

PhD	
Focus	Topic
Material science/Plasma-wall interaction	Additive manufacturing for structured material joints in plasma-facing components
Material science/Plasma-wall interaction	Porous tungsten composites for highly heat loaded plasma-facing components
Material science/Plasma-wall interaction	Tungsten-copper composite casting technology for plasma-facing components
Plasma fuelling	Continuation of pellet physics, modelling with HP12 code
Plasma control	Digital Twin framework: Optimize real-time plasma control using machine learning techniques, discharge planning through predictive modeling and scenario analysis
Fast plasma density evaluation	QMI: FPGA programming of fast phase evaluation -> fast profile analysis -> profile monitor
Analysis of plasma heating	ECRH power deposition from ECRH switching derived with the ECE zoom system
Plasma (particle) transport	Calculate particle transport (with the improved Thomson profiles)
Plasma spectroscopy	Neutral density measurements from warm H α – asymmetries and particle transport.
Plasma spectroscopy	Outer-core measurements with passive CVI spectroscopy.
Plasma wall interactions	Tungsten erosion and transport (ERO 2.0 + new divertor)
Gas exhaust	Residual gas analysis
Plasma heating	Wave Physics, ICW excitation by microwave beams
Plasma Dynamics	MANTIS Setup, Operation & Design: Validating island transport model (stellarator TPM)
Plasma Dynamics	Impact of convective (drift) transport on island plasma & synthetic diagnostic for MANTIS
Plasma Dynamics	Divertor physics in size & power flux scaling towards reactor values
Plasma Dynamics	Development of simplified stellarator divertor models towards optimization & systems codes
ITER Technology & Diagnostics	Vacuum-Ultraviolet (VUV) spectroscopy at low-temperature plasmas
ITER Technology & Diagnostics	Investigation of methane pyrolysis and dry reforming of methane in microwave plasma reactors

Postdoc	
Focus	Topic
Fast ion physics	FI loss diagnostics: wall integrated Faraday cup (QHF), scintillator based FI diagnostic (QHS), Faraday cup midplane manipulator probehead (from NIFS)
Data evaluation in complex geometries	full 2D or 3D tomography of edge physics parameter using multiple diagnostics
Plasma heating	Technical and experimental optimization of NBI operation

Plasma heating	Technical and experimental optimization of ICRH operation
Neutral pressure gauges	R&D on reactor relevant neutral gas pressure gauges
Heat exhaust	Data evaluation from OP2, diagnostic operator, calibrations
Particle exhaust	Modeling of neutral gas pressure (ANSYS, DIVGAS) + code development
Plasma edge physics	EMC3-EIRENE (-Lite) modeling of plasma edge, experimental support
Heat exhaust and power balance	Data evaluation from divertor calorimetry and thermo couples
Magnetic field topology	Topology, mapping and error field simulation vs. flux surface mapping/IR images
Turbulence	HIBP setup and operation (alternatively MPM)
MHD	Equilibrium reconstruction using the SPEC code
MHD	X-ray multi-channel camera development
MHD	Development of online equilibrium reconstructions
ITRP	Synthetic island model for integrated analysis
ITRP	W7-X closed divertor modeling
ITRP	Impurity transport, impurity fluctuation diagnostics & transport analysis framework/CXRS/LBo
Engineering analysis	Thermomechanical analysis
ITER Technology & Diagnostics	Application of the 3D-MC-PIC Code ONIX to Sources for Negative Hydrogen Ions
ITER Technology & Diagnostics	Experimental Physics for Neutral Beam Injection on the ASDEX Upgrade Tokamak
ITER Technology & Diagnostics	Optical Emission Spectroscopy at a Source for Negative Hydrogen Ions
ITER Technology & Diagnostics	Conceptual Engineering of Neutral Beam Injection for the EUROfusion Volumetric Neutron Source
ITER Technology & Diagnostics	experimental physics for the development of the ITER bolometer diagnostic
ITER Technology & Diagnostics	Development of modular microwave plasma reactor for CO2 conversion with oxygen separation

specific topics (PhD or Postdoc)	
Focus	Topic
Development of plasma diagnostics	Spectral in situ ellipsometer for PSI studies
	Fast Thomson as local diagnostic
	Neutral density measurements from warm H α – asymmetries and particle transport

	Continue impurity concentration studies from passive line ratios (N, Ne, Ar, He), including 2D emission tomography of impurity lines . Toroidal asymmetries of seeded impurity transport.
	Outer-core measurements with passive CVI spectroscopy
	Stark broadening for ne measurement in the emission zone (using QSS70 signals, in Minerva)
	XICS Ti profile and ArXVIII density profile measurements
	profile reflectometry
ITER Technology & Diagnostics	development of Neutral Beam Injection (NBI) systems
	development of Neutral Beam Injection (NBI) systems