TECHNISCHE UNIVERSITÄT WIEN

INSTITUT FÜR ANGEWANDTE PHYSIK
Institute of Applied Physics
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IAP-SEMINAR

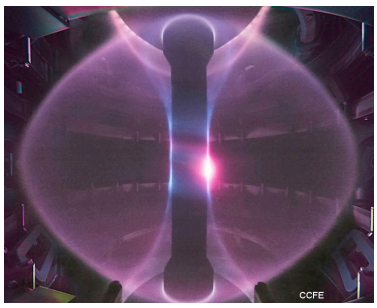
ANNOUNCEMENT

Date: **Tuesday, 14.3.2017**
Time: **16:00 s.t.**
Location: **Technische Universität Wien, Institut für Angewandte Physik, E134**
yellow tower „B“, 5th floor, Sem.R. DB gelb 05 B (room number DB05L03), 1040 Wien, Wiedner Hauptstraße 8-10

Lecturer: **Dipl.-Ing. Florian Laggner**
TU Wien, IAP

Subject: **Towards the realisation of fusion energy reactors: The edge of magnetically confined, tokamak plasmas and its stability**

Abstract: The performance of a magnetically confined, fusion plasma is strongly impacted by the plasma edge, which is the boundary between the hot, confined plasma and the reactor walls. In a tokamak reactor, which uses a toroidally axis-symmetric magnetic field configuration, a regime of improved plasma confinement, the so-called H-mode, has been observed. The improvement of plasma confinement origins from a transport barrier at the plasma edge, which is accompanied by steep gradients of the plasma pressure, named pedestal. The maximum sustainable pressure gradient at the plasma edge is usually set by an ideal magnetohydrodynamic limit, which if exceeded is leading to edge localized modes (ELMs) that relax the pedestal. The mechanisms setting the final pedestal structure (height and width) are not fully understood. Here, microturbulent instabilities are expected to become important. The presented work investigates the temporal evolution of the pedestal density and temperature in between ELM crashes. Further, fluctuations of the magnetic field, which are signatures of instabilities, are correlated to the pedestal evolution. During their presence, the gradients of the edge pressure are clamped, indicating a limitation of the pedestal already before the ELM onset.



All interested colleagues are welcome to this seminar lecture
(45 minutes presentation followed by discussion).

F. Aumayr e.h.
(LVA-Leiter)