

Nonequilibrium Green's function calculations based on tensor trains

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Tensor based representations of multi-dimensional functions reduce memory demand and enable the efficient evaluation of Feynman diagrams [1]. I will present two complementary applications of the so-called quantics representation [2,3] to nonequilibrium Green's function calculations: (i) the implementation of high-order strong-coupling impurity solvers for nonequilibrium steady-state problems [3,4], and (ii) the time evolution of large lattice systems within weak-coupling diagrammatic approaches [5,6]. Both applications suggest that combining nonequilibrium Green's function schemes with tensor-train representations and routines allows to significantly extend the reach of numerical studies.

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