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Study of Beta-induced Alfvn Eigenmodes with RMP system in J-TEXT Tokamak LINZI LIU, QIMING HU, ZHUO HUANG, DAOJIN GUO, ZHIPENG CHEN, GE ZHUANG, Huazhong University of Science Technology, HUAZHONG UNIVERSITY OF SCIENCE TECHNOLOGY TEAM — The feature of Beta-induced Alfvn eigenmodes (BAE) are studied by two sets of external applied resonant magnetic perturbations (RMPs) system with different magnetic field component in J-TEXT Ohmic plasmas. The experimental results show that with moderate amplitude of RMP, a 3/1 magnetic oscillation emerges, which is regarded as BAE and has standing wave structure with its frequency in the gap triggered by kinetic thermal ion effect in the Alfvn continuum. The strength of BAEs becomes stronger with increasing RMPs coil current. With strong enough RMP, m/n=2/1 field penetration is triggered. The structure of BAE transits from 3/1 surface to 2/1 while frequency increase about 10kHz which agree with the theoretical dispersion relation of BAE.In the meantime, another magnetic oscillation with higher frequency of 70 kHz is driven, which is defined as MiAE that as nonlinear interaction with magnetic island, i.e. frequency is modulated by width of magnetic island mainly. When we change the RMP component to generate a magnetic island on 3/1 surface, MiAE is triggered only. By measuring the width of magnetic island experimentally, we verified the theoretical dispersion relation of MiAE is agree with experimental value for the first time.

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