**Conceptual design of the visible / near-infrared camera**

**system for the COMPASS Upgrade tokamak**

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This contribution describes the visible and near-infrared (~1 μm) camera systems which are planned to observe the interaction between the plasma and the first wall in the first phase of the COMPASS Upgrade operation. The COMPASS Upgrade tokamak is a compact mid-size (R = 0.9 m) device being designed and assembled at the Institute of Plasma Physics in Prague [1]. Extensive auxiliary plasma heating power is foreseen (several megawatts of NBI and ECRH), therefore, extreme heat fluxes of order of tens MW/m 2 towards the plasma facing components are expected in 1-3 s long discharges [2]. Consequently, some of these cameras will also be used as interlocks, protecting the first wall against overheating by monitoring the material temperature.

The requirements for the camera systems to be met are introduced, e.g. temperature range of the first wall to monitor, large field-of-views and spatial and temporal resolutions to be reached. Issues raised with selection and technical implementation of the chosen visible and near-infrared cameras are described in detail, including optical design for visible and infrared spectral regions. Because the first (plasma facing) mirrors have to withstand high operating temperature of the first wall (up to 500oC), the concept is a compromise between the occupied port space (compact tokamak) and the diagnostic requirements. Pros and cons of three different considered concepts [3,4.5] will be discussed. The systems placement and their expected field-of-view and coverage will then be shown.

***References***

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