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P1.1021 First results from the Thomson scattering diagnostics on Globus-M2

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See the full abstract here:
http://ocs.ciemat.es/EPS2019ABS/pdf/P1.1021.pdf

This work discusses first results of ne and Te measurements on Globus-M2 obtained with the upgraded Thomson scattering (TS) diagnostics. Globus-M2 is spherical tokamak with the following parameters R = 0.36m, r = 0.24m, Ip < 500 kA which differs from Globus-M by a two times higher magnetic field reaching 1 T. The upgrade Thomson scattering hardware consists of 12 TS digital polychromators representing a new generation of TS real-time spectral analytical equipment [1] based on 5GHz 14Bit ADC, ultra-low noise amplifiers and in-build computer with optical Gigabit Ethernet. The upgraded TS probing laser system consists of two lasers: Nd:Glass lasing at 1055 nm with pulse duration of 30 ns and Nd:YAG at 1064 nm with 3 ns duration. Nd:YAG laser is a prototype of the laser developed for ITER divertor Thomson scattering with shortening pulse duration (compare with common 10-15 ns) providing reduction of the accumulated plasma background and separating in time TS signal from stray light sources arranged at distances 0.5 m and more. Two probing laser wavelengths are planned to be used for self-calibration of relative sensitivity in two spectral channels closest to the laser lines. Signal processing as well as methods and instrumentation to reduce measurement errors are also under discussion.

[1] V. Solokha et al (2018). Digital filter polychromator for Thomson scattering applications. Journal of Physics: Conference Series. 982. 012003. 10.1088/1742-6596/982/1/012003.

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