

## Recent Results from the PEGASUS Toroidal Experiment

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### Abstract

The PEGASUS Toroidal Experiment is an extremely low aspect ratio university-scale spherical torus with a major radius of 0.25 - 0.45 m.  $\beta_t$  values of 25% ( $\beta_N \sim 5$ ) have been obtained to date in PEGASUS with no evidence of a beta limit. Densities range up to the Greenwald limit. The toroidal field utilization factor,  $I_p/I_{TF}$ , has reached 1.2. Normalized currents ( $I_N = I_p/aB$ ) greater than 5 have been achieved. Stored energies are consistent with values expected from the ITER98pby1 confinement scaling. The evolution of the plasma current is often limited by an MHD instability, which results in a rapid decrease in  $dI_p/dt$ . An  $m=2$  mode is observed to rotate in the electron diamagnetic direction; the appearance of this mode is consistent with the existence of a  $q=2$  surface in the plasma. Recent experimental campaigns have focused on accessing high  $\beta_t$  plasmas with ohmic heating, characterizing the equilibrium and stability of these plasmas. A complete set of magnetics diagnostics and new plasma-facing components, including core armor and divertor plates were recently installed. A HHFW antenna was also installed. Initial loading tests with relatively large plasmas ( $A \sim 1.15$ ) show an impedance on the order of 1 ohm with the two straps anti-parallel.