

# Colloquio di Dipartimento

nell'ambito della scuola di dottorato

**Mercoledì, 7 Maggio 2014**

**ore 14:30**

Edificio U1 – Stanza 13

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## **A demonstration fusion reactor: Roadmap and remaining challenges**

Demonstrating the capability of generating several hundred MW of net electricity and operating with a closed fuel-cycle, in a DEMOnstration Fusion Reactor, is viewed by many of the Nations engaged in the construction of ITER as the remaining crucial step towards the exploitation of fusion power. For a DEMO reactor, there are still some outstanding physics and engineering challenges with potentially large gaps beyond ITER where R&D and design work is urgently needed.

This talk reviews the remaining main technical challenges in physics and technology, together with the DEMO design and R&D work in progress in Europe, being implemented as part of the new Roadmap to Fusion Electricity. An integrated design-oriented approach is viewed as essential especially during the early concept design stage: (i) to better understand the problems and evaluate the impact of uncertainties and technical risks of foreseeable technical solutions; (ii) to identify design trade-offs and constraints to address the most urgent issues in physics, technology and system engineering integration; and (iii) to prioritize the R&D needs. Ensuring that R&D is focused on resolving uncertainties in a timely manner and that learning from R&D is used to responsively adapt the technology strategy will be crucial to the success of the DEMO Programme.