A simulated annealing algorithm for the optimization of multistage depressed collector efficiency

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ABSTRACT

The microwave traveling wave tube amplifier (TWTA) is widely used as a high-power transmitting source for space and airborne communications. One critical factor in designing a TWTA is the overall efficiency. However, overall efficiency is highly dependent upon collector efficiency; so collector design is critical to the performance of a TWTA. Therefore, NASA Glenn Research Center has developed an optimization algorithm based on Simulated Annealing to quickly design highly efficient multi-stage depressed collectors (MDC).

INDEX TERMS

- **IEEE Terms**
  Algorithm design and analysis , Design optimization , Electromagnetic heating , Electrons , High power amplifiers , Microwave amplifiers , NASA , Simulated annealing , Space exploration , Space heating
- **INSPEC**
  - **Controlled Indexing**
    simulated annealing , travelling wave amplifiers
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    design optimization , microwave traveling wave tube amplifier , multistage depressed collector efficiency , simulated annealing algorithm

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