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A holographic aspect of dynamical mean-field theory

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Dynamical mean-field theory (DMFT) has been one of the most standard numerical methods for strongly correlated electron systems. We discuss that DMFT for interacting electrons with the semi-circle density of states can be viewed as a holographic renormalization group, similar to the holographic tree-tensor-network description of the Bethe lattice-type Ising model. In particular, the scaling dimension for Green's function can be related to that of the corresponding correlation function for outer-edge boundary electrons, which is consistent with a p-adic AdS/CFT. We calculate the scaling dimension within DMFT for the Bethe lattice Hubbard model and then discuss the effect of the Mott transition.

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