

Computation of current carriers mobility in III-V semiconductor compounds

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III-V semiconductor compounds are of great interest for manufacture modern optoelectronics with perfect operational parameters. The quality of devices is determined by the electrical properties of the charge carriers mobility of active part of devices- semiconductor material. But at investigation of current carriers mobility the necessary stage is comparison of experimental results with theoretical prediction. Usually theoretical calculations are performed manually. However appropriate components of mobility are expressed by very complicated formulas and their treatment require a lot of time. Therefore, the goal of our paper is to find appropriate method for calculation of current carriers mobility for application in study of semiconductors electrical properties with high accuracy.

There are presented results of programming analytical expressions of the charge carriers mobility components connected with main scattering mechanisms of electrons in semiconductors for arbitrary degeneracy of charge carriers gas. The high accuracy calculation has been implemented by using numerical methods. General program has been developed in Matlab to calculate appropriate mobility in III-V type semiconductors with high precision accuracy. Calculations have been done for InAs compound single crystals.

Biography

Revazi Kobaidze is Phd Student at Ivane Javakhishvili Tbilisi State University he works on Non-volatile memory devices and also works in Laboratory of Semiconductor Materials, Ferdinand Tavadze Institute of Metallurgy and Materials Science as a scientist where he is involved in numerical

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Category: oral presentation