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Tensor renormalization group approach to (1+1)-dimensional Hubbard model

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We investigate the metal-insulator transition of the (1+1)-dimensional Hubbard model in the path-integral formalism with the tensor renormalization group method. The critical chemical potential μ_c and the critical exponent ν are determined from the μ dependence of the electron density in the thermodynamic and zero-temperature limit. Our results for μ_c and ν show consistency with the exact solution based on the Bethe ansatz. Our encouraging results indicate the applicability of the tensor renormalization group method to the analysis of higher-dimensional Hubbard models.

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