



Contribution ID: 1110

Type: not specified

## P3.063 Design manufacturing and testing of a Long Focus Spectro-Telescope mockup for H-alpha diagnostic

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

H-alpha and Visible Spectroscopy is one of the ITER first-plasma optical diagnostics providing full poloidal coverage of plasma scrape-off layer (SOL) by two poloidal-view channels in EP11, one tangential-view channel in EP12, and one divertor-view channel in UP02. The diagnostics is composed of several optical sub-units, which transfer the SOL image to the narrow-band filtered cameras located in the Port Cell and to the spectrometers in the diagnostic building. One of major subunits of the optical chain is the Long-Focus Spectro Telescope (LF-ST) which main functions are the transfer of the optical beam through the Port Interspace zone as well as the retention of the image quality in case of shifts and tip/tilts of the optical beam due to position variation of the VV or the in-vessel optical elements respectively.

The LF-ST is composed of 2 aspherical mirrors (TM1 and TM2) in an all-aluminum athermal layout (housing and mirrors). The telecentric design of the LF-ST is able to compensate displacements of the nominal optical beam of up to  $\pm 10$  mm & tip-tilt variations of up to  $\pm 0.5^\circ$ . The LF-ST is located in the Interspace Support Structure (ISS) and is equipped with a hexapod for non-operational pre-alignment of the LF-ST.

Based on the H-alpha PDR design a full-scale LF-ST mock-up has been designed, analyzed, manufactured, assembled and aligned. This paper summarizes the design and analysis process and describes the pre-alignment concept and execution. Final optical alignment within the complete optical chain of the H alpha components is presented in another contribution(1) to this meeting.

(1) 'Testing of the optical chain mock up of H-alpha and Visible Spectroscopy for ITER', A. Gorshov et al., submitted to SOFT-2018

**Presenter:** AGEORGES, Nancy (Kampf Telescope Optics GmbH)

**Session Classification:** P3