

Bound magnon states in the frustrated ferromagnetic 1D chain

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We studied a one-dimensional Heisenberg chain with ferromagnetic nearest-neighbor and antiferromagnetic next-nearest neighbor interactions in a magnetic field. Starting from the fully polarized high-field state, we calculated the saturation field and the dispersions of the lowest-lying n -magnon excitations. We found out that the dominant excitations are always bound multi-magnon states of rather small extension and, except for a small parameter range, a total momentum of π .