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Neutral Particle Measurements of the Pitch-Angle Scattering Rate, Beam-Ion Transport, and Radial Electric Field¹ W.W. HEIDBRINK, E.M. CAROLIPIO, T. TRAN, University of California, Irvine, K.H. BURRELL, General Atomics — The DIII-D charge exchange diagnostic consists of an array of three vertically-viewing neutral particle analyzers and one horizontally scanning analyzer.² In addition to passive measurements, three of the detector sightlines intersect heating beams, permitting active charge exchange measurements. We report on several planned experiments. In the first, a sequence of short beam pulses are injected to measure the pitch angle scattering rate of the beam ions. Profile measurements of the electron and carbon densities and of the electron temperature permit accurate calculation of the expected rate. In the second, profiles of the beam ion density indicate anomalous transport of beam ions in the presence of Alfvén activity. In the third, simultaneous measurements of the edge radial electric field E_r with several diagnostics test the assertion³ that E_r changes gradually at the L-H transition.

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²E.M. Carolipio and W.W. Heidbrink, *Rev. Sci. Instrum.* **68** (1997) 304.

³W. Herrmann *et al.*, *Phys. Rev. Lett.* **75** (1995) 4401.

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