

Abstract Submitted
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Ground State phase diagram of the asymmetric spin tube up to 6 legs RYO IGARASHI, MASAHIKO OKUMURA, SUSUMU YAMADA, MASAHIKO MACHIDA, Center for Computational Science & e-Systems, Japan Atomic Energy Agency and CREST, Japan Science and Technology Agency — We obtain the detailed ground state phase diagram of the asymmetric $S = 1/2$ spin tube up to 6 legs using the two-dimensional density-matrix renormalization-group method. Spin gap is observed for the symmetric tube regardless of the leg size, but 3- and 5-leg system becomes gapless when one of the asymmetric interchain (rung) interaction is turned off. We determine the phase boundary between the spin gap phase and the gapless phase and discuss the leg-size dependence of the full gap region.

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