



Contribution ID: 258

Type: Poster

IShTAR: a dedicated facility to characterize the interactions between ICRF waves and plasma

Thursday, 20 October 2016 14:00 (4h 45m)

IShTAR (Ion Sheath Test ARrangement) is dedicated to the investigation of the interactions between an ICRF antenna and a plasma in the conditions (plasma temperature and density, magnetic configuration) representative of the plasma edge of a magnetic confinement fusion machine. The test bed is composed of a helicon plasma source and a main vessel, in which a dedicated single strap ICRF antenna is installed.

Firstly, the optimization of the plasma source in order to get the highest density and most radially uniform plasma is presented (by changing of the position of the source and by scanning the operational parameters). In addition, the efficiency of the installed diagnostics (compensated/noncompensated Langmuir probes, B-dot probes, wideband spectrometer) is discussed.

The second part addresses the effect of the ICRF operation on the generated plasma; the wave profiles in vacuum and plasma are recorded. The impact of the eigenmodes due to the small size of the vessel on the wave field at the interface antenna/plasma is evaluated. The effect of the additional ionization on the density profile is also measured with the spatial variation of the plasma potential near and inside the RF sheath in front of the antenna strap.

Finally, the feasibility of a diagnostic to directly measure the electrical field in the sheath by using the change in emission from energy levels modified by Stark effect and mixing is discussed.

Paper Number

EX/P6-48

Country or International Organization

Belgium

Primary author: Dr CROMBE, Kristel (Ghent University, Belgium)

Co-authors: Ms KOSTIC, Ana (Department of Applied Physics, Ghent University, Belgium); Dr NIKIFOROV, Anton (Department of Applied Physics, Ghent University, Belgium); Dr VAN EESTER, Dirk (LPP-ERM/KMS); Dr FAUDOT, Eric (Institut Jean Lamour UMR 7198 CNRS-Université de Lorraine, Nancy, France); Dr LOUCHE, Fabrice (LPP-ERM-KMS, TEC partner, Brussels, Belgium); Dr FAUGEL, Helmut (Max-Planck-Institut für Plasmaphysik, Garching, Germany); Dr FUENFGELDER, Helmut (Max-Planck-Institut für Plasmaphysik, Garching, Germany); Prof. NOTERDAEME, Jean-Marie (Max Planck Institute for Plasma Physics); Dr MORITZ, Jerome (Institut Jean Lamour UMR 7198 CNRS-Université de Lorraine, Nancy, France); Mr MORENO, Joel (Department of Applied Physics, Ghent University, Belgium); Dr JACQUOT, Jonathan (Max-Planck-Institut für Plasmaphysik, Garching, Germany); Ms USOLTSEVA, Mariia (Department of Applied Physics, Ghent University, Belgium); Dr D'INCA,

Rodolphe (Max-Planck-Institut für Plasmaphysik, Garching, Germany); Dr OCHOUKOV, Roman (Max-Planck-Institut für Plasmaphysik, Garching, Germany); Dr DEVAUX, Stephane (Institut Jean Lamour UMR 7198 CNRS-Université de Lorraine, Nancy, France); Prof. HEURAUX, Stephane (Institut Jean Lamour UMR 7198 CNRS-Université de Lorraine, Nancy, France)

Presenter: Dr CROMBE, Kristel (Ghent University, Belgium)

Session Classification: Poster 6

Track Classification: EXS - Magnetic Confinement Experiments: Stability