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Frustrated antiferromagnet on generalized partial line graphs of a honeycomb lattice SHIN MIYAHARA, CHISA HOTTA, KENN KUBO, NOBUO FURUKAWA, Aoyama Gakuin University — Recently we have proposed generalized partial line graphs on which tight binding models of electronic energy bands realize flat bands [1]. We study Heisenberg antiferromagnets on these structures, which are frustrated and may realize novel ground states. In this report, we focus on a generalized partial line graph created on a honeycomb lattice. The model is a honeycomb lattice composed of A and B-sublattice, where a triangle cluster sits on a site of A-sublattice and a single spin exists on a site of the B-sublattice. We assume the two-types of exchange coupling: J inside the triangle cluster and J' between the cluster and B-sublattice. In the limit J << J' the model is equivalent to the spin-1 triangle model. We introduce an effective model for two limits J >> J' and J << J'. The results of exact diagonalization will be reported and discussed. [1] S. Miyahara et al., J. Phys. Soc. Japan, 74 1918 (2005).

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