

Magnetically induced negative thermal expansion in some frustrated J1-J2 quantum chains

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The search for unconventional states in quantum matter is at the forefront of current research in solid state physics. In this respect, frustrated quantum magnets are topical candidates since they are widely known to be able to realize atypical ground states. In this class of systems frustrated J1-J2 quantum spin chains have attracted special attention since they have been demonstrated to realize {it e.g.} helimagnetic order giving rise to spin-current induced type-II multiferroicity or they are currently discussed as candidates for spin-nematic phases. We have investigated the lattice properties of such system, like {it e.g.} CuBr₂, CuCrO₄, LiCuVO₄ and observed magnetically induced negative thermal expansion, partially extending far into the short range correlated antiferromagnetically regime.

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