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4.15 Measurement of the toroidal radiation asymmetry during massive gas injection triggered disruptions on J-TEXT

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Disruptions have the potential to cause severe damage to large tokamaks like ITER. The mitigation of disruption damage is one of the essential issues for tokamak plasmas. Massive gas injection (MGI) is a technique in which large amounts of noble gas is injected into the plasma in order to safely radiate the plasma energy evenly over the entire plasma-facing first wall. However, the radiated energy during the disruption triggered by massive gas injection is found to be toroidal asymmetric. In order to investigate the spatial and temporal structure of the radiation asymmetric, the radiated power diagnostics for the J-TEXT tokamak have been upgraded. A multi-channel array of ultraviolet photodiodes (AXUV) has been upgraded at four different toroidal positions to investigate the radiation asymmetries during massive gas injection. It is found that the toroidal asymmetry is associated with gas properties and MGI induced MHD activities

Primary author(s) : TONG, Ruihai (Huazhong University of Science and Technology)

Co-author(s) : CHEN, Zhongyong (Huazhong University of Science and Technology); ZHANG, Xiaolong (Shenzhen University); CHENG, Zhifeng (Huazhong University of Science and Technology); LI, Wei (Huazhong University of Science and Technology); YAN, Wei (Huazhong University of Science and Technology); WEI, Yunong (Huazhong University of Science and Technology); YANG, Zhoujun (Huazhong University of Science and Technology)

Presenter(s) : TONG, Ruihai (Huazhong University of Science and Technology); CHEN, Zhongyong (Huazhong University of Science and Technology); ZHANG, Xiaolong (Shenzhen University); CHENG, Zhifeng (Huazhong University of Science and Technology); LI, Wei (Huazhong University of Science and Technology); YAN, Wei (Huazhong University of Science and Technology); WEI, Yunong (Huazhong University of Science and Technology); YANG, Zhoujun (Huazhong University of Science and Technology)

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