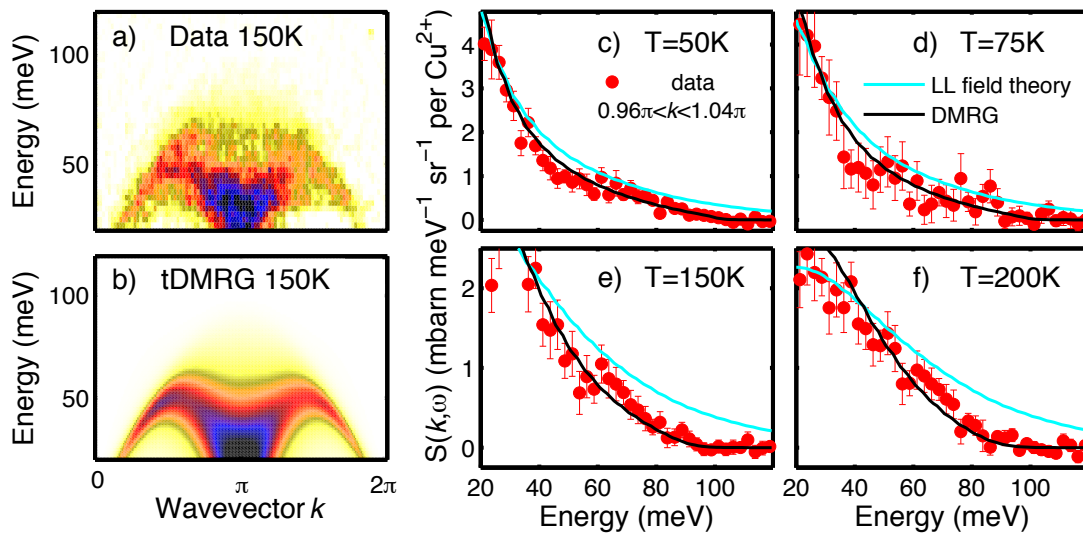

Figure 1: Spectral function from neutron scattering at spin chains: experiment versus DMRG.