

Entanglement measures of a frustrated spin-1/2 Heisenberg octahedral chain within the localized-magnon approach

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We consider the spin-1/2 antiferromagnetic Heisenberg model on the frustrated octahedral chain in a presence of the external magnetic field. In a previous study [1], it was shown that the localized-magnon theory [2] can be modified for simpler calculation of concurrence [3], which may serve as a measure of the bipartite entanglement between nearest-neighbor and next-nearest-neighbor spins on squares of the octahedral chain. The results presented in [1] confirmed a new paradigm of the localized-magnons concept concerned with a simple calculation of entanglement measure. This study is devoted to further application of a modified localized-magnon theory for finding other entanglement measures. To be specific, we will consider such measures of entanglement as entanglement of formation and negativity [4-5]. It could be, thus, concluded that the localized-magnon theory can be straightforwardly adapted in order to calculate the respective entanglement measures for a wide class of flat-band quantum Heisenberg antiferromagnets.

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