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New Perspectives for Time-Evolution with DMRG

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In the last 10 years, time-evolution with DMRG has revealed itself to be a very powerful technique for low-dimensional strongly interacting quantum systems both near and far from equilibrium. We show how new techniques, mainly based on the use of Chebyshev polynomials allowing to use DMRG for obtaining real-frequency spectral information in multi-band DMFT calculations, also allow to use it as an impurity solver for far-from-equilibrium DMFT in a Hamiltonian formulation, strongly increasing the time range of non-equilibrium DMFT, and to attack time-evolutions efficiently in far from equilibrium settings.