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**Magnetic equilibrium reconstruction of Pegasus plasmas**<sup>1</sup> B.J. SQUIRES, N.W. EIDIETIS, M.J. FROST, R.J. FONCK, G.D. GARSTKA, M.B. MCGARRY, E.A. UNTERBERG, University of Wisconsin-Madison — MHD equilibrium reconstruction on the Pegasus Toroidal Experiment is the major tool used to characterize the plasma across varied operational regimes. Reconstructions are complicated by the presence of wall currents. Since the vacuum vessel can carry currents comparable to the plasma current for much of the shot duration, vessel current estimates are constrained by an array of external flux loops. The characteristics of plasmas produced by helicity injection by plasma guns are of particular interest. Reconstructions of these plasmas indicate that the current profile  $J(r)$  is relatively hollow, as expected in cases where current is driven at the edge. This gives rise to reverse magnetic shear in the core region. In contrast, purely ohmically driven plasmas typically exhibit peaked  $J(r)$  profiles and minimal magnetic shear in the plasma interior. In the near future, data from a new 2D soft X-ray camera will be incorporated as a measurement of flux surface shape which provides a constraint on the current profile.

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