

Contribution submission to the conference Erlangen 2018

Bolometry results of first divertor plasmas at the stellarator Wendelstein 7-X — •PHILIPP HACKER^{1,2}, DAIHONG ZHANG¹, RAINER BURHENN¹, THOMAS KLINGER¹, and W7-X TEAM¹ — ¹Max-Planck Institut für Plasmaphysik, EURATOM Association, D-17491 Greifswald, Germany — ²Ernst-Moritz-Arndt Universität Greifswald, D-17491 Greifswald, Germany

Results of the bolometer diagnostic studying plasmas generated in the stellarator Wendelstein 7-X with a first test divertor and all graphite tile baffles will be presented. The bolometer diagnostic is a metal film resistive detector system used to study the total radiated power without limitation of frequency bands. Two gold-foil detectors with up to 64 equidistant channels and collimating apertures are located on the inner side and bottom of the vacuum vessel at the same poloidal position, yielding a horizontal and vertical cut through the same plasma volume. Their fan-shaped line of sight provides full coverage of the stellarator cross-section and ensures maximum power absorption at a spatial resolution of $\sim 5\text{cm}$. The devices promise a long-term, stable response and high absorption coefficients in UV (sensitivity $>85\%$) and SXR ($>95\%$) radiation. Resistive calibration and offset correction through a shutter are performed in situ and on each corresponding discharge. The camera systems are water cooled and connected to graphite tiles and thermally high conductive structures to avoid thermal drifts of the electric components. Sufficient microwave shielding against stray radiation from the ECR heating has been achieved by placing virtually permeable wire-meshes in front of the detector.

Part: P
Type: Poster
Topic: Helmholtz Graduate School for Plasma Physics
Email: philipp.hacker@ipp.mpg.de