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Time dependent DMRG for spectral functions of Heisenberg chains STEVEN WHITE, UC Irvine, IAN AFFLECK, University of British Columbia, RODRIGO PEREIRA, UC Santa Barbara — Recently developed real-time DMRG techniques allow the calculation of space and time dependent spin-spin correlation functions for spin chain systems. These correlation functions can be Fourier transformed to obtain momentum and frequency dependent spectral functions. The growth of entanglement in the simulation as a function of time prevents extremely long simulation times, limiting the frequency resolution. We have found that the long time behavior can be extrapolated using either of two different techniques, allowing us to obtain very high resolution spectra with very high accuracy. We demonstrate these techniques for the S=1 Heisenberg chain and the XXZ S=1/2 chain.

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