[BoldFont = LinLibertine$_R B.otf, ItalicFont = LinLibertine_R I.otf, BoldItalicFont = LinLibertine_R BI.otf, Path = /opt/indico/.venv/lib/python2.7/site-packages/indico_fonts/][BoldFont = LinBiolinum_R B.otf, ItalicFont = LinBiolinum_R I.otf, Path = /opt/indico/.venv/lib/python2.7/site-packages/indico_fonts/]

HTPD 2018

Contribution ID : **133** Type : **not specified**

11.3 Infrared Imaging Systems for wall protection in the W7-X stellarator

Wednesday, 18 April 2018 19:30 (30)

Wendelstein 7-X aims at quasi-steady state operation with up to 10 MW of heating power for 30 minutes. Power exhaust will be handled predominantly via 10 actively water cooled CFC based divertor units designed to withstand convective loads of 10 MW/m2 locally in steady state. If local loads exceed this value, a risk of local delamination of the CFC and failure of entire divertor modules arises. Infrared endoscopes for monitoring all main plasma facing components are being prepared and near real time software tools are under development to identify areas of excessive temperatures arising, distinguish them from none critical events, and trigger alarms. Test with different cameras were made in the recent campaign. Long pulse operation enforces additional diagnostics design constraints: e.g. the optics need to be thermally decoupled from the endoscope housing. In the upcoming experimental campaign a graphite scraper element (SE), in front of the island divertor throat will be tested as a possible means to protect the divertor pumping gap edges during the transient discharge evolution. An additional imaging endoscope systems will be used for detailed observations of the plasma interactions and heat loads on the SE and high resolution measurements at one of the divertors.

Primary author(s) : JAKUBOWSKI , Marcin Waclaw (Max-Planck-Institut für Plasmaphysik)

Presenter(s) : JAKUBOWSKI , Marcin Waclaw (Max-Planck-Institut für Plasmaphysik)

Session Classification : Session #11, Wednesday Night Invited Talks, Chair: G. McKee