

Abstract Submitted  
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**Overview of the Pegasus toroidal experiment**<sup>1</sup> A.C. SONTAG, D.J. BATTAGLIA, M.W. BONGARD, J.A. COLE, C.C. HEGNA, E.T. HINSON, B.A. KUJAK-FORD, B.T. LEWICKI, A.J. REDD, A.P. ROBINSON, A.R. WIERSMA, G.R. WINZ, University of Wisconsin - Madison — Extremely low aspect ratio ( $A < 1.3$ ) allows Pegasus to achieve  $I_N > 12$  and  $\beta_t > 20\%$  Ohmically.  $I_p$  and  $q$ -profile manipulation using programmable magnet coil currents suppress internal tearing modes. Washer-stack point-current sources (plasma guns) are used to initiate non-solenoidal discharges with toroidal plasma current in excess of 60 kA via DC helicity injection. Present research is aimed at understanding the physics of this startup technique to form discharges with  $I_p$  200 kA without central induction. Low TF and high edge current allows potential study of peeling stability. Estimates using DCON indicate that the Pegasus plasma edge is peeling unstable, consistent with the observation of spatially coherent edge filaments and accompanying magnetic fluctuations. Planned upgrades to the center-column will increase the available Ohmic flux by a factor of 5-10 and the toroidal field by a factor of 5. These upgrades will support tests of the scalability of the point-source helicity injection and enable feasibility tests of advanced divertor configurations.

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