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Initial Edge Stability Observations in the PEGASUS Toroidal Experiment[1] M.W. BONGARD, D.J. BATTAGLIA, G.D. GARSTKA, A.C. SONTAG, E.A. UNTERBERG, University of Wisconsin-Madison — Edge stability is an important consideration for design of fusion experiments, as transient heat loads generated by edge instabilities may damage the first wall. Such instabilities are now believed to include peeling (current driven) and ballooning (pressure driven) components. Peeling instability may be expected for high values of edge $j_{||}/B$ and low edge pressure gradient. This matches the operating space of Pegasus, with typical $<j_{||}/B>$ $\sim$100 kA/m^2, $|B|$ $\sim$ 0.01 T, and an L-mode edge. A new camera system has observed filamentary structures in the edge of nearly all ohmically-heated discharges. Ideal stability analysis of these discharges with DCON indicates marginal stability to resistive interchange for ψ_N $\geq$ 0.95. Modification of triangularity during startup is observed to delay instability onset. A plasma control system based on that used on DIII-D will allow study of the influence of plasma shaping on mode stability characteristics. An array of magnetic probes capable of insertion into the scrape-off layer and plasma edge is being developed to provide a local constraint on the edge current profile.

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