



Wissenschaftlicher Ergebnisbericht / Scientific Report 2003

Schwerpunkt / main research area
FE-Vorhaben / RD project
Institutsbeitrag / institute's contribution

Verantwortlich / in charge
HGF-Forschungsbereich / Research Field
HGF-Programm / Programme
HGF-Thema / Topics

Internet

Energie / Energy
E05 Kernfusions- und Plasmaforschung
63700
Projekt Kernfusion / Nuclear Fusion Project (KFS)
Prof. U.Samm u.samm@fz-juelich.de
Energy
Nuclear Fusion
ITER
Fusion Technology
Tokamak-Physics
Stellarator Research
www.fz-juelich.de/scientific-report

Detaillergebnisse / Details

Aims and Objectives

Co-ordination of all work at Jülich in the field of nuclear fusion and plasma research as well as activities in the framework of the EURATOM association contract, the European Fusion Development Agreement (EFDA), the TEC-contract ("Trilateral Euregio Cluster": ERM/KMS Brussels and FOM Nieuwegein), the IEA (International Energy Agency) Implementing Agreement on "Plasma Wall Interaction in TEXTOR" (Japan, USA, Canada) and the co-operation with neighbouring universities.

Significant Results in 2003

The technical realisation of the new experimental facility on TEXTOR, the Dynamic Ergodic Divertor (DED), has been finished based on the joint efforts of the partners in TEC and in the IEA Implementing Agreement. This will now allow the investigation of further options for optimising plasma-wall interaction and the extension of the operational range of a tokamak.

FZ Jülich takes part in the European facility JET (Joint European Torus) in Culham (England) by participating in experimental campaigns and long term secondment of scientists.

The work of the new European task force on "Plasma-Wall Interaction" (task force leader V. Philipps from FZJ) gains momentum in co-ordinating all European ITER-related activities in this field by organising workshops, joint meetings and maintaining a web-site at FZJ.

An important test facility for fusion materials is the electron beam device JUDITH located inside the hot cells, which is in particular suited to investigate irradiated and toxic materials. Since the capacity of this device turns out to be a bottleneck for the European fusion materials research, it is planned to realise an additional electron beam device JUDITH-II in Jülich.

The new DFG-Sonderforschungsbereich with the universities of Bochum, Düsseldorf und Wuppertal on "plasmas far from equilibrium: transport, heating and structure formation" has started in 2003. Within this project the universities gain access to high temperature plasmas and in particular to the new experimental possibilities with the DED for fundamental studies of stochastic plasmas.

FZJ is participating in the planning for ITER by taking over specific "ITER Technology Tasks" and "ITER Physics Tasks" as well as increased participation in the ITPA (ITER Tokamak Physics Activities).

In addition to diagnostic projects, also a larger work package for the construction of Wendelstein 7-X in Greifswald has been defined and work for it has started. The main components in this work package are the design, manufacturing and installation of the super conducting bus-bar system. Moreover, additional work in the fields welding and FEM calculations has been performed in 2003.