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Planned EBW Heating and Current Drive Experiments on Pegasus[1] G.D. GARSTKA, R.J. FONCK, B.T. LEWICKI, University of Wisconsin-Madison, S.J. DIEM, P.C. EFTHIMION, G. TAYLOR, Princeton Plasma Physics Laboratory — The Pegasus Toroidal Experiment provides an attractive opportunity for investigating the physics and implementation of electron Bernstein wave (EBW) heating and current drive in an overdense ST plasma. The toroidal field of 0.07-0.15 T on axis will provide fundamental resonant absorption of 2.45 GHz waves. The new plasma control system will provide a stable plasma edge to support resilient EBW coupling; initial tests will focus on the O-X-B mode conversion scenario. Experiments with up to 1 MW of RF power will address fundamental issues concerning EBWs in ST experiments. These include edge coupling, nonlinear effects (such as parametric instabilities) at the edge, ray propagation, deposition locations, and current drive efficiency, which may be as large as 60 kA/MW at high T_e. The proposed hardware is made up in large part of pieces from the PLT lower hybrid system. These include two 450 kW klystrons and associated systems, recirculators, and power transmission equipment.

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