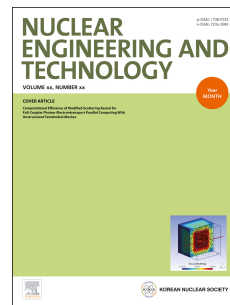


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Computer Modeling, Characterization and Applications of GaAs Gunn Diodes at Radiation Environments

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ABSTRACT

The present paper reports on a trial to shed further light on the characterization, applications, and operation of radar speed guns or Gunn diodes on different radiation environments of neutron-or-gamma-fields. To this end, theoretical and experimental investigations of microwave oscillating system for outer-space applications were carried out. Radiation effects on the transient parameters and electrical properties of the proposed devices have been studied in detail with the application of computer programming. Also, the oscillation parameters, power characteristics, and bias current were plotted under the influence of different gamma -and neutron -irradiation levels. Finally, shelf or oven annealing processes were shown to be satisfactory techniques to recover the initial characteristics of the irradiated devices.

Keywords: Transferred electron devices, gamma-dose, neutron-fluence, microwave oscillator, mobility, domain excess field, and forced-and shelf-annealing.

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