

Abstract Submitted  
for the DPP09 Meeting of  
The American Physical Society

**Physics of turbulent transport and zonal flows in the edge of fusion plasmas** ULRICH STROTH, University Stuttgart — The understanding of turbulent transport at the plasma edge and on transition to the scrape-off layer is of greatest importance for fusion plasmas. Edge transport sets the values of temperature and density at the pedestal top, parameters which are needed as input for core-turbulence simulations. And SOL transport ultimately defines the peak power density on the divertor plates and the first wall. Furthermore, the interplay between flows and turbulence is one of the most fascinating and rich topics of fusion research. The talk will give an overview of experimental studies on turbulent transport and the interaction of fluctuations with poloidal flows. The studies were carried out on the low-temperature plasma in the TJ-K stellarator which is dimensionally similar to fusion edge plasmas and, hence, a kind of “windtunnel” experiment for fusion devices and testbed for turbulence code. Turbulence is studied with high spatial and temporal resolution and a close comparison of the data with results from the gyro-fluid code GEM shows a great structural similarity. This comparison indicates that drift-waves dominate turbulent transport in the edge plasma. It is also shown how drift waves couple to zonal flows and how they generate intermittent structures (blobs) at the natural edge shear layer. Results are compared with findings from ASDEX Upgrade and other devices.

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Date submitted: 08 May 2009

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