Shot Noise in Negative-Differential-Conductance Devices

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Shot noise: Fluctuations of the current flowing through a device that result from the discreteness of the charge carrier. Shot noise provides information on the charge carriers and the transport mechanism in the device. The shot noise measurements in semiconductor heterostructure devices shed light on how the devices operate, beyond information provided by the electrical conductance. The shot noise in a p-i-n photodiode with an embedded superlattice showed reduction of shot noise relative to the Poissonian noise ($2eI$) at low electric fields regardless of impinging photon energy.