

Abstract Submitted
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The magnetic short range order in magnets VLADIMIR ANTROPOV, Ames Laboratory — Following our prediction of the strong magnetic short range order (MSRO) above the Curie temperature in the itinerant magnets we consider the influence of this MSRO on several important observable properties. Using the density functional spin dynamics we analyze the spin wave like excitations appearance in the paramagnetic state and discuss the conditions of their persistence at the high temperature. The first principles dynamic correlation function $S(q,w)$ at the finite temperature in different materials is discussed. A giant antiferromagnetic MSRO in pure Cr is found, and both transversal and longitudinal MSRO have been identified. Such MSRO strongly affects all observable properties. The validity of our spin dynamic approach at high temperatures is questioned. The conditions to regulate such MSRO to improve magnetic properties of materials are analysed. We also discuss what kind of new experiments should be performed to estimate a degree of MSRO.

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