

# Magnetic susceptibility of effective two-level systems: insights from a Heisenberg isosceles triangle

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Low-temperature magnetic susceptibility of magnetic spin systems often exhibits pronounced maxima that reflect microscopic properties of low-lying energy levels. In this contribution, we investigate magnetic systems that can be effectively described as two-level systems at sufficiently low temperatures. We demonstrate that the position and height of the low-temperature susceptibility maximum are governed by a limited set of parameters, namely the energy gap between the ground and first excited states, their relative degeneracy, and the difference in total spin quantum numbers.

The general theoretical framework is illustrated using an exactly solvable spin-1/2 Heisenberg triangular cluster, where distinct types of susceptibility maxima emerge in the vicinity of level-crossing fields as a consequence of changing degeneracies. This example highlights the predictive power of the two-level description for frustrated magnetic systems. The presented results open the possibility of confronting theoretical predictions with experimental realizations.

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