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DIPARTIMENTO DI SCIENZE MATEMATICHE, FISICHE ED INFORMATICHE

SEMINARIO INTRODUTTIVO ALLA SPETTROSCOPIA NEUTRONICA

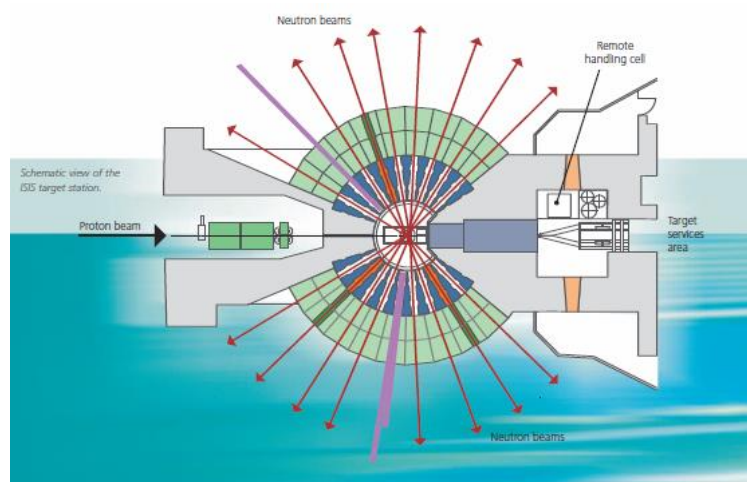
PULSED NEUTRONS FOR MATERIALS RESEARCH

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## Abstract

This talk provides an overview of recent developments and perspectives in the use of pulsed neutrons to probe the structure and dynamics of materials, as illustrated by the current research programme of the *Molecular Spectroscopy Group* at the *ISIS Pulsed Neutron and Muon Source, Rutherford Appleton Laboratory, United Kingdom* [1]. In particular, I will make recourse to several recent examples in order to highlight the uniqueness of short-pulse spallation neutron sources to access and explore a broad range of phenomena with unrivalled resolution and over several orders of magnitude in length and time. These capabilities remain largely unique to ISIS, the only operational neutron source of its kind in Europe at the present time, and have enabled a growing number of applications in physical and materials chemistry, energy research or catalysis. I will also discuss in some detail the increasing importance of first-principles materials-modelling methodologies to guide and interpret neutron-scattering experiments on complex materials, as well as ongoing and much-needed infrastructure developments for in-situ and operando studies under realistic conditions of industrial and social relevance.

[1] See: [www.isis.stfc.ac.uk/groups/molecular-spectroscopy](http://www.isis.stfc.ac.uk/groups/molecular-spectroscopy)

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Aula Newton Plesso FISICO