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Title

Correlation between low-frequency current-noise enhancement and high-frequency oscillations in GaN-based planar nanodiodes: A Monte Carlo study

Source

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Abstract

We present a spectral analysis of time sequences of current, calculated by means of Monte Carlo simulations, in GaN-based asymmetric nanodiodes, devices that are potential candidates to exhibit Gunn oscillations. It is found that the low-frequency noise increases significantly for biases close to the threshold voltage of Gunn oscillations, taking place at much higher frequencies of hundreds of gigahertz. Due to the inherent difficulty in detecting so fast fluctuations, the measurement of the low-frequency noise can be a quite useful tool for predicting current oscillations at sub-terahertz frequencies in these devices. (12 References).