# Frustration and quantum entanglement in the family of ring-shaped chromium nanomagnets

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Molecular nanomagnets can serve as a perfect testbed for studying the interplay between quantum entanglement and frustration. In this contribution, the relation between frustration and entanglement is investigated in the family of ring-shaped chromium nanomagnets with odd number of magnetic ions. It is demonstrated by numerical simulations that though larger frustration generates stronger entanglement between complementary spin blocks and weaker between nearest neighbor spins, the relation between entanglement and frustration is not strictly monotonic and can be used to reconcile different classifications of frustration. It is shown that in the geometrically frustrated phase the region in which the lower bound on the universal frustration measure is saturated increases as geometric frustration is diluted. The entanglement between particular complementary spin blocks can attain almost the maximal value for a proper choice of Hamiltonian parameters. The influence of single ion anisotropy, magnetic field and size of the molecules on frustration and entanglement measures is also investigated.

**References:**

[1] P. Kozłowski Phys. Rev. B **91** 174432 (2015)