

Helmholtz Call for Chinese Applicants Interested in Running for CSC 2021 Fellowship

Helmholtz Centre: Forschungszentrum Jülich GmbH – www.fz-juelich.de
Department/Institute: Institute of Energy and Climate Research, Plasmaphysics (IEK-4)
https://fz-juelich.de/iek/iek-4/EN/Home/home_node.html
Supervising scientist: Dr. Andreas Krämer-Flecken
University for registration or for a future degree: -
Research Field: Energy; Plasma physics
Position open for: PhD Student Sandwich PhD Student
Title of the research: Investigation of turbulent transport in the plasma edge

More description of research topic:

The stellarator is one major type of magnetic confinement fusion device. In contrast to tokamaks, no plasma current is needed to create the poloidal field, and the magnetic field lines are naturally twisted along the toroidal and poloidal directions in stellarators. Since no current needs to be induced, steady-state operation is possible. Wendelstein 7-X, the world largest stellarator for the next few decades, started operations in Nov. 2015, and under preparation of OP2 with an island divertor configuration. A detailed study of the 3D island divertor physics is important, and requires knowledge of the processes in the plasma edge and scrape-off layer.

The Institute of Energy and Climate Research (IEK-4) is one of the leading institutes in plasma edge diagnostics and physics of 3D edge physics. Its major contributions on W7-X is beside a multi-purpose probe system with probe heads to measure plasma parameters in the edge region, several reflectometer systems measuring profiles of poloidal rotation and radial electric field in the plasma edge/scrape-off layer and density profiles. By studying the impact of the shear layer on turbulence the understanding is improved of the turbulence contribution to the anomalous transport.

We are seeking one sandwich PhD student. He/She will work on the operation and analysis of reflectometers at W7-X and contribute to the understanding of turbulence driven transport in the plasma edge and SOL.

Specific requirements:

A very good knowledge of mathematical and modelling skills, and good experiences in the operation and analysis of microwave based diagnostics as well as plasma transport physics on tokamak or stellarator are a prerequisite. Furthermore a very good level in spoken and written English is necessary to work in an international scientific team.

Working Place: Forschungszentrum Jülich, Germany (near Cologne)

Earliest Start: September 2021

Language Requirement: Very good knowledge of English language, written and spoken. German language courses are organised in the context of our in-house training program and are free of charge.

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