Recent Results in Edge Plasma Studies on the COMPASS tokamak

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COMPASS is a compact tokamak operated in divertor plasma configuration with an ITER-like plasma cross-section. COMPASS operates with a plasma current of up to 0.4 MA and is equipped by two new neutral beam injectors, which provide power of 2 x 0.4 MW at the beam energy of 40 keV for additional plasma heating. COMPASS operates in an Ohmic as well as NBI assisted H-mode accompanied by Type-I and Type-III Edge Localized Modes (ELMs) in the frequency range of 80 – 1500 Hz.

The main focus of the COMPASS scientific programme is on the edge, SOL and divertor physics supported by a comprehensive new diagnostic system. Characterization of H-mode and ELMs using newly developed diagnostic techniques, which allow for unique measurements of the plasma parameters in the pedestal, SOL and divertor regions, will be presented.

In addition, COMPASS is equipped with a system of coils for generation of magnetic perturbations (MP) with a toroidal mode number of n=2. A plasma response to applied magnetic perturbation measured by 100 diagnostic saddle loops covering the whole vacuum vessel will be presented and compared to the MARS-F model. In addition, the changes in divertor plasma during the application of MP will be shown.