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Modeling Temperature dependent Avalanche Characteristics of InP

Supplementary Material

Jonathan D. Petticrew, *Student Member, IEEE*, Simon J. Dimler, Chee Hing Tan, *Senior Member, IEEE*, and Jo Shien Ng, *Member, IEEE*.

I. TEMPERATURE DEPENDENT GAIN COMPARISON

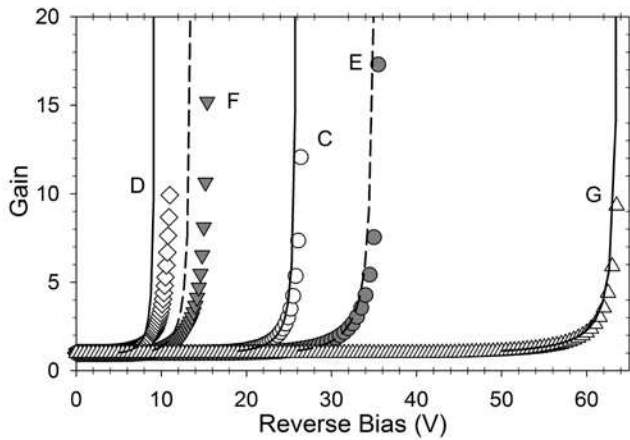


Fig. S1 Comparison of $M(V)$ simulated using the recurrence equations and the $\alpha^*(E)$ and $\beta^*(E)$ expressions from Table 3 with experimental results (symbols) [18], for three InP P-I-N (device C, D and G) and two N-I-P devices (device E and F) at 290K.

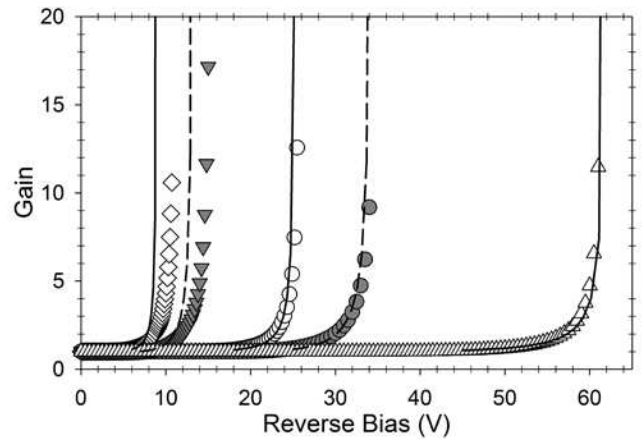


Fig. S2 Comparison of $M(V)$ simulated using the recurrence equations and the $\alpha^*(E)$ and $\beta^*(E)$ expressions from Table 3 with experimental results (symbols) [18], for three InP P-I-N (device C, D and G) and two N-I-P devices (device E and F) at 250K.

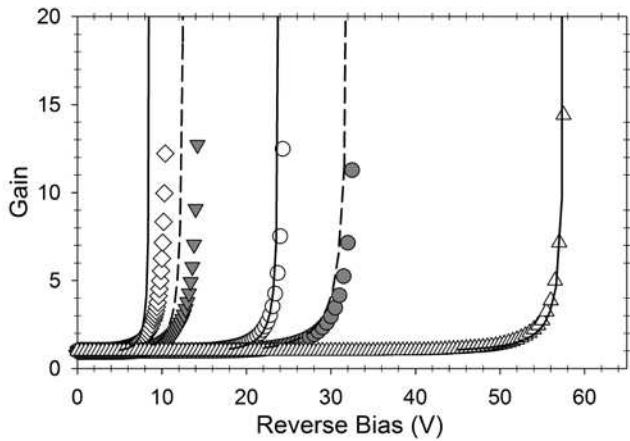


Fig. S3 Comparison of $M(V)$ simulated using the recurrence equations and the $\alpha^*(E)$ and $\beta^*(E)$ expressions from Table 3 with experimental results (symbols) [18], for three InP P-I-N (device C, D and G) and two N-I-P devices (device E and F) at 200K.

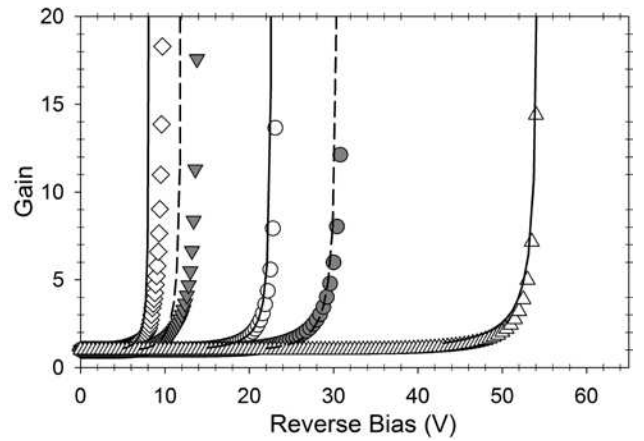


Fig. S4 Comparison of $M(V)$ simulated using the recurrence equations and the $\alpha^*(E)$ and $\beta^*(E)$ expressions from Table 3 with experimental results (symbols) [18], for three InP P-I-N (device C, D and G) and two N-I-P devices (device E and F) at 150K.

II. ROOM TEMPERATURE $F(M)$

Figure S5 shows a comparison of recurrence generated $F(M)$ results that shows reasonable agreement to experimentally measured results except for device A.

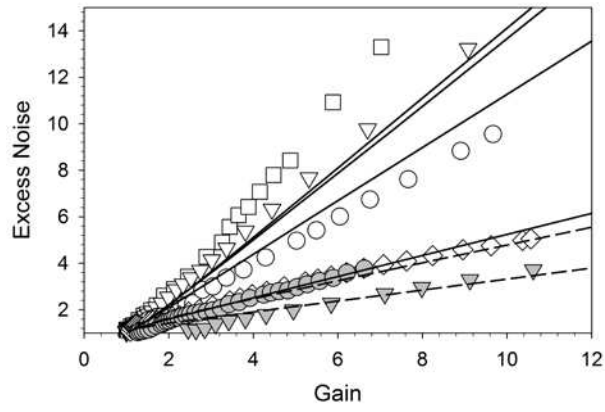


Fig. S5 Comparison of $F(M)$ simulated using the recurrence equations and the $\alpha^*(E)$ and $\beta^*(E)$ expressions from Table 3 with experimental results (symbols) [8], for four InP P-I-N (device A-D) and two N-I-P devices (device E and F) at 290K.