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Study the effect of electrode biasing on $m/n=2/1$ tearing mode on the J-TEXT tokamak. QIMING HU, HAI LIU, ZHIPENG CHEN, Huazhong University of Science and Technology, QINGQUAN YU, Max-Planck-Institut für Plasmaphysik, LIZHI ZHU, ZHIFENG CHENG, GE ZHUANG, Huazhong University of Science and Technology — The effects of electrode biasing (EB) on the $m/n = 2/1$ tearing mode (TM) have been experimentally studied on the J-TEXT tokamak. It is found that, for negative bias with increasing its voltage, the $2/1$ TM is accelerated from 4 kHz to 8 kHz and its amplitude is stabilized until complete suppression, and the plasma toroidal rotation is accelerated in counter- I_p direction. While for positive bias with increasing its voltage, the $2/1$ TM is decelerated from 4 kHz to less than 1 kHz and its amplitude is destabilized until the occurrence of mode locking, and the toroidal plasma rotation is accelerated in co- I_p direction. Associated with the change in TM dynamic, the plasma particle confinement is found to be improved under negative bias, however, that changes little under positive bias. Statistical results show that the level of TM stabilization (destabilization) and the change in TM frequency caused by EB are found to correlate positively with the value of negative (positive) bias voltage, indicating that the negative (positive) bias stabilizes (destabilizes) the TM through increasing (decreasing) the plasma flow or flow shear.

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