



Contribution ID: 69

Type: Oral

Oral_2: Steady state magnetic diagnostics for ITER and some new approaches to magnetic diagnostics of future fusion reactors

Monday, September 6, 2021 11:30 AM (30 minutes)

The measurement of the magnetic field in future tokamaks such as ITER and DEMO will be challenging due to the long pulse duration, high neutron fluxes and elevated temperatures. This contribution will review the design of outer vessel steady state magnetic sensors for ITER. The diagnostic consists of a poloidal array of sixty sensors, mounted on the vacuum vessel outer shell, and will contribute to the measurement of the plasma current, plasma-wall clearance, and local perturbations of the magnetic flux surfaces near the wall. Each sensor accommodates a pair of bismuth Hall sensors. Key lessons learned from the process of development, manufacturing, and calibration of this ITER diagnostic will be outlined. Outlook for possible options for DEMO steady state magnetic sensors based on Hall effect will be reviewed. Novel type of inductive sensors manufactured using Thick Printed Copper technology will be introduced.

Authors: DURAN, Ivan; Dr ENTLER, Slavomir (Institute of Plasma Physics of the CAS); Dr KOVARIK, Karel (Institute of Plasma Physics of the CAS); Mr TORRES, Andre (Institute of Plasma Physics of the CAS); Dr TURJANICA, Pavel (Faculty of Electrical Engineering, University of West Bohemia); Dr REBOUN, Jan (Faculty of Electrical Engineering, University of West Bohemia); Dr VIERERBL, Ladislav (Research Centre Rez); Dr KOCAN, Martin (ITER Organization); Dr VAYAKIS, George (ITER Organization); Dr VYBORNY, Karel (Institute of Physics of the CAS); Dr ZBYNEK, Soban (Institute of Physics of the CAS); Dr MORTET, Vincent (Institute of Physics of the CAS); Dr TAYLOR, Andrew (Institute of Physics of the CAS)

Presenter: DURAN, Ivan