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Quantum Antiferromagnents and Emergent Orders on Spatial Anisotropic Triangular Lattices JIAN-JIAN MIAO, DONG-HUI XU, YI ZHOU, FU-CHUN ZHANG, Zhejiang Univ — Schwinger boson representation and large N expansion technique is applied to the quantum antiferromagnetic Heisenberg model on triangular lattices with spatial anisotropic nearest-neighbor and next-nearest-neighbor coupling. In the large N limit, we found several degenerate ground states with different magnetic ordering on sub-lattices,where the non-zero bonds form honeycomb lattice or dice lattice. Large $\kappa\,(=\frac{n_b}{N})$ expansion is used to lift the degeneracy and to obtain the phase diagram. Possible applications to recent discovered compound $LiZnMo_3O_8$ are discussed.

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