



Contribution ID: 767

Type: **Poster**

The ITER Neutral Beam Test Facility toward SPIDER operation

Wednesday, 19 October 2016 14:00 (4h 45m)

In order to achieve thermonuclear-relevant plasma parameters in ITER, the auxiliary heating systems have to provide 50 MW, out of which 33 MW by two Neutral Beam Injectors (NBI), each designed to operate at 1 MV, 40 A for one hour. The unprecedented parameters and the complexity of the NBI systems have led to recognize the need of a dedicated Test Facility to carry out an international R & D programme aimed at realizing, testing and optimizing the prototype of the NBI and to assist ITER during its operation. This Facility is under construction in Padova Italy at Consorzio RFX premises and hosts two experiments: MITICA, a 1 MeV full-size prototype of the ITER NBI, and SPIDER, a full-size prototype of the ion source for ITER NBI.

The realization of the two experiments is carried out with the main contribution of the European Union, channeled through the Joint Undertaking for ITER (F4E), the ITER Organization and Consorzio RFX, with the Japanese and the Indian ITER Domestic Agencies (JADA and INDA) and European laboratories, such as IPP-Garching among others.

The realization of MITICA and SPIDER progresses in parallel; presently, the installation phase of SPIDER is proceeding in good agreement with the general plan.

This paper mainly focuses on the integration issues and complementary research toward the SPIDER first operation, expected for next year. This is a very crucial phase, evolving along three main parallel paths: integration and testing of SPIDER components, completion and implementation of diagnostics and preparation of operation and research plan.

The most interesting aspects of the wide set of activities, studies and further developments, all concurrent to determine the success of the SPIDER start of operation and exploitation will be described and discussed.

Paper Number

FIP/P4-28

Country or International Organization

Italy

Primary author: TOIGO, Vanni (Consorzio RFX)

Co-authors: CHAKRABORTY, Arun Kumar (ITER-India, Institute for Plasma Research); BOILSON, Deirdre (ITER Organization); BONICELLI, Tullio (Fusion for Energy); Prof. FANTZ, Ursel (Max-Planck-Institut fuer Plasmaphysik)

Presenter: TOIGO, Vanni (Consorzio RFX)

Session Classification: Poster 4

Track Classification: FIP - Fusion Engineering, Integration and Power Plant Design