

Frustration Induced Noncollinear Ferrimagnetism in Mixed Spin Chains with Side Chains

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Ferrimagnetic ground states of the mixed spin Heisenberg chains with frustrated side chain are investigated by means of the numerical exact diagonalization and DMRG method. In addition to the Lieb-Mattis type ferrimagnetism in which the spontaneous magnetization is given by the difference of fully polarized sublattices, a noncollinear ferrimagnetism with spontaneous magnetization is not a simple fraction of full magnetization is found between Lieb-Mattis type phase and nonmagnetic phase. It turns out that the spin profile has an incommensurate structure as in the previously reported frustration induced noncollinear ferrimagnetism. The properties of the nonmagnetic phases which appear near the ferrimagnetic phase will be also discussed.