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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

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simulated annealing , travelling wave amplifiers

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