

Abstract Submitted
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Exchange and Magnetic Anisotropic Interactions of Magnetic Ions in Magnetic Materials ALEXANDER BAZHAN, P.L.Kapitza Institute for Physical Problems, RAS, Kosygin str 2, Moscow — Investigations of magnetic ions interactions in antiferromagnetic materials, based on theory of crystallographic and magnetic symmetry, which indicates quadratic forms of thermodynamic potentials, invariant with respect to operations of magnetic symmetry groups and presented in irreducible representations of interacting magnetic moments, are carried out using vector v.s.magnetometer. Magnetic field dependencies of samples three, separate magnetic moments components directly indicate orientations of samples magnetic moments, determined by magnetic ions interactions. Symmetric, Anderson, and antisymmetric, Dzyaloshinskii-Moria, exchange interactions, which are in current interest in studies of antiferromagnetic orders taking into account first-principles methods and models including spin-orbit interactions, in rhombohedral structures as example, $H_{\text{ex}} = \sum_{i,j} J_{i,j} (\mathbf{S}_i \mathbf{S}_j) - \sum_{i,j} D_{i,j,z} (\mathbf{S}_{i,x} \mathbf{S}_{j,y} - \mathbf{S}_{i,y} \mathbf{S}_{j,x})$, determine weak ferromagnetic states at selected orientations of antiferromagnetic vectors, discussed in the report.

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