Abstract Submitted
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Use of a Plasma Cathode Electron (PCE) source in an Electron Beam Integrated Thruster (EBIT)[1] MAX LIGHT, TSITSI MADZIWA-NUSSINOV, PAT COLESTOCK, RON KASHUBA, RICK FAEHL, ISR-6, Los Alamos National Laboratory — The electron Beam Integrated Thruster (EBIT) plasma propulsion concept centers around the use of an electron beam to ionize a propellant; a more efficient ionization mechanism than conventional electric propulsion concepts. In this paper we outline the EBIT concept, in particular, the generation of the electron beam in a Plasma Cathode Electron (PCE) source. The PCE beam source utilizes a plasma as an electron beam cathode, eliminating lifetime and heating issues associated with material cathodes. Our PCE source was created using 1.5kW of microwave power at 2.45GHz delivered in a static magnetic field of 875Gauss. We were able to drive electron beams of greater than 100A in our source with very high beam efficiencies by biasing the ECR source chamber to -120V.

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