ENTANGLEMENT AND QUANTUM MAGNETIC PROPERTIES OF ANTIFERROMAGNETIC CLUSTER MODELS WITH SPINS 1/2, 1 AND 3/2.

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Entanglement, magnetization, and magnetic susceptibility for the 1D antiferromagnetic Heisenberg model with spin 1/2, 1 and 3/2 on finite chains in the ground state and at low temperatures have been analytically derived.

Our theoretical results were compared with experimental data for temperature-dependent magnetic susceptibility of copper, nickel, and cobalt ion complexes. Additionally, we studied magnetization plateaus, magnetic susceptibility, and thermal entanglement in these complexes in response to an external magnetic field.

The observed correlation between magnetization and entanglement jumps and magnetic susceptibility peaks suggests the need for further experimental research. Based on our theoretical findings, we believe that additional experimental measurements are essential to gain a deeper understanding of these phenomena and possibly uncover even more intricate quantum correlations and behaviors as a function of an external magnetic field at low temperatures.