MAX-PLANCK-INSTITUT
FÜR PLASMAPHYSIK

Status of profile diagnostics before OP2.2

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EUROfusion

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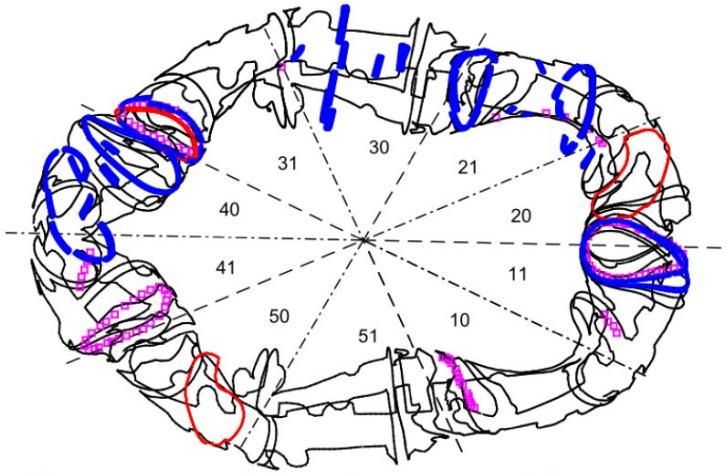
Content

- Overview of the status of the most essential diagnostics before the campaign
- Multiple changes and upgrades were performed between the campaigns. From hardware side, the diagnostics are mostly prepared, thanks to the intense works of ROs and diagnosticians.
- The plasma commissioning phase is essential for integral testing, especially so for the data analysis part. The report should be updated after that.
- Most diagnostics do not use Minerva for time critical analysis, alternatives were developed.
- Scheduler is not used for triggering. New solution (w7x_ana) will be under testing for core diagnostics. Once the interfaces are fixed, more diagnostics can be added.
- Analysed data will be available in Archive and via Profile Cooker.
- Covered diagnostics: magnetics, interferometer, XICS, CXRS, ECE, Thomson scattering, alkali-beam.

Magnetics

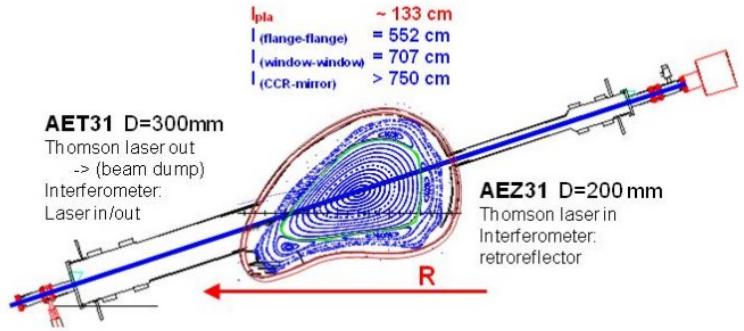
Quantities	**Wdia, Ip, Mirnov coils**
RO	**K. Rahbarnia**
Hardware status	**fully prepared for operation**
Availability	**always**
Recent or open issues	**none**
Calibration	**done, verification with field ramp-up is planned for commissioning**
Analysed data provision	**after shot (Minerva, alternatives are prepared)**
log-book/wiki/data access	**data streams didn't change, aliases are prepared, log-book page is up to date, supported by Profile Cooker**
Misc	**detailed Mirnov analysis on request**



diamagnetic, Rogowski, saddle, Mirnov coils

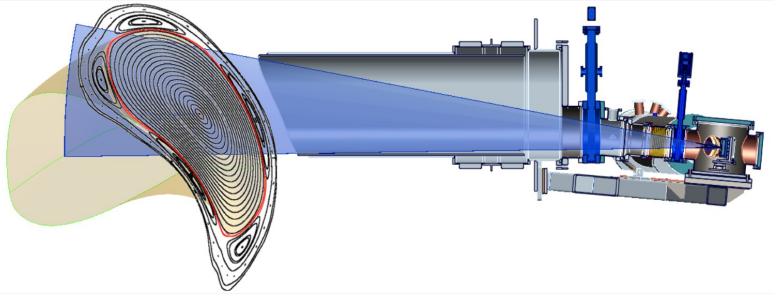
Single channel interferometer

Quantities	**line integrated density**
RO	**J. Knauer**
Hardware status	**prepared**
Availability	**always**
Recent or open issues	**SPS control issues after upgrade of the cooler were solved**
Calibration	**final adjustment and calibration before the plasma commissioning phase**
Analysed data provision	**automatic, after shot**
log-book/wiki/data access	**data streams didn't change, log-book page is up to date, supported by Profile Cooker**
Misc	**fast-Data on request (J. Brunner)**



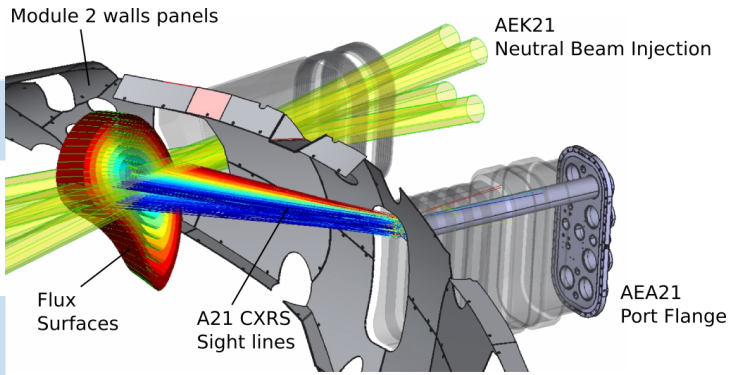
XICS

Quantities	**profiles of Ti, Er, impurity densities**
RO	**A. Langenberg**
Hardware status	**prepared**
Availability	**always, Ar-injection is neccessary**
Recent or open issues	**none**
Calibration	**LOS are calibrated**
Analysed data provision	**line integrated after shot, inverted profiles overnight**
log-book/wiki/data access	**as before, log-book page is up to date, supported by Profile Cooker**
Misc	**impurities on request**



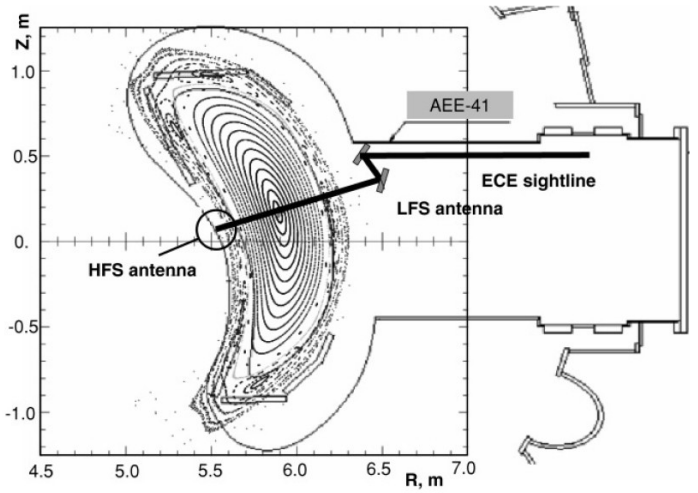
CXRS

Quantities	**Ti, n_C (on request from T. Romba)**
RO	**O. Ford**
Hardware status	**prepared**
Availability	**Available with NI21, automatic operation is under preparation**
Recent or open issues	**none**
Calibration	**calibrated, shots for cross-validation with XICS are desirable (oliford_007)**
Analysed data provision	**Ti abot 30 s after shot, automatic mode**
log-book/wiki/data access	**wiki is upto date, supported by Profile Cooker**
Misc	**For other impurities (Ar, Ne, He, B, N, O, Fe) contact the RO. Fast system (1 kHz) on request.**



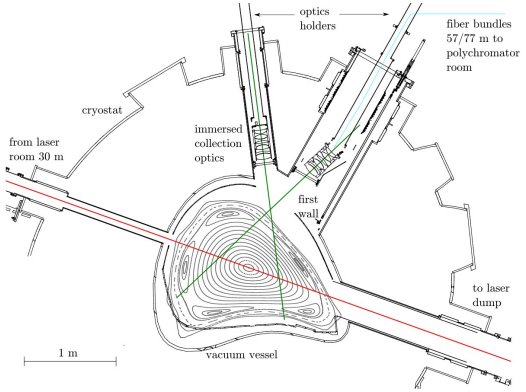
ECE

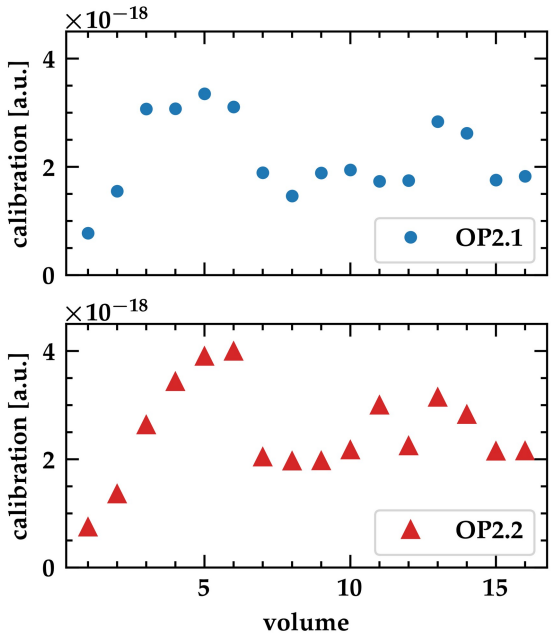
Quantities	**Te-rad, Te**
RO	**M. Hirsch**
Hardware status	**32 channels are prepared, racks are temperature stabilized**
Availability	**always, under the X2 cut-off**
Recent or open issues	**noise level is about 5x for HFS channels, does not affect Te; linearity is under investigation; 2 MHz only for 20 s**
Calibration	**during commissioning; noise source every morning - to be automated; commissioning proposal for B-scan (hirsch_012)**
Analysed data provision	**Te-rad after shot (1 kHz); Te over night for every TS point - 92 CPUs; MCMP on request (N. Chaudhary)**
log-book/wiki/data access	**log-book is up to date; aliases are in preparation; Te-rad supported by Profile cooker**
Misc	**zoom system on request (Murugesan); X3 and W-band (for 1.7 T) radiometers are in preparation (J.F. Guerrero Arnaiz)**



Thomson scattering

Quantities	**ne, Te**
RO	**J. Knauer**
Hardware status	**prepared, 42 channels, 3x30 = 90 Hz (30 Hz fallback)**
Availability	**always available**
Recent or open issues	**improved laser identification and energy measurements; laser stability was also improved but remains to checked**
Calibration	**successful Raman calibration on 21.08; spectral calibration unchanged**
Analysed data provision	**two Python codes prepared to provide data after shot, testing during commissioning**
log-book/wiki/data access	**contact G. Fuchert; log-book to be upgraded; will be supported by Profile Cooker**
Misc	**burst mode is presently out of operation; two-wavelengths measurements will be tested; nine additional polys (about 18 new channels) will be added during OP2.2-OP2.3**





preliminary Raman calibration

Alkali-beam

Quantities	**edge ne, Ti (test phase, 1 Hz)**
RO	**M. Vecsei**
Hardware status	**prepared, possible adjustments of the beam during commissioning; resolution about 5 mm**
Availability	**should be routinely available, check with RO; ne < 8e19 m-2, Ti > 100 eV.**
Recent or open issues	**spectrometer adjustments for Ti**
Calibration	**completed**
Analysed data provision	**ne@10 Hz after shot, @10 kHz on request; Ti in test mode**
log-book/wiki/data access	**relatively up to date; support by Profile Cooker to be added**
Misc	**-**