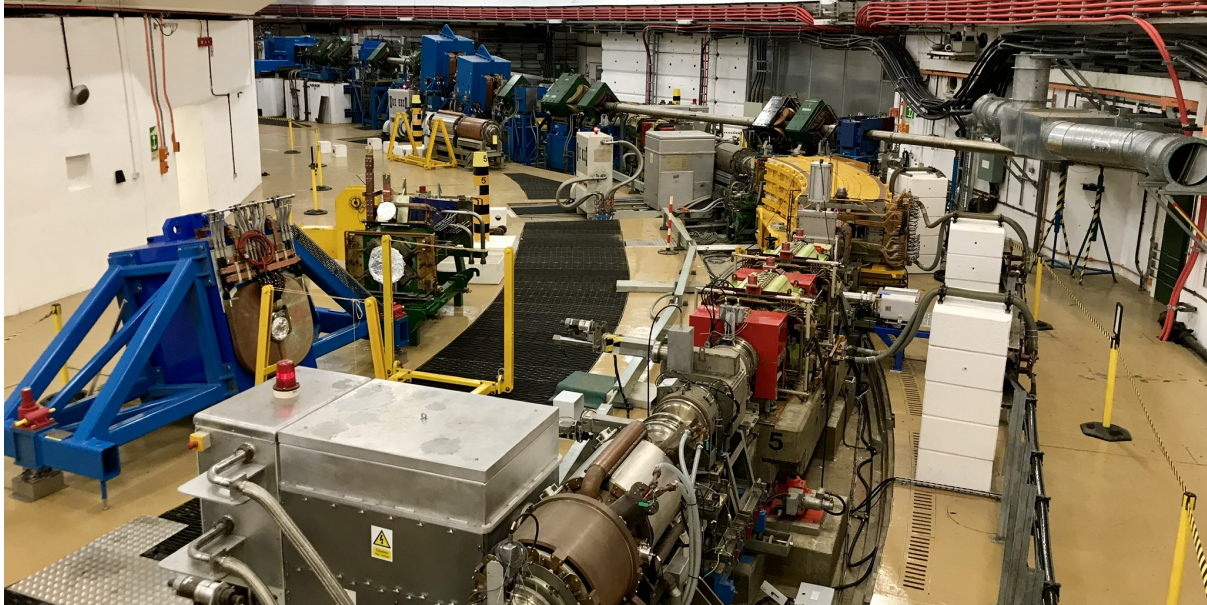


Upgrade of the ISIS Facility

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JAI Seminar – Hilary Term 2021

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Abstract:

The ISIS Neutron and Muon Source accelerators have been studied, improved and refined over many years, but recently a feasibility study was launched to explore ISIS-II, the next generation source for the UK. The aim is to refocus facility upgrades in light of the advent of the European Spallation Source (ESS) in Sweden and new forecast scenarios for neutron and muon provision in Europe.

A working group was set up consisting of ISIS experts on accelerators, targets, neutronics, instrument science, detectors and engineering, to reflect the ambition of a full facility upgrade, not simply an accelerator upgrade. This working group has produced a comprehensive roadmap for the feasibility and design studies and associated R&D to enable a fully informed decision on the optimal proton driver and target system architecture to build a Megawatt-class short pulse neutron and muon facility on the Harwell campus with the best balance of technical capability and lifetime cost – ‘ISIS-II’. This could either be a stand-alone facility, or make use of existing ISIS infrastructure.

This challenging and ambitious project aims to gather enough detailed knowledge to enable a decision by 2027 and start construction by 2030 on a machine that will support the international research community for decades to come.

John Thomason is Accelerator Division Head for the ISIS Neutron and Muon Source, responsible for ISIS accelerator operations and the R&D which will support running optimally and sustainably for the lifetime of the facility. He also coordinates efforts towards the design of potential ISIS accelerator upgrades – ‘ISIS-II’ – and more generic high power proton drivers.

After completing a PhD in atomic physics John did post-docs involving ion sources and radar before joining the ISIS Ion Source Section in 1997.

John is a member of the Accelerator Technical Advisory Committees for the US and Japanese spallation neutron sources, is part of a number of European Spallation Source Review Boards and was chair of the China Spallation Neutron Source Advisory Committee. He is a Fellow of the Institute of Physics and a member of the IoP Particle Accelerators and Beams Group Committee.