

Progress in European Fusion Research

A.J.H. Donne

*formerly EUROfusion, Boltzmannstrasse 2, 85748 Garching, Germany
tony.donne@gmail.com*

The European **Roadmap to the realisation of fusion energy** is used to coordinate and prioritise all European Fusion R&D activities. The European community can look back with satisfaction to the achievements since the establishment of EUROfusion in 2014. The joint exploitation of all tokamaks, the W7-X stellarator and a number of linear plasma facilities has led to a coherent and targeted programme. Similarly, an integrated approach has been set up in which theory, simulation, verification and validation activities are centrally supported by five Advanced Computing Hubs. Many scientific and technical achievements were made, that have given important new insights to optimise the ITER Research Plan and guide the DEMO design; the recent TT and DT results of JET are the most visible of them.

This talk briefly presents an overview of the fusion roadmap along with recent highlights and then it focuses on the status of the concept design and R&D activities for DEMO in Europe. At present the DEMO concept design is strongly following the recommendations and lessons learned from a Gate Review at the end of the Pre-Concept Design Phase in 2020, including the strong directive role of a DEMO Central Team, a stronger attention to physics aspects that are profoundly interwoven in the design process and a better articulation of the technology R&D and system design. Also an overview of the IFMIF-DONES neutron source will be presented.

The talk will also look forward and address the remaining outstanding challenges on the path towards DEMO. Thus far the European strategy has been based on testing certain technologies in ITER but given the recent delays in the ITER project it is investigated whether these challenges can be tackled in a different and faster way.