Modeling Temperature dependent Avalanche Characteristics of InP
Supplementary Material

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I. Temperature dependent gain comparison

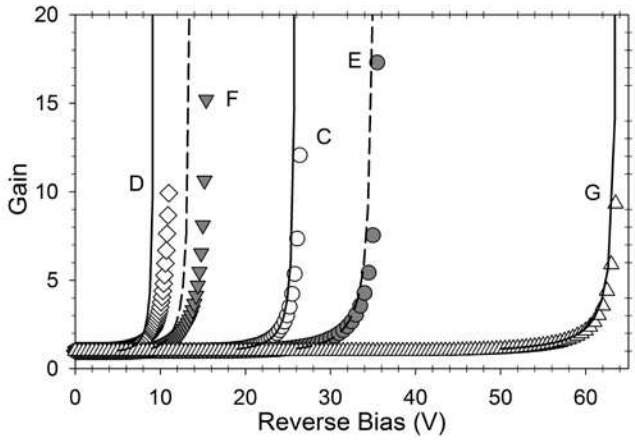

Fig. S1 Comparison of $M(V)$ simulated using the recurrence equations and the $\alpha^*(E)$ and $\beta^*(E)$ expressions from Table 3 with experimental results (symbols) [18], for three InP P-I-N (device C, D and G) and two N-I-P devices (device E and F) at 290K.

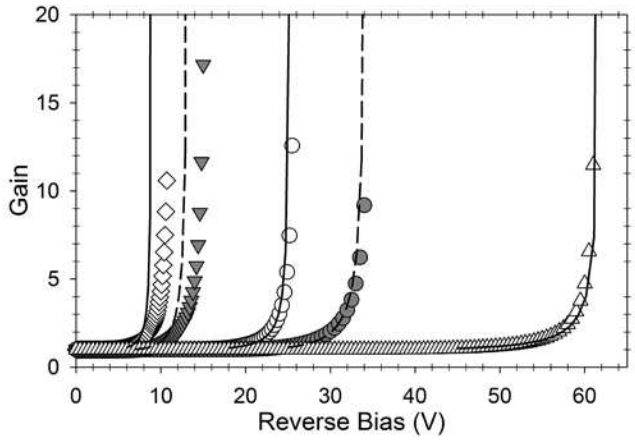

Fig. S2 Comparison of $M(V)$ simulated using the recurrence equations and the $\alpha^*(E)$ and $\beta^*(E)$ expressions from Table 3 with experimental results (symbols) [18], for three InP P-I-N (device C, D and G) and two N-I-P devices (device E and F) at 250K.

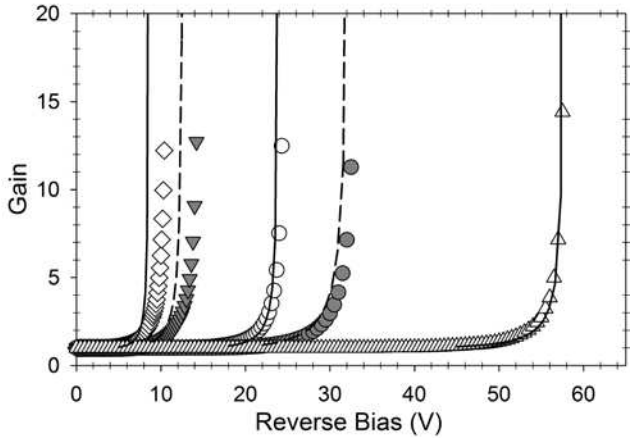

Fig. S3 Comparison of $M(V)$ simulated using the recurrence equations and the $\alpha^*(E)$ and $\beta^*(E)$ expressions from Table 3 with experimental results (symbols) [18], for three InP P-I-N (device C, D and G) and two N-I-P devices (device E and F) at 200K.

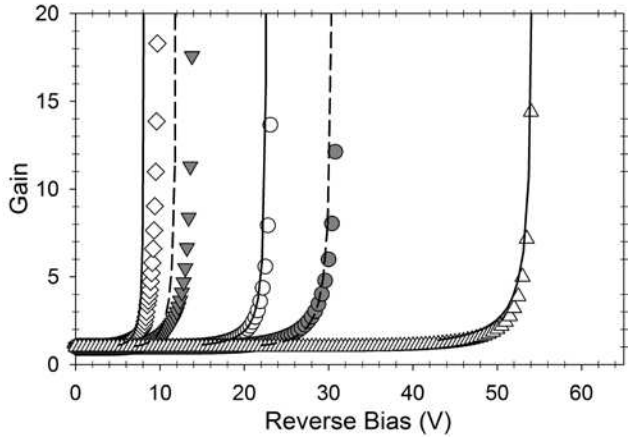

Fig. S4 Comparison of $M(V)$ simulated using the recurrence equations and the $\alpha^*(E)$ and $\beta^*(E)$ expressions from Table 3 with experimental results (symbols) [18], for three InP P-I-N (device C, D and G) and two N-I-P devices (device E and F) at 150K.

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.

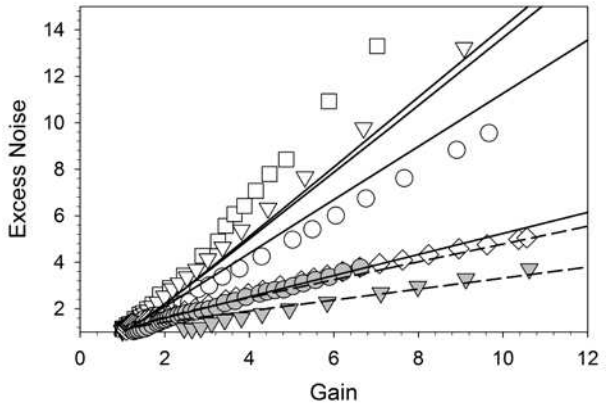

Fig. S5 Comparison of $F(M)$ simulated using the recurrence equations and the $\alpha^*(E)$ and $\beta^*(E)$ expressions from Table 3 with experimental results (symbols) [8], for four InP P-I-N (device A-D) and two N-I-P devices (device E and F) at 290K.