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Comparison of Runaway Electron Generation Parameters in Small, Medium-sized and Large Tokamaks –A Survey of Experiments in COMPASS, TCV, ASDEX-Upgrade and JET

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Report presents a survey of experiments on runaway electrons (RE) carried out recently in frames of EURO-Fusion Consortium in different tokamaks (Compass, ASDEX-Upgrade (AUG), TCV and JET). The increase of geometrical scale and physical parameters of plasma experiment on disruption generated RE has been studied. New data on disruption generated RE in Compass with carbon limiter and AUG with tungsten wall was collected and added to the database on RE in JET. Parameters of measured RE in different devices revealed similar trends on toroidal magnetic field fitting well into the JET database. Current values of RE beams demonstrated increasing trends with increase of geometrical size and parameters of plasma experiment from small and medium-sized tokamaks towards to JET. As well dissipation of RE beams in flattop discharges have been studied. Injections of impure gases into RE flattop discharges allowed distinguishing of two types of dissipative effect of such injections on RE populations in Compass and TCV. A description of diagnostics capable to characterize RE electrons and main measured parameters and values are given.

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