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The radiation asymmetry in MGI rapid shutdown on J-TEXT tokamak RUIHAI TONG, Huazhong University of Science Technology, ZHONGYONG CHEN, Huazhong University of Science Technology and Chengdu University, DUWEI HUANG, ZHIFENG CHENG, XIAOLONG ZHANG, GE ZHUANG, Huazhong University of Science Technology, J-TEXT TEAM — Disruptions, the sudden termination of tokamak fusion plasmas by instabilities, have the potential to cause severe material wall damage to large tokamaks like ITER. The mitigation of disruption damage is an essential part of any fusion reactor system. Massive gas injection (MGI) rapid shutdown is a technique in which large amounts of noble gas are 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 thermal quench (TQ) in massive gas injection (MGI) induced disruptions is found toroidal asymmetric, and the degrees of asymmetry correlate with the gas penetration and MGI induced magnetohydrodynamics (MHD) activities. A toroidal and poloidal array of ultraviolet photodiodes (AXUV) has been developed to investigate the radiation asymmetry on J-TEXT tokamak. Together with the upgraded mirnov probe arrays, the relation between MGI triggered MHD activities with radiation asymmetry is studied.

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