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Experimental Measurements of a High-Energy Pseudospark-Produced Electron Beam JING HU, JOSHUA L. ROVEY, Missouri University of Science & Technology, SCOTT KOVALESKI, University of Missouri-Columbia, AEROSPACE PLASMA LABORATORY TEAM, UNIVERSITY OF MISSOURI-COLUMBIA COLLABORATION — This paper presents the progress thus far in the investigation of pseudospark-produced electron beams for medical applications. A twenty-six-gap pseudospark device is fabricated with different insulators and tested as the electron beam source. The discharge capacitor between the anode and cathode to store electrical energy is incorporated into the stacked ring design to minimize inductance. The system is operated at 100kV. Two Rogowski coils are positioned in the hole of anode flange and external capacitors to measure the total beam and discharge currents. Further, a small Langmuir probe and a Faraday cup are used to determine the energy of the beam through the comparison of the time that the e-beam passes them. Results of the scaling study for the electron beam current with breakdown voltage, gas pressure, external capacitance, and the effect of insulator material on pseudospark operating characteristics are presented.

Jing Hu
Missouri University of Science & Technology

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