Paolo Innocente

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Education

PhD in Physics, University of Padova, Italy
Master in Engineering of Plasma for Controlled Fusion, University of Padova, Italy
Degree in Physics, University of Padova, Italy

Tutoring

Tutoring of Bachelor's, Master's degree and PhD theses

Research area

I am a plasma physicist working on magnetically confined plasmas of interest for controlled nuclear fusion research. My expertise lies in the field of core and PWI diagnostic measurement, data analysis and code development, edge-divertor modeling in standard and alternative divertor configurations, RFP experiment optimization, lithium experiments, PWI interaction studies, alternative divertor configuration experiments, divertor interaction optimization. My main branches of activity are:

- **Diagnostics**. Electron density measurement by interferometric diagnostic. Development of codes for interferometer remote control, self-alignment and of mirrors position and feedback control to reduce vibration/tilt amplitudes. Magnetic field measurements by polarimetric diagnostics. Visible and infrared measurements of plasma-wall interaction by fast cameras: camera setup with design/development of optical relay, development of code for inverse problem 2D computation of heat flux from temperature measurements;
- **Data analysis codes**. Codes for diagnostic and data-base analysis, neutral penetration and field line tracing: development of codes for interferometers data analysis, density profile reconstruction, field line tracing code for magnetic stochasticity studies;
- **Edge modeling codes**. Grid mesh generator, impurity setup, data analysis with synthetic diagnostics implementation;

- **Power exhaust modeling**. In various tokamak devices (JET, TCV, EAST) with different divertor configurations (single null, snowflake, x-divertor, super x-divertor, double null). DEMO alternative divertor configurations comparison in terms of power exhaust as coordinator of modeling activity in WPDDT1-ADC;
- **Divertor design**. Optimization of divertor power exhaust: control of radiation emission and interaction by flux expansions control and gas puffing at JET as scientific coordinator or modeler in the team.
- **Vacuum system**. Design of DTT divertor and vacuum pumping system as DTT task coordinator

I am the group leader of one of the five RFX physics groups and the DTT project coordinator of the power exhaust activity and pumping system design.

Invited talk

Scanning beam medium infra-red interferometry for plasma density measurements, Invited presentation at 14th International Symposium on LASER-AIDED PLASMA DIAGNOSTICS, Castelbrando (TV), Italy 2009
Exploration of DTT conventional and advanced divertor configurations by means of edge simulation codes , Invited presentation IAEA Technical Meeting on Divertor Concepts, Suzhou, China, November 13-16, 2017

Summary of publications

- More than 350 papers (17 as leading author) in international peer-reviewed journals
- More than 3500 citation in total; H-index
- More than 150 contributions to proceeding of international conferences (oral, poster presentation and invite talks).