

Alberto Loarte

| | |
|------------------------------|--|
| Conferenciante | Alberto Loarte |
| Posición / afiliación | ITER Organization, France |
| Título de la charla | The new ITER Baseline: Status of Construction, Research Plan and open R&D issues |

Resumen

A new baseline has been adopted by the ITER Project in 2024 to ensure a robust achievement of the Projects' goals, in view of past challenges. The new baseline includes modifications to ITER's tokamak configuration and ancillaries (e.g. change of first wall material from beryllium to tungsten, modification of heating and current drive mix, etc.) as well as additional testing of components (e.g. toroidal field coils) or phased installation (start with inertially cooled first wall before water-cooled one is installed) to minimize operational risks.

In the new baseline, the ITER Research Plan (IRP) is divided into three main phases:

- a) Start of Research Operation (SRO), with 40 MW of ECH and 10 MW of ICH, which will focus on the demonstration of 15 MA operation in L-mode, commissioning of all required systems, including disruption mitigation, and the demonstration of H-mode plasma operation in deuterium,
- b) DT-1, with 60-67 MW of ECH, 33 MW of NBI and 10-20 MW of ICH, which will demonstrate robust operation in high confinement H-mode plasmas in DT up to $Q = 10$ for burn durations for 300-500s within an accumulated neutron fluence of $\sim 1\%$ of the final goal, and,
- c) DT-2, with 60-67 MW of ECH, up to 50 MW of NBI and 10-20 MW of ICH, with the ITER tokamak and ancillaries in their final configuration to demonstrate routine operation in DT plasmas at high Q and the $Q = 5$ long-pulse and steady-state scenarios to the final neutron fluence.

The presentation will describe the status of ITER tokamak assembly and plant system installation and commissioning, the logic, physics basis and the modelling and experimental evaluations carried out to support the new baseline and the associated IRP. The latter includes the impact of the tungsten wall on plasma scenarios and associated risk mitigation measures, as well as the optimization of the tokamak components and ancillaries to minimize Project risks. Open R&D issues related to these evaluations and mitigation measures will also be described together with experimental, modelling and modelling validation activities required to address them.