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An Extension of the Miller Equilibrium Model into the X-Point Region M.D. HILL, R.W. KING, W.M. STACEY, Georgia Institute of Technology — The Miller equilibrium model [1] has been extended to better model the flux surfaces in the outer region of the plasma and scrape-off layer, including the poloidally non-uniform flux surface expansion that occurs in the X-point region(s) of diverted tokamaks. Equations for elongation and triangularity are modified to include a poloidally varying component and grad-r, which is used in the calculation of the poloidal magnetic field, is rederived. Initial results suggest that strong quantitative agreement with experimental flux surface reconstructions and strong qualitative agreement with poloidal magnetic fields can be obtained using this model. Applications [2] are discussed. A major new application is the automatic generation of the computation mesh in the plasma edge, scrape-off layer, plenum and divertor regions for use in the GTNEUT [3] neutral particle transport code, enabling this powerful analysis code to be routinely run in experimental analyses. 1) Phys. Plasmas 5 (1998) 973-978; 2) Phys. Plasmas 15 (2008) 122505; 3) Comp. Phys. Comm. 161 (2004): 36-64. Work supported by US DOE under DE-FC02-04ER54698.

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