

Excitation of low-frequency wave in FAT-FRC plasmas

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A field-reversed configuration (FRC) plasma has extremely high beta value because it is a compact toroid mostly with poloidal magnetic field [1]. Therefore, it has a potential to be an advanced fuel fusion reactor core. However, because of its high-beta nature, FRC has limited ways of additional heating. It has been observed that ion temperature and energy can be increased due to excited low frequency wave in FRC [2]. The FIX facility is asymmetric. Therefore, antennas had bad affected the FRC at the process of translation and reflection because of both interactions. On the FAT-CM facility, two FRCs are formed by the field-reversed theta-pinch(FRTP) on the both side of a confinement region and translation along a gradient of external magnetic field toward the confinement region. Thereafter, merged FRC is confined in the confinement region. In this experiment, low-frequency wave is excited by a set of externally installed loop antennas is a FRC plasma formed by this collisional merging method to verify the additional heating and current drive effect.

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[2] K. Yamanaka *et al*, Phys. Plasma **7**, 2755(2000).