



Contribution ID: 70

Type: **Oral**

## **Oral\_8: Diagnostics for DTT: opportunities of progress towards systems for fusion reactors**

*Wednesday, 8 September 2021 10:00 (30 minutes)*

Specifically designed to test power exhaust solutions, DTT will represent in the near future the closest approximation to ITER and DEMO, with its magnetic field (6T), plasma current (5.5 MA), high power density (45 MW,  $R=2.19$  m,  $a=0.7$  m,  $k=1.7$ ), actively cooled first wall components and superconducting coils. A series of diagnostics, system is being designed to cover all the important functional requirements of the diagnostics in a fusion device. Besides ordinary machine protection and basic feedback control functions (density, plasma current, equilibrium etc.), diagnostics are necessary to boost the comprehension of the complex physics phenomena that occur in fusion plasmas by providing accurate input to sophisticated physics models. State of the art diagnostic system are therefore being considered to be integrated on DTT to properly cover core, edge, SOL and divertor areas. They will allow full physics characterization of the plasma as well as the possibility to safely test DEMO relevant control methods based on physics and engineering models

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