

P1.1035 Non-linear MHD simulations of pellet triggered ELMs in JET

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See the full abstract here:

<http://ocs.ciemat.es/EPS2019ABS/pdf/P1.1035.pdf>

Non-linear MHD simulations of pellet-triggered ELMs in JET plasma have been carried out with the JOREK code [1, 2, 3]. The pellet particle fueling efficiency and the power flux at the divertor target during the pellet-triggered ELM have been studied. The understanding of the ELM mitigation is more important in the “local” power load onto the divertor target. The JOREK simulations show the good agreement with the experiment observation in terms of the similar heat flux onto the divertor target, 60 MW/m^2 . The spontaneous ELM shows small toroidal variations ($\pm 15\%$) of the time-averaged heat flux, 60 MW/m^2 . In this work, the toroidal angle of 90° where the location of the infra-red (IR) camera and the angle of 270° which is the toroidally opposite side of the camera location are estimated. The pellet triggered ELM shows a toroidally asymmetric in the energy deposition, the heat flux of 60 MW/m^2 at the IR camera location. On the other hand, the toroidally opposite side shows up to 120 MW/m^2 , a factor 2 larger than the observation of IR camera which cannot see this toroidal location. The JOREK analysis suggests that the IR camera in the experiment might not be focussed onto the most damaging toroidal location for the pellet triggered ELM.

References

- [1] Huysmans GTA and Czarny O, Nuclear Fusion 47 659 (2007)
- [2] Czarny O and Huysmans G, JCP 227, 7423 (2008)
- [3] Futatani et al., Nuclear Fusion 54, 073008 (2014)

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