

[SORS: Modelling of ion cyclotron resonance frequency heating in JET in preparation of ITER](#)

This is the official opening session of the Severo Ochoa Research Seminar for 2014 - 15 season

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Abstract:

Future energy requirements set an unprecedented challenge for our society. Fusion energy is uniquely placed

to meet the growing energy demand. Presently, an international fusion R&D project called ITER is building the world's largest experimental tokamak nuclear fusion facility in Cadarache, in southern France. It aims to demonstrate that fusion energy is scientifically and technologically feasible.

Computer modeling plays an important role in fusion research in preparation of ITER. It is used to address numerous aspects in the present-day fusion experiments and in the preparations for ITER operation. In this talk I will discuss the modelling of ion cyclotron resonance frequency (ICRF) heating in the JET tokamak with emphasis on comparisons with experimental data. Located near Oxford in the United Kingdom, JET is the largest tokamak in the world that operates with conditions closest to ITER. In JET, as will be done at ITER, ICRF heating is used as one of the main schemes to heat the fuel to the very high temperatures of circa 150 million °C needed for fusion.

Biography:

I graduated with distinction in Technical Physics at Helsinki University of Technology (HUT), now Aalto University, Finland, in 1992. I carried out my fusion research at HUT until I moved to the United Kingdom to join the Data Analysis and Modelling Department at the JET tokamak in 1995. At JET, I worked as Responsible Officer for several large modelling codes, Ion Cyclotron Resonance Frequency (ICRF) Physics Expert, Scientific Coordinator, and Physicist in Charge as well as trained as Session Leader of JET experiments. My thesis for the degree of Doctor of Science in Technology at HUT in 1999 was based on my research at JET. In 2003 I became Deputy Leader of Task Force Heating and Current Drive at JET, with approx. 80 members at several research institutions across Europe. In 2006 I joined the ICRF group of the Asdex Upgrade tokamak, Max-Planck-Institute for Plasma Physics, Germany and in October 2013 I became ICREA Research Professor in Barcelona Supercomputing Center. My current research focuses in the numerical modelling of present-day experiments in preparation of ITER.

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