Relative shift in pedestal position during power and gas scans at the COMPASS tokamak

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Recent analysis performed on ASDEX Upgrade, NSTX and DIII-D suggest that the density profile position plays an important role in pedestal stability [1,2,3]. On JET and on ASDEX Upgrade, it has been observed that the electron temperature and electron density profiles can have a different relative pedestal positions (so-called relative shift). As shown in [4], the increase of the relative shift is correlated with the reduction in the normalized pressure gradient, leading to a weakening of the pedestal stability. Systematic measurements of pedestal structure were performed during Ohmic and NBI-assisted H-modes at the COMPASS tokamak [5]. For P_{NBI} exceeding 200 kW the electron pedestal temperature reached 300 eV, allowing to achieve pedestal collisionality $\nu^*_{ped} < 1$ at $q_{95} \sim 3$. Measurements during the last 30% of the ELM cycle were considered for analysis and were processed as described in [6]. First results on analyses of pedestal shift on COMPASS were published in [7]. A linear trend between the shift and P_{sep} was observed similarly as on JET [8]. Dependence of α_{crit} on pedestal shift was more complex - it followed the trend observed previously on JET only for low collisionalities. The pedestal stability was analysed with the peeling-ballooning model [9].

In this contribution, analyses on an extended dataset was performed. Particularly, data from power and gas scans are included. The experimental data are compared to EPED.

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