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## P3.061 Divertor infrared thermography at COMPASS

*Wednesday, 19 September 2018 11:00 (2 hours)*

A new fast divertor infra-red (IR) thermography system was put into operation at COMPASS. It provides full radial coverage of the bottom open divertor with pixel resolution  $\sim 0.6\text{-}1.1$  mm/px. on the target surface (0.04-0.12 mm/px. mapped to the outer midplane) and time resolution better than 20  $\mu\text{s}$ . This setup provides unique capabilities for heat flux profile measurements simultaneously in the inner and the outer divertor regions in various plasma regimes: exceptional temporal resolution secure ELM-resolved heat flux measurements, good spatial resolution is adequate for measurements of very narrow heat flux decay lengths in inter-ELM H-mode periods and for study of profile modification during the application of resonant magnetic perturbations.

Individual parts of the system are described: the fast IR camera TELOPS Fast-IR 2K, its magnetic shielding box and the positionable holder, the 1m long IR endoscope consisting of 14 Ge and Si lenses securing of-axis view from the upper inner vertical port. The special graphite divertor tile optimized for IR thermography is presented as well. It is equipped with the heating system allowing tile preheating up to 250°C, embedded thermoresistors, the calibration target (a deep narrow hole acting as a black body radiator) for in-situ system calibration including estimation of the target surface emissivity and the roof-top shaped structure increasing magnetic field incidence angles above 3 degrees.

Laboratory tests of the system performed during its commissioning are presented (system transmission, spatial resolution characterised by the slit response function) as well as examples of the first experimental results.

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