Transport properties of magnetic narrow-band semiconductors

S. Murawski,[1] K. Kapcia,[1] G. Pawłowski,[1] and S. Robaszkiewicz[1]

[1]*Electron States of Solids Division, Faculty of Physics, Adam Mickiewicz University in Poznań, Umultowska 85, 61-614 Poznań, Poland*

Magnetic insulators are materials in which a mixture of localized and itinerant electrons give rise to magnetic orderings [1]. This is realized in transition metal cluster compounds with formula AM_4X_8 where A-Al,Ga, M-V,Mo, X-S,Se,Te as well as in high-T_c superconductors. The extended Hubbard model with intersite magnetic interactions can be an effective model for these materials. This model was heavily investigated, especially for 1D and pseudo-1D systems [2-3]. This work presents results obtained using algorithms from the ALPS package [4] on square lattice. Ground state is shown as well as compressibility, magnetization and specific heat behaviour.

References:

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