

Main priorities and contributions

Objective 2:

- Development of microwave diagnostics for ITER - and DEMO
- Development of predictive models and codes for turbulence and transport physics

Objective 3:

- Education and training: Master & Ph.d. in physics and engineering. ITER operators and analysts -- European programme for education and training

Objective 4:

- Development of DEMO relevant materials and superconductors

Development of microwave diagnostics for ITER and DEMO

- Microwave diagnostics are resilient to hard radiation environments
=> important for ITER and DEMO
- Collective Thomson Scattering (CTS) provide space resolved measurements of the ion velocity distribution and the fuel ion ratio – essential in a "burning" plasma
- CTS is developed and matured at ASDEX Upgrade in collaboration with IPP
- CTS is an enabled diagnostic in the ITER baseline

Priorities:

- Continued development and maturation of CTS on ASDEX Upgrade
- Continued development of (microwave) diagnostics
- Option: Application of CTS for fast ion and fuel ion ratio diagnostic on JET for the tritium campaign

Development towards predictive modelling of ITER performance

- Modelling of edge and SOL turbulent transport and profile development, predict power loads on PFC
- Develop global models with self-consistent coupling from edge to SOL and including atomic processes
- Code and model development within ITM framework with implementation on HPC FF – and
- Focus point: bench-marking : with other codes and theory (verification) and with experiments (validation) – need for a range of satellite devices
- Contribute to the development of "ITER flight simulator"

Development of DEMO relevant materials and superconductors

- Characterization and testing of high temperature superconductors for DEMO coils
- Material characterization, testing and development: e.g., Tungsten alloys, ODS ferritic steel
- Potential for significant extension of activities at DTU

Additional contributions:

- Safety issues
- Modelling of fusionenergy in the global energy system

Industry involvement in ITER and DEMO

- Big Science Secretariat (BSS) to facilitate the involvement of Danish companies in the construction of ITER
 - Increase awareness of the companies on the potential for commercial participation in ITER construction phase
 - Assist companies in the required competence and network building phase