

Abstract Submitted  
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**Exchange and Magnetic Anisotropic Interactions of Magnetic Ions in Antiferromagnetic Materials,  $\text{Nd}_2\text{CuO}_4$**  ALEXANDER BAZHAN, P.L.Kapitza Institute for Physical Problems, RAS, Kosygin str, 2, Moscow, Russia — Investigations of magnetic ions interactions, based on theory of crystallographic and magnetic symmetry, which indicate quadratic forms of thermodynamic potentials, presented in irreducible representations of interacting magnetic moments, described by antiferromagnetic and magnetic vectors, which determine antiferromagnetic orderings, are carrying out using vector v.s.magnetometer, in example, of non collinear antiferromagnetic orderings of four Cu ions in magnetic unit cells in  $\text{Nd}_2\text{CuO}_4$  of tetragonal symmetry, applying in HTS. Magnetic field dependencies of three separate components of samples magnetic moments directly indicate magnetic moments orientations, determined by magnetic ions interactions. Transformations of non collinear antiferromagnetic orderings of Cu ions in magnetic fields  $H_{c1} \sim 42\text{kOe}$  and  $H_{c2} \sim 8.4\text{kOe}$ , at fields orientations along [100] and [110] axis,  $T \sim 1.8\text{K}$ , which are discussing using representations, determined by two antiferromagnetic vectors in equations of magnetic states, can be used in investigations, when two dimensional correlated electrons systems are introduced in such materials, before HTS.

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