

**MODELING OF MULTISTAGE DEPRESSED  
COLLECTORS USING A 3D CONFORMAL  
FINITE-DIFFERENCE TIME-DOMAIN  
PARTICLE-IN-CELL CODE**

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The feasibility of modeling a multistage depressed collector using a conformal finite-difference time-domain particle-in-cell code has been studied. A feedback mechanism is implemented to provide stable time-dependent voltages for each stage of the depressed collector. An arbitrary space-time dependent spent beam distribution can be given in our time domain simulations. We demonstrate the design of a five stage depressed collector recovering a triangular spent beam distribution achieving an energy recovery efficiency of 70%. Detail modeling and code capabilities will be presented.

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\* Work supported by Defense Acquisition Program Administration and Agency for Defense Development.