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Tensor renormalization group approach to (1+1)-dimensional SU(2) principal chiral model at finite density

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We apply the tensor renormalization group method to the (1+1)-dimensional SU(2) principal chiral model at finite chemical potential with the use of the Gauss-Legendre quadrature to discretize the SU(2) Lie group. The internal energy at vanishing chemical potential $= 0$ shows good consistency with the prediction of the strong and weak coupling expansions. This indicates an effectiveness of the Gauss-Legendre quadrature for the partitioning of the SU(2) Lie group. In the finite density region with $\neq 0$ at the strong coupling we observe the Silver-Blaze phenomenon for the number density.

Recording and publishing

yes

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