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Competing phases of S=1 XXZ model on Kagome lattice[1]
ZHENYUE ZHU, STEVEN WHITE, UC Irvine — We numerically study the S=1 XXZ model on the kagome lattice with the Density matrix renormalization group. We focus on the two types of expected magnetic order, $Q = 0$ and $\sqrt{3} \times \sqrt{3}$. As a function of the coupling Δ for the $S_z S_z$ terms, we find two possible phase transitions. For $\Delta < \Delta_1$, we find that the $Q = 0$ state has lower energy, but the difference between these two magnetic ordered phase is very small. For $\Delta_1 < \Delta < \Delta_2$, $\sqrt{3} \times \sqrt{3}$ magnetic ordered state is the ground state. For $\Delta > \Delta_2$, we find that the magnetic ordered phases disappears, entering a magnetic disordered phase. We find a close competition between a trimerized phase and a hexagon singlet phase, which is consistent with recent numerical studies of S=1 Heisenberg model on the Kagome lattice.

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