

Abstract Submitted  
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**Investigation of a 94 GHz Pseudospark-Sourced Klystron<sup>1</sup>** DAVID BOWES, HUABI YIN, ADRIAN CROSS, WENLONG HE, ALAN PHELPS, KEVIN RONALD, University of Strathclyde, XIAODONG CHEN, DAOHUI LI, Queen Mary College, University of London — Work is ongoing at the University of Strathclyde to design, construct and test a klystron amplifier with an operating frequency of 94 GHz using a pseudospark discharge beam source. A pseudospark is a form of low-pressure, high-current discharge which produces an electron beam possessing high brightness and self-focusing properties during the final stages of the discharge. Single-gap pseudospark experiments were performed in order to assess the feasibility of scaling down in size previous work carried out at the University of Strathclyde. Using 1mm cathode and anode apertures with 3mm separation, a 10kV voltage applied at a pressure of 100mTorr resulted in a 4 A beam current, which compares favourably with previous discharges. A 3-cavity 94 GHz klystron has been simulated with the particle-in-cell code MAGIC-2D with pulsed voltage and current inputs in keeping with possible pseudospark discharge traces. Efficiency and gain were simulated at 7.38% and 16.5 dB respectively.

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