

Modulation Experiment on Ion Heat Transport and Rotation Study with X-ray Spectroscopy at Alcator C-Mod

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Ion Cyclotron Range of Frequencies (ICRF) modulation experiments were carried out at Alcator C-Mod during the 2010 and 2011 campaigns. The recently upgraded High Resolution X-ray Spectroscopy (HiReX) analysis tools provide better spatial resolution of ion temperature and rotation profiles. Analysis with these tools on experiments in 2010 shows that both ion and electron temperatures are modulated at similar amplitudes by ICRF minority heating. To study the response of heat transport to ion temperature only, a combination of ICRF minority heating with antiphase ICRF mode conversion may be useful to depress electron temperature modulation. In recent experiments of 2011, emission intensity and rotation velocity profiles with modulated ICRF heating show different behaviors under plasma current and magnetic field scans. They are better modulated than those in 2010. Analysis will be focused on figuring out the roles of plasma current, magnetic field, electron temperature and other possible parameters on determining intensity and rotation modulation.