



# ***PPD Seminar***

## **Robotics for Challenging Environments**

**Nick Sykes and Lushan Weerasooriya (RACE/UKAEA)**

**16 Sept 2026, 11:30**

**R61 CR03 (RAL)**

This talk explores the development and deployment of robotic systems designed to operate in environments that are hazardous, inaccessible, or otherwise unsuitable for human intervention. It examines the technical challenges associated with developing robotic solutions for radiation environments, safety-critical applications, autonomous operation, mobility, communication, and manipulation. The discussion will focus on applications in fusion energy facilities, large-scale scientific research infrastructures, and space exploration. The presentation will also highlight a recent development programme centred on the Large Hadron Collider (LHC) at CERN, where an autonomous mobile robotic system has been developed to perform inspection tasks within one of the world's most complex and challenging scientific facilities. Through this case study, the talk will demonstrate how advances in robotics and artificial intelligence are enabling safer, more efficient, and more reliable operations in environments where human access is restricted or impractical.

