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Development of Double Discharge Pulsed Electron Beam Generator and its Preliminary Applications in Material Processing

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**Abstract:** This article presents the construction of a fast, intense electron beam generator, several of its operational properties and its preliminary applications. A fast filamentary discharge produced in a tube filled with Argon gas at pressure of about 0.1 torr. An electron beam is obtained with a current intensity of about 0.6 A for a 25 ns duration. The length of the filamentary discharge and the behavior of the beam in the magnetic field are examined. The interaction of the beam with different targets was investigated by Scanning Electron Microscope. It is also demonstrated that the device can be used to drill holes of several tens of microns in diameter and it can be used for material coating.

**Key Words:** Electron beam, Fast pulsed discharge, Material processing

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