

The Matrix Product State approach versus Haldane-gap antiferromagnets

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The one-dimensional quantum Heisenberg model is applied to antiferromagnetic Heisenberg spin chains with integer value of spin. The Matrix Product State formalism is applied to study the effect of alternation in the single-site anisotropy on the existence of the Haldane gap in the energy spectrum. Moreover, the time evolution of the ground-state magnetization has been performed after the sudden change in applied field.