

# Interplay between frustration and quantum entanglement in ring-shaped chromium-based molecular magnets

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Magnetic frustration in quantum spin systems has been long believed to be connected to quantum entanglement. In a recent paper [1] it has been demonstrated that this relation can be quantified for some class of quantum spin models. In this contribution we investigate the interplay between frustration and quantum entanglement in the recently synthesized ring-shaped chromium-based molecular magnets [2,3] and test the relation proposed in [1]. It is showed that by using precise measures of frustration and entanglement the intuitive classification of frustration proposed in [2] can be given more solid foundation related also to quantum entanglement. Moreover, the quantities considered to be frustration signatures, like e.g. local magnetizations are showed to be in fact entanglement signatures. It is also demonstrated that the relation proposed in [1] can be used to differentiate between geometric and purely quantum frustration, though not in rings with one of the couplings larger than all the others.

## References:

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