

## TCP on Tokamak Programmes (CTP TCP)

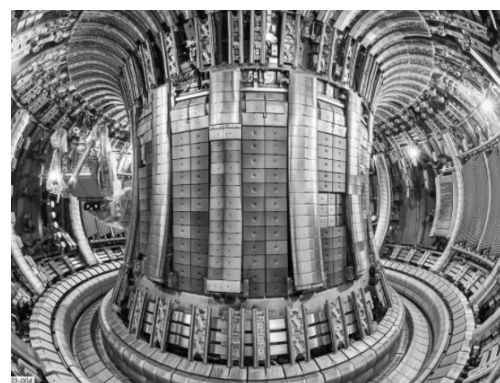
The CTP TCP supports the development of fusion energy by contributing to the physics basis of the International Thermonuclear Experimental Reactor (ITER), and DEMO\* design optimisation. The CTP TCP provides a forum for tokamak programmes of the ITER Members to co-ordinate tokamak research by carrying out scientific and technological exchanges, holding workshops and meetings for the purpose of advancing the tokamak concept in the context of fusion energy, and supporting ITER physics and technology needs.

### Main areas of work

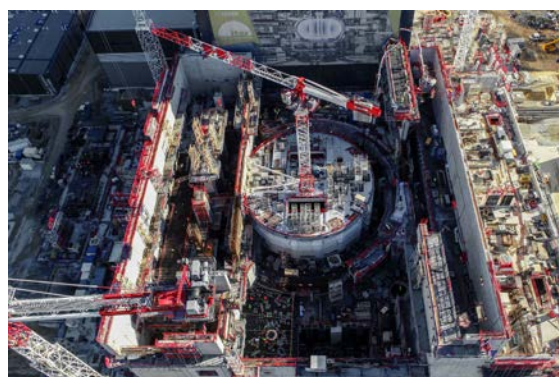
- Experimental programme plans for the tokamak facilities
- Design and planning of experiments to contribute to the database for the next-generation tokamak devices including, but not limited to, support of activities identified by the International Tokamak Physics Activity (ITPA)
- Experimental, theoretical and technical studies

### Key activities and accomplishments (2017-2018)

- Co-ordinated multi-experiments and simulations aimed at improving the physics basis of plasma facing components power loading and melt dynamics
- Improved understanding of the dynamics and control of ITER plasma terminations



*JET Tokamak, Europe (photo courtesy of EUROfusion)*



*ITER Tokamak (photo courtesy of ITER Organization)*

### Priorities and projects (2019 – 2020)

- Addressing the avoidance, control and mitigation of the key plasma instabilities
- Protection of the plasma facing components and access to good confinement plasma regimes in ITER
- Specific test for one of the systems to be installed in ITER to mitigate the consequences of the abrupt termination of the plasma "Disruptions" to be installed on JET (Joint European Torus)

\* DEMO is a proposed nuclear fusion power station that is intended to build upon the ITER experimental nuclear fusion reactor.

### Multilateral collaborations

- Framework agreement between four CTP TCP partners to design, construct, install and operate ITER relevant hardware on JET. Mitigation of disruptions is a critical issue for ITER; it is important to test the concept of Shattered Pellet Injection (SPI) for mitigation of runaway electrons during the disruption current quench. The commissioning with plasma of the JET SPI and experimental campaign will take place in 2019.

### Membership



Australia



China



India



Japan



Korea

United  
StatesEuropean  
Commission

- International Thermonuclear Experimental Reactor (ITER) Organization

### Why should your organisation become a member of the CTP TCP?

The CTP TCP is one of the main programmes for the implementation of the ITPA, which now operates under the auspices of the ITER Organisation and co-ordinates activities among the domestic programmes of the signatories to the ITER Agreement. The next critical step in demonstrating the scientific feasibility of fusion energy is to demonstrate burning plasmas in long pulses. As achieving this objective is a great challenge, and there are many scientific and technological issues to be addressed, this is the primary mission of ITER and of tokamak research programmes worldwide.

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