

INFLUENCE OF PIEZO-ACTIVE ACOUSTIC
VIBRATIONS ON CHARGE TRANSPORT
AND PHOTOLUMINESCENCE IN DOPED
GaAs/AlGaAs STRUCTURES

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S u m m a r y

Charge transfer processes in the two-dimensional electron gas of GaAs/AlGaAs hybrid structures subjected to piezo-active vibrations within ultrasound frequency range have been studied both experimentally and theoretically. Changes in the photoluminescence spectrum of such structures and the spatial variations of this spectrum in the excited high-frequency piezoelectric field have been registered experimentally. The data obtained are in good agreement with the results of numerical simulation. The piezoelectric field component normal to the GaAs-plane has been shown to control the processes of perpendicular charge transport in the structure concerned. A bend in the current-voltage characteristic of the structure, typical of the process of charge-carrier resonant tunneling through the barrier layer, has been registered; the corresponding model of band bending in the piezoelectric field has been proposed.