Abstract Submitted
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Overview of Experiments from the Wisconsin Plasma Physics Laboratory (WiPPL)[1] CARY FOREST, University of Wisconsin - Madison, WIPPL TEAM[2] — WiPPL is a multi-machine, collaborative research facility directed toward fundamental topics in discovery plasma science: dynamos, reconnection, turbulence, particle acceleration, coherent structures, and plasma systems. Users from outside institutions have led and are leading WiPPL experimental projects on basic, astrophysical, and fusion plasma studies. We present an overview of recent WiPPL projects. On the Big Red Ball collisionless reconnection is studied with unprecedented spatial and temporal resolution; shock formation is studied with a novel theta pinch configuration; compact toroids are injected that create collisionless shocks for particle energization and heating studies. Enormous magnetic field amplification is observed in high beta Hall dominated Couette flow and a novel instability driven by differentially rotating electrons has been observed. On the Madison Symmetric Torus, tokamak plasmas are routinely created for a variety of studies: disruptions caused by loss of equilibrium in low q plasmas are studied; whistler waves driven by runaway electrons have been observed. Nonlinear behavior of tearing mode fluctuations versus Lundquist number are being studied in self-organizing reversed-field pinch plasmas.

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