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Impurity effects on frustrated ferro- and ferrimagnets in one dimension MASANORI KOHNO, XIAO HU, Computational Materials Science Center, National Institute for Materials Science, Tsukuba 305-0047, Japan — We have investigated impurity effects on magnetization for frustrated one-dimensional ferro- and ferrimagnets. Using the density-matrix renormalization group method and the exact diagonalization method, we confirmed that the magnetization decreases significantly by doping non-magnetic impurities. In a special case, the magnetization can vanish due to a single impurity in finite chains. Introducing the picture of magnetic domain inversion, we numerically investigated the impurity-density dependence of magnetization. In particular, we show that the magnetization substantially decreases down to less than 60% from that of the corresponding pure system by doping an infinitesimal density of impurities. We also formulate conditions for the materials which may show this anomalous impurity effect.

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