Abstracts

Monte Carlo simulation of microwave noise temperature in cooled GaAs and InP

J.M.M. Pantoja, Chih-I Lin, M. Shaalan, J.L. Sebastian and H.L. Hartnagel. "Monte Carlo simulation of microwave noise temperature in cooled GaAs and InP." 2000 Transactions on Microwave Theory and Techniques 48.7 (Jul. 2000, Part II [T-MTT] (Special Issue on Microwave and Communication Applications at Low Temperature)): 1275-1279.

A simulation at microscopic level of the intrinsic microwave noise temperature associated with GaAs and InP semiconductors under far from equilibrium conditions has been performed. The dependence of the noise temperature on the electric field, doping level, and physical temperature has been investigated, and the results show the existence of threshold fields above which electron heating and partition noise due to intervalley scattering can make the cooling inefficient in terms of noise improvements. A comparison with available experimental data has also been made to verify the accuracy of the models used in the simulation.

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