Magnetization plateau of the classical Ising model on the Shastry-Sutherland lattice: A tensor renormalization-group approach

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We study the magnetization for the classical antiferromagnetic Ising model on the Shastry-Sutherland lattice using the tensor renormalization group approach [1]. With this method, one can probe large spin systems with little finite-size effect. For a range of temperature and coupling constant, a single magnetization plateau at one third of the saturation value is found. We investigate the dependence of the plateau width on temperature and on the strength of magnetic frustration. Furthermore, the spin configuration of the plateau state at zero temperature is determined.

References

[1] Ming-Che Chang and Min-Fong Ynag, Phys. Rev. B. **79**, 104411 (2009).