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Effects of time dependence of multiplication process on avalanche noise $\hat{a} \sim \dagger$

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Abstract

Theoretical and experimental studies of noise generated due to the randomness of the multiplication process in the avalanche region of a uniform diode are presented. The theory extends the results of McIntyre to include the time dependence of the multiplication process. It also shows the correspondence between the results of McIntyre, Gummel and Blue, Hines and Tager. The space-charge feedback and transit-time effects have been neglected in this analysis. The theoretical and the experimental results described have shown that even at frequencies well below transit-time frequency, the importance of the factor resulting from consideration of the time dependence of the multiplication process cannot be ignored.

The measurements of the avalanche noise on uniform $p^+ - n - n^+$ silicon diodes are found to be in good agreement with the theory presented here.



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[†] This work was initiated while author was associated with Cornell University, New York.

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Effects of time dependence of multiplication process on avalanche noise, in this regard, it should be emphasized that the cluster vibrato significantly transforms the age crisis of the genre, working on the project.

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