

Abstract Submitted
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Observation of the bifurcation of tearing modes due to supersonic gas injected into the J-TEXT plasmas¹ XIANDE FENG, GE ZHUANG, ZHOIJUN YANG, JINSHUI XIAO, JIE CHEN, XIWEI HU, State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan430074, China, STATE KEY LABORATORY OF ADVANCED ELECTROMAGNETIC ENGINEERING AND TECHNOLOGY TEAM — The influence on the magnetohydrodynamic (MHD) behaviors due to the gas injected by Super-sonic Molecular Beam Injection (SMBI) has been observed on J-TEXT tokamak. The change of local electron temperature and density due to the injected supersonic gas trigger a relaxation instability, and then the relaxation could bifurcate into two different types of tearing modes' behaviors. One is the tearing mode with single $m/n=2/1$ helicity (m and n are poloidal and toroidal mode numbers, respectively), another is the tearing modes with different helicities ($m/n=2/1, 3/2$). The mechanism responsible for the bifurcation is closely related to changes of the pressure, and lately the plasma current density profile, due to the gas injection.

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