

PECULIARITIES
OF SPACE-TIME PERTURBATION WAVE
PROPAGATION IN SEMICONDUCTOR
UNDER THE PHOTO GUNN EFFECT

P.M. Gorley, P.P. Horley, S.M. Chupyra

Yuri Fedkovych Chernivtsi National University
(2, Kotsyubynsky Str., Chernivtsi 58012, Ukraine;
e-mail: semicon@chnu.cv.ua)

S u m m a r y

In the framework of a one-dimensional field model, we have carried out the theoretical investigation of the space-time perturbation wave propagation in a semiconductor with n -GaAs parameters under the simultaneous action of a carrier-warming electric field and a laser light (with the space-time constant intensity) in dependence on the control parameters: the incident light wave intensity, dopant compensation degree, and external electric field intensity. It is shown that it is possible to find a specific combination of the material parameters, external influence, and wave numbers, under which the spontaneous contact of equal-frequency surfaces can be observed in the crystal under study.