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Upgrade to the MPTS Thomson scattering diagnostic in preparation for NSTX-U restart[1] BENOIT LEBLANC, AHMED DIALLO, PPPL — Upgrades to Multi-Pulse Thomson Scattering (MPTS) diagnostic are in progress. An innovative laser is being added to existing the two 30-Hz Nd:YAG lasers. The new laser also has 30-Hz base operation, but differs notably in its capacity of generating rapid bursts of nominally 50 pulses at either 1 KHz or 10 KHz. This Pulsed-Bursting Laser System (PBLS) is described elsewhere [1]. The current laser delivery optics, which supports two paraxial beam paths, is maintained. One beam path will be occupied by PBLS. The other two laser beams will be actively combined coaxially and will occupy the second beam path. The new laser arrangement will result in a 90-Hz baseline operation, plus the PBLS burst capability. While the existing sample-and-hold electronics is expected to track a 1-KHz sequence, it will not be able to follow a 10-KHz burst. For this purpose, ten radial channels, dedicated to the pedestal region, will be instrumented with 250-MHz digitizers. The NSTX-U longer plasma duration and increased heating power will be conducive to situations with sustained high background light, a condition exacerbated by the absence of viewing dump necessitated by machine geometry. Additional work is slated to study the behavior of the fast signal detection in presence of strong background light. [1] A. Diallo *et al.,* HTPD 2016, Madison, WI

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