Contribution ID: **3416** Type: **not specified**

P4.1040 Comparison of plasma current asymmetry with vessel currents asymmetry on COMPASS during disruptions.

Thursday, 11 July 2019 14:00 (2 hours)

See full abstratc here
http://ocs.ciemat.es/EPS2019ABS/pdf/P4.1040.pdf

Determination of vessel currents magnitudes and distribution plays crucial role in understanding of mechanical loads on the machine [1]. Asymmetrical disruptions are of particular concern because they possibly cause severe asymmetric electromagnetic loads [2, 3]. For the first time plasma current asymmetries are compared with vessel currents asymmetries on COMPASS. These might help to understand whether localization of vessel currents and therefore mechanical stresses are caused by plasma current asymmetry. Both toroidal and poloidal components of the vessel current are considered. Experimental measurements of poloidal currents in the vacuum vessel during thermal and current quenches are compared with recent analytical predictions [4]. The COMPASS tokamak has unique magnetic diagnostics including full internal and full external Rogowski coils (having same poloidal position), three sets of Mirnov coils (each coil capable of measuring radial, toroidal and poloidal components of magnetic field), internal and external partial Rogowski coils (having the same toroidal position) [5, 6]. Plasma current has been measured in 5 toroidal locations, its asymmetry magnitude and phase have been determined. Asymmetry comparison with local poloidal and toroidal vessel currents (including their poloidal distribution) from Halo region and any other sources has been analysed.
[1] C. Bachmann et al., Fusion Engineering and Design, 86, 2011 [2] S.N. Gerasimov et al., Nuclear Fusion, 55, 2015 [3] R. Roccella et al., Nuclear Fusion, 56, 2016 [4] V.D. Pustovitov, Fusion Engineering and Design, 117, 2017 [5] P.J. Knight et al., Nuclear Fusion, 40, 2000 [6] Panek et al, Czech. J. Phys. 56, 2006

Presenter: MATVEEVA, E. (EPS 2019)

Session Classification: Poster P4

Track Classification: MCF