IAEA FEC 2014

Contribution ID: **768** Type: **Overview Poster**

Overview of HL-2A Recent Experiments

Monday 13 October 2014 14:00 (4h 45m)

Since the last IAEA FEC, experiments on HL-2A tokamak have been dedicated to address the physics on L-H transition, energetic-particles (EPs) and shear Alfvén waves (SAWs), ELM mitigation, disruption mitigation, edge impurity transport and other MHD related activities. In particular, significant progresses have been made in the following areas: (i) For the first time in experiments, it was found that the phase between normalized radial electric field and the envelope of density fluctuations reverses during the intermediate phase (I-phase) in comparison to the usual predator-prey regime as the plasma approaches H-mode during the L-I-H confinement transition; (ii) The frequency up- and down-sweeping reverse shear Alfvén eigenmodes (RSAEs) were observed in NBI plasmas with qmin~1. By using kinetic AE code (KAEC) simulation, it has been confirmed that the down-sweeping modes are kinetic RSAEs, and the up-sweeping modes are RSAEs that exist in the ideal or kinetic MHD limit; (iii) The transition and interaction among low-frequency MHD modes have been observed during NBI, which suggests profound interaction existing among fishbone mode, long-live mode (LLM) and tearing mode (TM); (iv) With SMBI a runaway electron plateau was observed at a rather low toroidal magnetic field. In addition, progresses have also been made in the analysis of the loss of energetic-ions, the ELM mitigation induced by supersonic molecular beam injection (SMBI), and the onset of neoclassical tearing mode (NTM) during nonlocal effect with SMBI, etc. All these experiments benefited from several newly installed diagnostics, such as Motional Stark Effect (MSE), Charge Exchange Recombination Spectroscopy (CXRS) and a scintillator-based lost fast-ion probe (SLIP), and the upgrade of ECRH heating power to 5 MW.

Paper Number

OV/4-1

Country or International Organisation

China

Presenter: Mr XU, Min (China)

Session Classification: Overview Posters