

Normal and Reversed Impurity Flows in the DIII-D Divertor

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Flows of carbon ions along the magnetic field lines in the DIII-D tokamak divertor are determined from Doppler shifts of C II and C III spectral lines. Flows are normal, *i.e.*, directed toward the target plate, except in a band close to the outer separatrix where reversal is observed. The assumption of equal carbon and deuteron temperatures implies that normal carbon flows in the outer leg are 0.3–0.7 of the deuteron sound speed. The normally-flowing ions in the inner leg and the reversed-flowing group in the outer leg achieve speeds that are near Mach 1.