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Series Expansion for the Green's Function of the Infinite-U Hubbard Model EHSAN KHATAMI, University of California, Santa Cruz / Georgetown University, EDWARD PEREPELITSKY, B. SRIRAM SHASTRY, University of California, Santa Cruz, MARCOS RIGOL, Pennsylvania State University — We implement computationally a strong-coupling expansion for the dynamical single-particle Green's function of the infinite-U Hubbard model up to the eighth order in the hopping, within the formalism introduced by Metzner [1]. We obtain analytical expressions for the finite Matsubara frequency Green's functions and the Dyson self energy in the momentum space at all densities in the thermodynamic limit. The results match those obtained up to the fourth order by means of another method devised by us. Furthermore, we employ Pade approximations and various numerical re-summation techniques to extend the region of convergence to lower temperatures.

Ref. [1]: W. Metzner, Phys. Rev. B 43, 8549 (1991).

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