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Randomness effects on the distorted triangular-lattice antiferromagnets TORU SAKAI, JAEA, SPring-8, HIROKI NAKANO, Graduate School of Material Science, University of Hyogo — The quantum spin liquid-like behaviors were observed on some distorted triangular-lattice antiferromagnet organic compounds[1]. If the lattice vibration is much slower than the spin dynamics, the lattice distortion possibly plays a role of the bond randomness in the spin system. Thus in order to explain the observed spin liquid behavior of the organic compound, we consider the antiferromagnetic Heisenberg model on some distorted triangular lattices with the bond randomness. Using the numerical exact diagonalization we calculated the standard spin glass order parameter, as well as the ordinary Neel order parameter. The present study suggested that the spin glass order can survive in some region where the Neel order vanishes. We will discuss a scenario of the observed spin liquid behavior of the distorted triangular-lattice antiferromagnets, based on the result. [1] Y. Shimizu, K. Miyagawa, K. Kanoda, M. Maesato and G. Saito, Phys. Rev. Lett. 91 (2003) 107001.

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