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Rotational symmetry breaking in Heisenberg model on triangular lattice[1] RYO TAMURA, NAOKI KAWASHIMA, ISSP, University of Tokyo — We study a finite-temperature phase transition in the two-dimensional classical Heisenberg model on a triangular lattice with a ferromagnetic nearest-neighbor interaction J_1 and an antiferromagnetic third-nearest-neighbor interaction J_3 using Monte Carlo simulation. Apart from a trivial degeneracy corresponding to O(3) spin rotations, the ground state for $J_3 \neq 0$ has a threefold degeneracy corresponding to 120 degree lattice rotations. We find that this model exhibits a phase transition with breaking of the three-fold symmetry when $J3 = J1/3$ and that the transition is of the first order.

[1]This work is partially based on the paper by Ryo Tamura and N. K. (J. Soc. Phys. Jpn. 77 103002 (2008))

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