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Observation of counter flowing ExB drifts in annulus magnetized SHANTANU KARKARI, Institute for Plasma Research, Bhat, Gandhinagar, SOURABH JAIN, ISHETA MAJUMDAR, Indian School of Mines, Dhanbad, HASMUKH KABARIYA, CHIRANJEEV SONEJI, DHRUMIL PATEL, Institute for Plasma Research, Bhat, Gandhinagar — High density plasma sources based on magnetron devices are widely popular in thin film deposition systems. In this paper we present the characteristic properties of an intense magnetized plasma column produced using a d.c magnetron source. The plasma column extends up to a distance of 50 cm in the presence of uniform magnetic field ranging up to 150 mTesla. The device comprise of a hollow cathode of diameter 5 cm and a differentially pumped constricted hollow anode. Measurement of radial plasma parameters using planar Langmuir probe shows an off-centered density peak exceeding 10^{17} m^{-3} at a distance of 15 cm from the source. The detail analysis of the electron-saturation region of the probe characteristics in the central column shows a double hump structure at approximately 10 Volts above the plasma potential. This feature reveals the presence of an ion beam in the plasma column which is absent outboard from the axis. In addition energetic electrons having energies greater than 100 eV are also inferred from the probe characteristic. Preliminary assessment regarding the origin of these energetic particles is attributed to the possibility of a virtual anode inside the magnetron device.

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