

P5.1041 Analysis of inter-ELM bursts in the JET scrape-off layer

Friday, 12 July 2019 14:00 (2 hours)

See full abstract here <http://ocs.ciemat.es/EPS2019ABS/pdf/P5.1041.pdf>

Edge localized modes (ELMs) are typically considered as major concerns for the main chamber wall. However, other smaller but more frequent events, so called inter-ELM bursts, which appear between type-I ELMs, could also harm the plasma-facing components. Although they only occasionally appear in the JET scrape-off layer in the majority of the discharges, they became frequent [1] in a discharge series, where the effect of fuelling on plasma parameters was studied. These plasmas were in the middle of the JET operation space ($B_t=2.2$ T, $I_p=2.2$ MA, $P_{NBI}=13.5$ MW, $P_{ICRH}\sim 1-2$ MW), had high triangularity and the strike points were placed close to the pumping duct in the corner of the divertor. The bursts were detected as huge ($n_e\sim 1-1.5 \times 10^{19}$ m⁻³) complex and multi-peaked density perturbations in the Lithium beam emission spectroscopy diagnostic signals observing the top of the machine. However, they did not appear in the Beryllium II line spectroscopy signals monitoring plasma-wall interaction in the divertor at the bottom of JET. This might suggest that they load the main chamber wall. In this contribution a possible explanation to the complex structure of this type of inter-ELM bursts is provided: the assumption that several filaments are simultaneously released at the outer midplane, corresponding to a ballooning-like structure, is shown to fit to the observations. They extend along the field lines and propagate radially outwards passing the observation window of the Lithium beam diagnostic. The effect of fuelling level on burst statistics is characterized. An estimation of the filament velocity and shape is provided. Burst properties are compared to the observations done in ASDEX Upgrade [2].

[1] B. Tal et. al., TTF Seville (2018)

[2] P. Hennequin et. al., EPS Belfast (2017), P1.167

pppp

Presenter: TAL, B. (EPS 2019)

Session Classification: Poster P5