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Universität Ulm

Master of Science Physics (PO 2019)

Seminar Diagnostics for Plasma Physics

Code	8812875066
ECTS credits	3
Attendance time	2
Language of instruction	English
Duration	1 Semester
Cycle	each Summer Semester
Coordinator	Dean of Physics Studies
Instructor(s)	Dr. Tim Happel (Max-Plank-Institute of Plasma Physics, Garching)
Allocation of study programmes	Physics M.Sc., elective module, 1st or 2nd semester Wirtschaftsphysik M.Sc., elective module, 1st – 3rd semester
Recommended prerequisites	Experimental physics and electrodynamics. Module *Plasma Physics - Fundamentals* would be beneficial.
Learning objectives	Students who successfully passed this module • have a basic understanding of key physics topics of today's nuclear fusion science. • understand how to diagnose important quantities of a fusion plasma along with their interpretation, also in regard of ITER and beyond.
Syllabus	Each seminar will consist of a pair of two related presentations (not compulsory). One of them introduces the key physics topic or quantity, while the other covers a more applied view on how to diagnose, analyse and interpret the topic under consideration. In the first meeting, the topics will be presented and assigned and the criteria for evaluation will be explained. Topics:

	• Plasma current profile in tokamaks / Motional Stark Effect • Turbulence in fusion plasmas / Reflectometry • The edge pedestal of fusion plasmas / Thomson Scattering & ECE • Radiation in fusion plasmas / Bolometry • Power exhaust (ex. ITER) / Infrared Thermography • Impurities, Helium transport / Charge Exchange Recombination Spectroscopy
Literature	Scripts on selected topics will be available.
Teaching and learning methods	Seminar (2 hours per week)
Workload	30 hours seminar (attendance time) 60 hours talk preparation Total: 90 hours
Assessment	The module examination consists of completing an assignement on a given topic and a graded oral presentation of the results as well as participating in the discussion.
Grading procedure	The grade of the module will be the grade of the exam.
Basis for	Research in the field of plasma physics