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Suppression of runaway generation by SMBI in disruptions in J-TEXT tokamak DUWEI HUANG, ZHONGYONG CHEN[1], RUIHAI TONG, WEI YAN, SHENYANG WANG, YUNONG WEI, TIANKUI MA, GE ZHUANG, State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, J-TEXT TEAM — Runaway current generated in ITER disruption can lead to severe damage at plasma facing components. The generation and suppression of runaway electrons have been investigated in the J-TEXT tokamak. Runaway current was created with rapid argon injection by a massive gas injection (MGI) valve. Supersonic molecular beam injection (SMBI) as a highly efficient fueling method can provide a high beam velocity and deep penetration depth. A small amount of hydrogen injected by SMBI during the quiescent plasma current flattop can induce magnetic penetration, and then cause plasma instability which increases runaway electron loss rapidly. SMBI has been used to mitigate disruption generated runaway electrons in the J-TEXT tokamak. It is found that SMBI of hydrogen during plasma disruption can efficiently suppress runaway generation.

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