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Negativity for spin one anisotropic Heisenberg clusters in magnetic field ARMEN KOCHARIAN, California State University, Los Angeles, NERSES ANANIKYAN, LEV ANANIKYAN, VAHAGN ABGARYAN, Yerevan Physics Institute — The quantum and thermal phase transitions are studied for spin s=1 in anisotropic (ferromagnetic and antiferromagnetic) XXZ and Heisenberg small clusters with longitudinal crystalline and magnetic fields. We investigate the concept of entanglement. The grand canonical ensemble of Heisenberg clusters is also used for exact analytical and numerical calculations of thermal properties and negativity as a function of magnetic and anisotropic fields. We study the negativity, magnetic phase transitions and crossovers in small clusters of various topologies driven by exchange interaction, external field and temperature. The negativity effect as a function of temperature and magnetic field is studied for both ferromagnetic and antiferromagnetic cases. The thermal behavior of negativity can capture the important properties in single molecule magnets, the dynamic magnetization and these our results can be useful for interpretation of the phase diagram in molecular nanomagnets and nanometer-sized magnetic particles.

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