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THE QUANTIZATION OF MAGNETODYNAMIC PARAMETERS IN Si(IV) CONDUCTING POLYMERIC CRYSTALS

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ABSTRACT

A systematic theoretical and experimental study of the influence of the magnetic field on the carrier distribution and their characteristic quantization in Si(IV) polymeric crystals have been presented. The energy of the ionic states is expressed as the sum of a translational energy along the magnetic field along with the cyclotron motion in the plane normal to the field H, obviously, quantizing Kz. The carrier non equilibrium due to magnetodynamic stimulation leading to transverse magneto potential and the transverse diffusion currents has been expressed in terms of simple analytical equations and the corresponding Qmechanical transformation has been obtained by the operator formalism of the dynamical variables. The data of Si(IV) polymeric systems have been employed to construct the useful magnetodynamical parameters such as cyclotron frequency, Hall angle, Rh-factors, QHE, frequency dependent magneto-conductivity, Landau Sub-bands, free space wavelength, magnetic energy, nH/n0, ne/n0, de Haas-Van Alphen Efeect, plasma frequency. The oscillatory behaviour of such quantities reveal the available low temperature phenomenon at room temperature. The findings, will prove actively, beneficial to construct the big quantized systems as messoscope states even at rcom temperatures.