

Abstract Submitted  
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**MST's Programmable Power Supplies: Results and Plans<sup>1</sup>** D.J. HOLLY, B.E. CHAPMAN, K.J. MCCOLLAM, J.C. MORIN, M.A. THOMAS, University of Wisconsin - Madison — Programmable power supplies for the toroidal field (BT PPS, recently commissioned) and poloidal field (BP PPS, now being designed) will maximize MST's inductive capabilities. The BT PPS gives unprecedented control of MST's toroidal field, and has already produced several key results. For example, it has provided routine reduction of the dominant magnetic fluctuations via inductive current profile control, and it has allowed the first production of tokamak plasmas in MST. These results have been somewhat limited, however, by the present passive control of the poloidal field. The planned BP PPS will augment tremendously MST's inductive control flexibility, and it will maximize MST's plasma current and pulse length. This supply will use IGBT H-bridge modules similar to those in the BT PPS. Groups of three 900-V modules in series will be combined to drive about  $\pm 80$  kA at  $\pm 2.5$  kV into the existing poloidal field transformer, connected at 10:1. The series-triplet topology allows control using seven-level Pulse Width modulation, which provides reduced ripple, noise, and IGBT switching losses.

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D. J. Holly  
University of Wisconsin - Madison

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