Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Pulse-Burst Laser Systems for Thomson Scattering on MST[1] D.J. DEN HARTOG, University of Wisconsin–Madsion, and Center for Magnetic Self-Organization in Laboratory and Astrophysical Plasmas, M.T. BORCHARDT, W.S. HARRIS, J.A. REUSCH, University of Wisconsin-Madison, Y.M. YANG, University of Wisconsin–Madison — A new purpose-built "pulse-burst" laser system is being constructed for the Thomson scattering diagnostic on the MST reversed-field pinch. This new laser will produce a burst of 1–2 J Q-switched pulses at repetition rates 5–250 kHz. It will operate at 1064 nm and is a master oscillator, power amplifier (MOPA) system. Variable pulse-width drive (0.15–20 ms) of the flashlamps in this laser will be accomplished by IGBT switching of large electrolytic capacitor banks. A subset of these power supplies has already been constructed and is currently being used to drive the flashlamps in the two existing commercial Nd:YAG lasers used for Thomson scattering on MST. Each of these upgraded lasers now produces a burst of up to fifteen 2 J Q-switched pulses (1064 nm) at repetition rates 1–12.5 kHz. Direct control of the laser Pockels cell drive enables optimal pulse energy extraction, and up to four 2 J laser pulses during one flashlamp pulse. These lasers are currently being used to study the dynamic evolution of electron temperature in MST. The new purpose-built "pulse-burst" laser system will further expand this capability.

[1]This work is supported by the U. S. Department of Energy and NSF.

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Date submitted: 14 Jul 2009 Electronic form version 1.4