08.P1.07 Anisotropic mobility model for GaInAs covering full composition and strain range in the GaAs-InAs system

Ch. KÖPF, H. Kosina, and S. Selberherr

Institute for Microelectronics, TU Vienna Gusshausstrasse 27-29, A-1040 Vienna, Austria

A mobility model for strained GaInAs is proposed which accounts for anisotropy caused by strained-layer epitaxy. It gives in-plane and perpendicular mobility as functions of the composition and in-plane strain independently. Based on deformation potential and $k \cdot p$ formulism expressions for the effective masses are obtained, which are employed in a Monte Carlo calculation. The results are used to construct a model which relates the strained mobility components to the unstrained bulk quantities and the strained masses in a straightforward manner.