LOW TEMPERATURE ELECTRONIC RELAXATION TIME OF DOPED LAYERED CRYSTALS CdJ2

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The electronic relaxation time of CdJ2 crystals doped by Cu averaged over charge carriers, which undergo the processes of collision with probability of is studied in this work. Theoretical calculations are performed by the Green's function method based on the Fermi golden rule, where . Calculations are carried out for the scattering of free carriers of conduction band on an effective Coulomb potential of the impurity (Yukawa potential). For a model description of a layered crystal of orthogonal symmetry with layers in the XOY plane, the zone spectrum of electrons in the conduction band is given by [1] in the approximation of the effective mass for describing the electrons in the plane of the XOY layers and the strong coupling in the direction perpendicular to XOY layers, which is justified by a significant difference in the chemical bond in various crystallographic directions of the layered crystal. The degree of anisotropy of the layered crystal is determined by the ratio of the electron mixing in the plane of the layer to the one between the layers *(α/τ)*. Theoretical calculations of the Green's function carried out depending on the degree of anisotropy *(α/τ)* as well as Yukawa's shielding radius *k0* are compared with the ones calculated on the basis of experimental data on kinetics of photoluminescence and photoconductivity for pure CdJ2 and CdJ2:Cu [2].

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