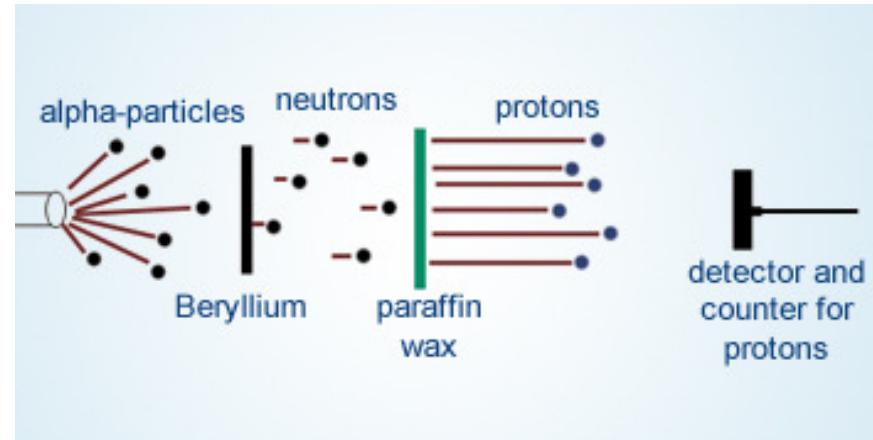


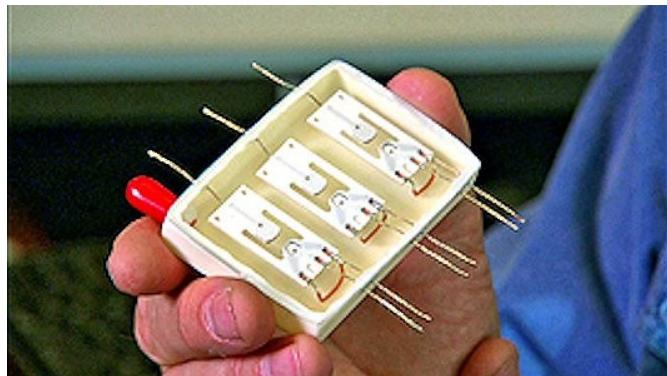
How to find neutrons

Robert McGreevy

Neutron source No. 1



Portable neutron sources



$$D + T \rightarrow n + {}^4He \quad E_n = 14.1 \text{ MeV}$$

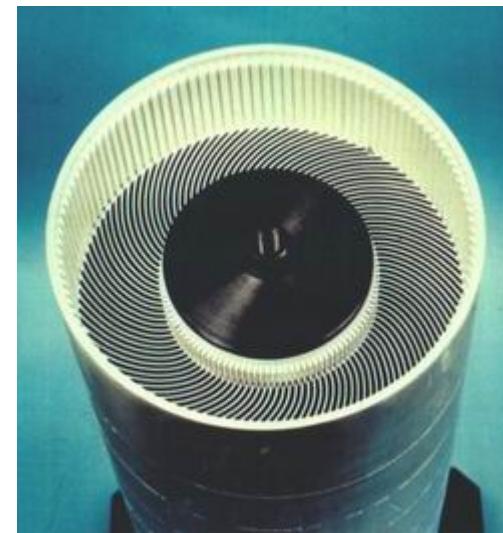
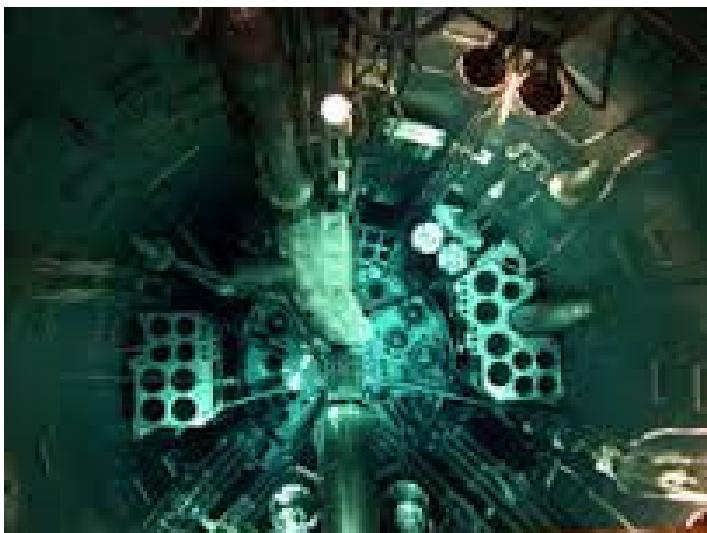
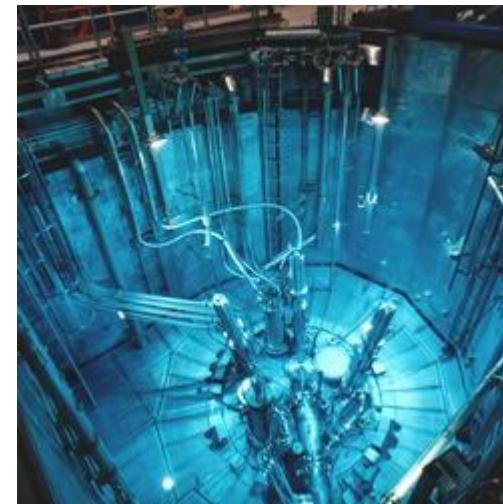
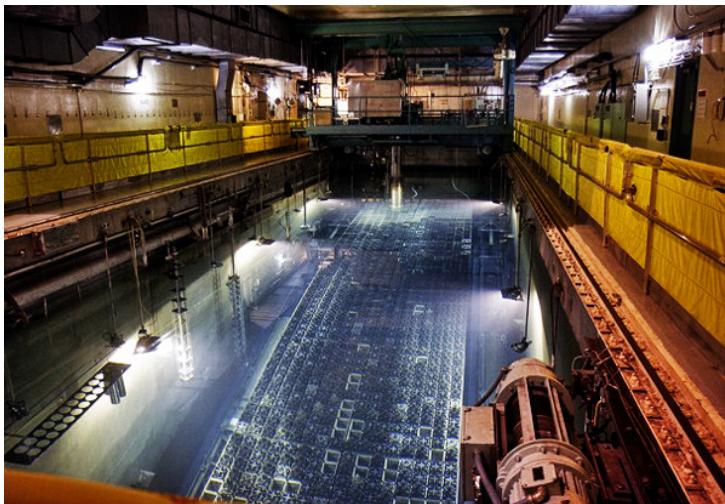
$$D + D \rightarrow n + {}^3He \quad E_n = 2.5 \text{ MeV}$$

- Oil industry
- Security
- Structure evaluation

Portable neutron sources



Non-portable neutron sources



User programmes

- Early programmes ‘parasitic’ at materials testing reactors
- Mainly used by local scientists (staff)
- UK Neutron Beam Research Committee 1966 expanded access to the broader university research community
- Institut Laue Langevin (1971) first (high flux) research reactor purpose built for an external user community
- User programmes now common at synchrotrons etc.



Where should I go to get neutrons?

- Where can I do the best science?
 - Instrument specifications
 - Flux
 - Sample environment
 - Technical/user support
 - Laboratory space/facilities
 - PhD programmes
 - Software
- Proximity/ease of access
- Timing (cycles, shutdowns ...)
- Funding
- Personal connections/collaborations
- Accommodation/Food/Scenery

Where should I go to get my neutrons?

<http://neutronsources.org/>



Home - Neutronsources - Internet Explorer

http://neutronsources.org/

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Welcome to Neutronsources.org

This website aims to provide information about neutron facilities and neutron research worldwide.

Get in touch

If you are from a neutron facility and would like to send your latest highlights please email us at news@neutronsources.org.

Mailing list

To be informed of neutron-related activities and developments please subscribe to the neutron sources [mailing list](#).



Neutronsources.org is supported by [nmi3](#) and hosted at [ENSA](#)


www.nmi3.org


16.07.2015 From:ANSTO, Australia

Deadline for Neutron Scattering and Deuteration Proposals at the OPAL Reactor

Proposals at the OPAL Neutron Beam Facility (both cold- and thermal-neutron instruments) and National Deuteration Facility are now open.



16.07.2015 From:ENSA

11:02 19/08/2015

Neutron centres - Neutronsources - Internet Explorer

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Neutronsources.org

Your entry into the neutron world

Home About News Neutron centres Resources Calendar

Africa, Asia and Oceania Americas Europe

Neutron centres

Research centres worldwide use neutrons as probes to investigate diverse properties of a wide range of materials.

Neutron associations support scientists who perform neutron research. These associations can be organised by country or be a joint collaboration between different countries.

Here you can find a dedicated webpage with information about each research centre and neutron association worldwide. Please browse them by continent through the tabs above or by clicking on the map below.

Map

Start

11:04
19/08/2015

Sources with significant user programmes

Europe

Reactors

- [Institut Laue Langevin – ILL \(France – member countries or collaborations only\)](#)
- [Heinz Maier-Leibnitz Zentrum – MLZ \(Germany\)](#)
 - Julich Centre for Neutron Science – JCNS
 - Forschungs-Neutronenquelle Heinz Maier-Leibnitz - FRM-II
- [Laboratoire Leon Brillouin – LLB \(France\)](#)
- [Helmholtz-Zentrum Berlin – HZB \(Germany\)](#)
- [Budapest Neutron Centre – BNC \(Hungary\)](#)
- [Nuclear Physics Institute – NPI \(Czech Republic\)](#)

Spallation sources

- [ISIS \(UK\)](#)
- [Swiss Spallation Neutron Source – SINQ \(Switzerland\)](#)
- [European Spallation Source – ESS \(Sweden – under construction\)](#)

NMI3

ILL (France)

ILL :: Neutrons for science : The world's flagship centre for neutron science - Internet Explorer
https://www.ill.eu/

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ABOUT ILL PRESS AND NEWS SCIENCE & TECHNOLOGY USERS INSTRUMENTS & SUPPORT REACTOR, ENVIRONMENT & SAFETY INDUSTRY CAREERS

 More than simply neutrons

The Institut Laue-Langevin is an international research centre based in Grenoble, France.

At the leading edge of neutron science and technology, it operates one of the most intense neutron sources in the world. [more]

To know more about ILL, see the FAQ

Site entrance
The site entrance is now located at 71 avenue des Martyrs. See interactive map of the site below, and more information here.



ILL general presentation film

New brochure on 'Neutrons and energy'
The main challenge for the COP21 conference in Paris next December is the transition to a lower-carbon economy. To combat global warming we need more efficient means of harnessing natural energy. The solutions often involve advanced materials with complex structures, and to understand these we need neutrons and neutron technology.

You can find examples of the ILL's work in this domain in its recently published "Neutrons and energy" brochure.



Colloquia at ILL
The ILL runs a colloquium series at which prestigious speakers are asked to give exciting and accessible talks of general interest to scientists having a wide range of backgrounds. In the past, ILL colloquia have included the Astronomer Royal, the editor of Nature or Hélène Langevin-Joliot.

More information on past and future colloquia [here](#).



News

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Scientific news

05.08.15 Solving a long-standing atomic mass difference puzzle paves way to the neutrino mass [more]

05.08.15 Superionic conductor for fuel cells An alternative material for use in fuel cells has been probed by the ILL. A publication in Physical... [more]

08.07.15 Sizing up for spintronics Neutrons have been used to directly observe the behaviour of tiny magnetic chains that could find... [more]

General information

18.06.15 Revised 2015 reactor schedule [more]

23.05.15 EU supports the neutron science community: SINE2020 granted [more]

10:26 29/08/2015

ILL (France)

The Yellow Book 2008 - Internet Explorer

https://www.ill.eu/fileadmin/users_files/Other_Sites/YellowBook2008CDRom/index.htm

ILL :: Neutrons for science : The Yellow Book 2008

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The Yellow Book 2008
Guide to Neutron Research Facilities

CONTENTS

Foreword
The high flux reactor
The ILL instruments

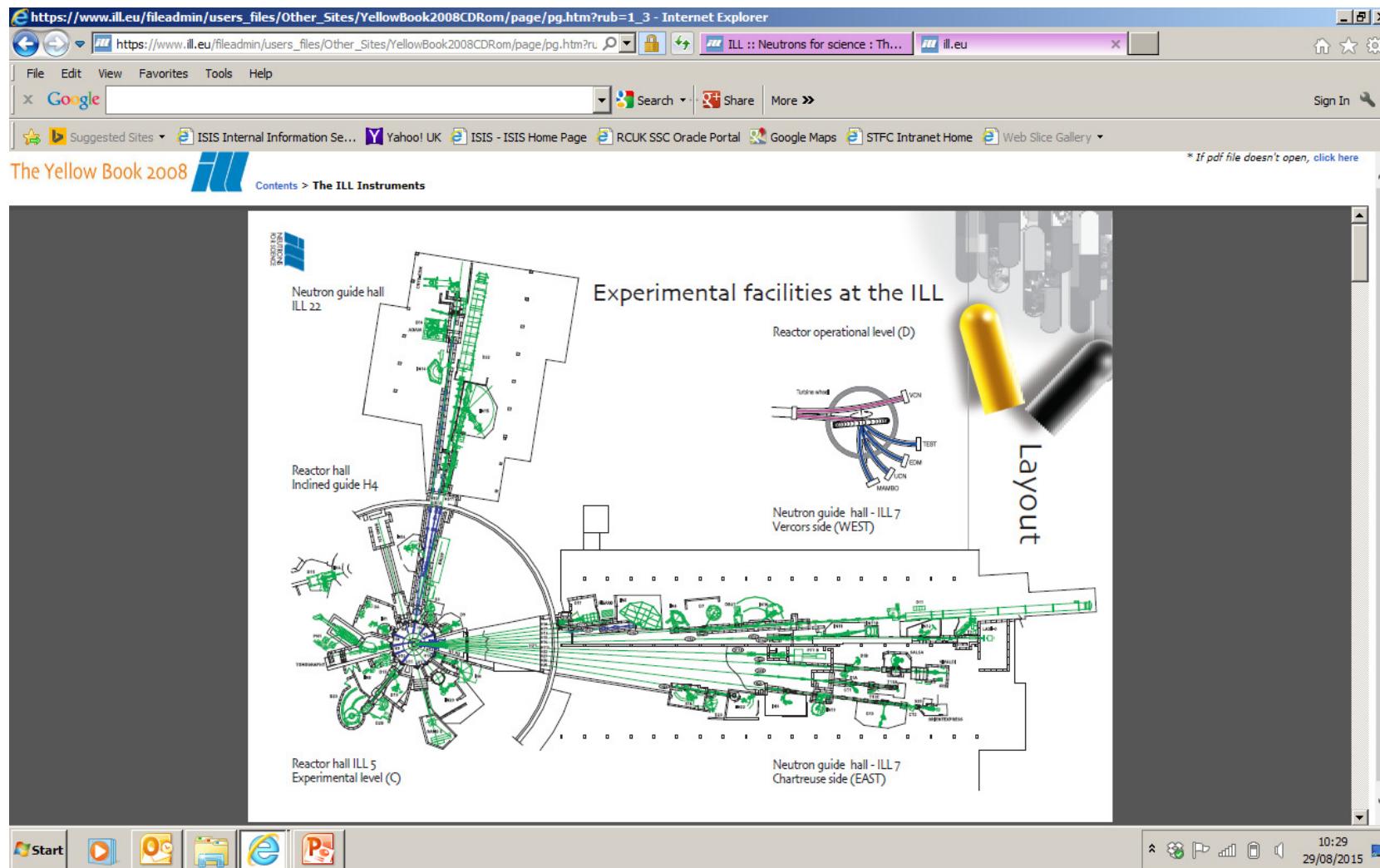
Elastic Scattering Instruments
Powder diffractometers
Single crystal diffractometers
Large-scale structure diffractometers
Reflectometers

Inelastic Scattering Instruments
Time-of-flight spectrometers
High resolution spectrometers
Three-axis spectrometers

Nuclear and Particle Physics Instruments
Nuclear and Particle Physics instruments

User Programme
Computers and Computing
Chemistry and Biology Laboratories
Sample Environment
Advanced neutron tools
Safety Regulation
Partnerships

ILL (France)



MLZ (Germany)

Home - MLZ - Heinz Maier-Leibnitz Zentrum - Internet Explorer

MLZ http://www.mlz-garching.de/englisch

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MLZ Heinz Maier-Leibnitz Zentrum Neutrons for Research, Industry and Medicine

About MLZ News & Media Neutron Research Instruments Science & Projects Industry & Medicine User Office

MLZ is a cooperation between:

TUM Technische Universität München

Heinrich Heine Universität Düsseldorf

Heinrich Heine Universität Düsseldorf

JÜLICH FOM-Institut für Materialfluss und Reaktionen

29.08.2015 Source: Forschungs-Neutronenquelle Heinz Maier-Leibnitz

Neutrons decrypt the dynamics of magnetic helices

+kh -kh

Manganese silicon is the preferred crystal of scientists going in for magnetic research: it can be manufactured for some time as relatively large single crystal, and is particularly suited to investigate the magnetic properties. Now theoretical and experimental physicists from the TU Munich, the MLZ and the University of Cologne managed to pull off a special coup with this material.

» read more

28.08.2015 Source: ESS, European Spallation Source, Lund, Sweden

Brilliant Future for Neutron Research

As of today, the European Union rises the neutron source European Spallation Source (ESS) in Lund, Sweden, which is under construction, to a European Research Infrastructure Consortium (ERIC).

Events

Conference 35th Symposium on Dynamical Properties of Solids (DyProSo2015) 13.09.2015 - 17.09.2015

School MATRAC Schools - Application of Neutrons and Synchrotron Radiation in Engineering Materials Science 21.09.2015

Workshop JCNS Workshop 2015 05.10.2015 - 08.10.2015

Workshop Soft Matter & Neutrons GO Energy 08.10.2015 - 09.10.2015

» Show all

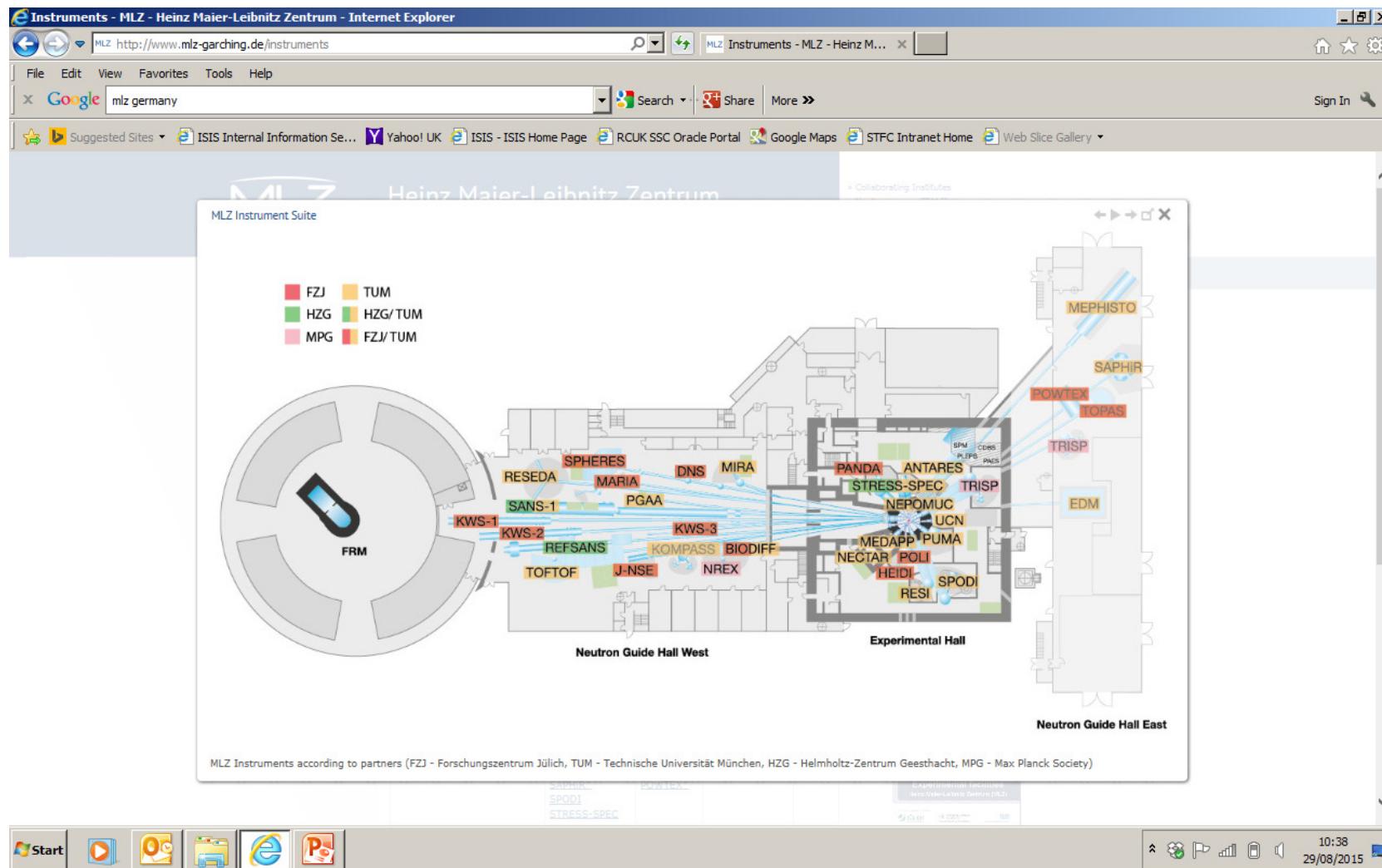
Third edition of "Experimental facilities" available

The essential guide for all users and those aspiring to be!

Start

10:32 29/08/2015

MLZ (Germany)



LLB (France)

Laboratoire Léon Brillouin - Internet Explorer

http://www.llb.cea.fr/en/

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Laboratoire Léon Brillouin
UMR12 CEA-CNRS
Bât. 563 CEA Saclay
91191 Gif sur Yvette Cedex
France
llb-sec@cea.fr

cea CNRS

Welcome Beam time Research Instrumentation Education Neutron links

IRAMIS / llb / Discover the LLB...

News ...

- Structural stability of anhydrous proton conducting Sr_{2-x}Er_xO₄ perovskite ceramic vs. protonation/deprotonation cycling: Neutron diffraction and Raman studies
- ENSA new "Neutrons for Science and Technology" brochure
- Future of the French neutron source LLB-Orphée.

Important Meetings Schools and Conférences

Aug. 30th 2015 to Sep. 04th 2015 Conférence CEA European Conference on Neutron Scattering 2015 (Saragosse -Espagne) » Zaragoza, Espagne PDF

Oct. 05th 2015 to Oct. 06th 2015 Conférence CEA Neutron Imaging and tomography: New applications and developments » Laboratoire Léon Brillouin Eauze les Barres, Haute Savoie, France http://www.sfn.asso.fr/jcn/site-jcn-23/Imaging-wor... JDNIImagingWorkshop.pdf (2.3 Mo)

The LLB Phone book by the CNRS RSS links

Headlines

Agenda

European Conference on Neutron Scattering 2015 (Saragosse -Espagne) Conference CEA Sunday, Aug 30, 2015, 14h00 Plus ...

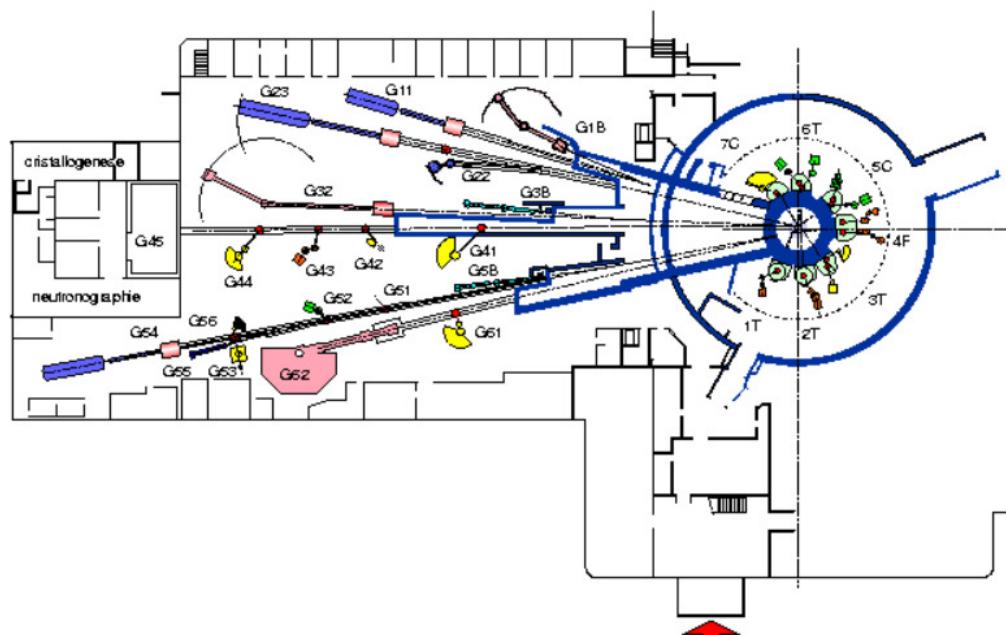
Start

10:39
29/08/2015

LLB (France)



IMPLANTATION GENERALE DES SPECTROMETRES



HZB (Germany)

Screenshot of the HZB (Helmholtz-Zentrum Berlin) website as viewed in Internet Explorer.

The browser title bar reads "Mainpage - Internet Explorer". The address bar shows the URL "https://www.helmholtz-berlin.de/index_en.html".

The search bar contains "hb germany".

The page header includes the HZB logo, a search bar, and links for Sitemap, Contact, Imprint, and My Intranet.

The main content area features a large image of a modern building complex, identified as BESSY II. Below the image, a section titled "Welcome to the Helmholtz-Zentrum Berlin" provides an overview of the facility's research focus on materials and energy transition.

A sidebar titled "Quick Access for Visitors" lists various links such as Users Information, Industry and Public Institutions, Press Information, Vacancies, Proton Therapy, Visitors, Students and PhD, Perspective, and Research for Society.

The bottom of the page includes social media links (Facebook, Twitter, YouTube, RSS, Instagram, HZBlog), a "Aktuelle Tweets @HZBde" section, and a "Media Centre" section with video thumbnails.

The taskbar at the bottom shows standard Windows icons for Start, Task View, File Explorer, Internet Explorer, and Print.

HZB (Germany)

Instruments BER II - Internet Explorer

HZB https://www.helmholtz-berlin.de/quellen/ber/instruments-neutrons/index_en.html

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HZB Helmholtz Zentrum Berlin

Neutron and photon source

Neutron source

Research Reactor BER II

Instruments BER II

- Experimental Hall
- Neutron Guide Hall

Operation BER II

High Field Magnet

Social Media

- HZBde Facebook
- HZBde Twitter
- HZBde Youtube
- RSS
- HZB Instagram
- HZBzlog

Complex neutron experiments under extreme conditions at BER II

HZB offers access to a great variety of **neutron instruments** for complex experiments under extreme conditions. Both thermal and cold neutrons are available. Instruments provided with thermal neutrons are located in the **Experimental Hall**, instruments provided with cold neutrons are located in the **Neutron Guide Hall**. An exception is the diffractometer EXED in the Neutron Guide Hall, which can be operated both with thermal and cold neutrons.

Users who are unsure which is the most appropriate **instrument** for their experiment should contact the User Office for help.

In order to achieve those extreme conditions, HZB is placing a special emphasis on **sample environment** for e.g. high magnetic fields, high pressures, high to ultra low temperatures – and combinations thereof.

Floorplan BER II

The floorplan illustrates the layout of the BER II facility. It shows a long, narrow building with several experimental stations labeled V1 through V20. Some stations are marked with a green circle, while others are marked with a blue circle. A large circular area labeled 'E' contains additional stations labeled E1 through E10. A legend at the bottom right indicates that a green circle means the instrument is under construction. A scale bar at the bottom right shows distances from 0 to 5 meters.

Downloads

- Floorplan 2011 (PDF, 637 KB)
- the complete BENSC instrumentation brochure (April 2007) (PDF, 6 MB)

Beamtime Coordination

Dr. Astrid Brandt

(030) 8062-42169
(030) 8062-14732
Email

Links

- User Access
- Sample Environment
- Badge

10:44
29/08/2015

BNC (Hungary)

Budapest Neutron Centre ...for research, science and innovation! | Association of the KFKI Rese - Internet Explorer
http://www.bnc.hu/ plan a diquer

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Budapest Neutron Centre ...for research, science and innovation!
Association of the KFKI Research Institutes Centre for Energy Research – Wigner Research
Centre for Physics

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Science at BNC
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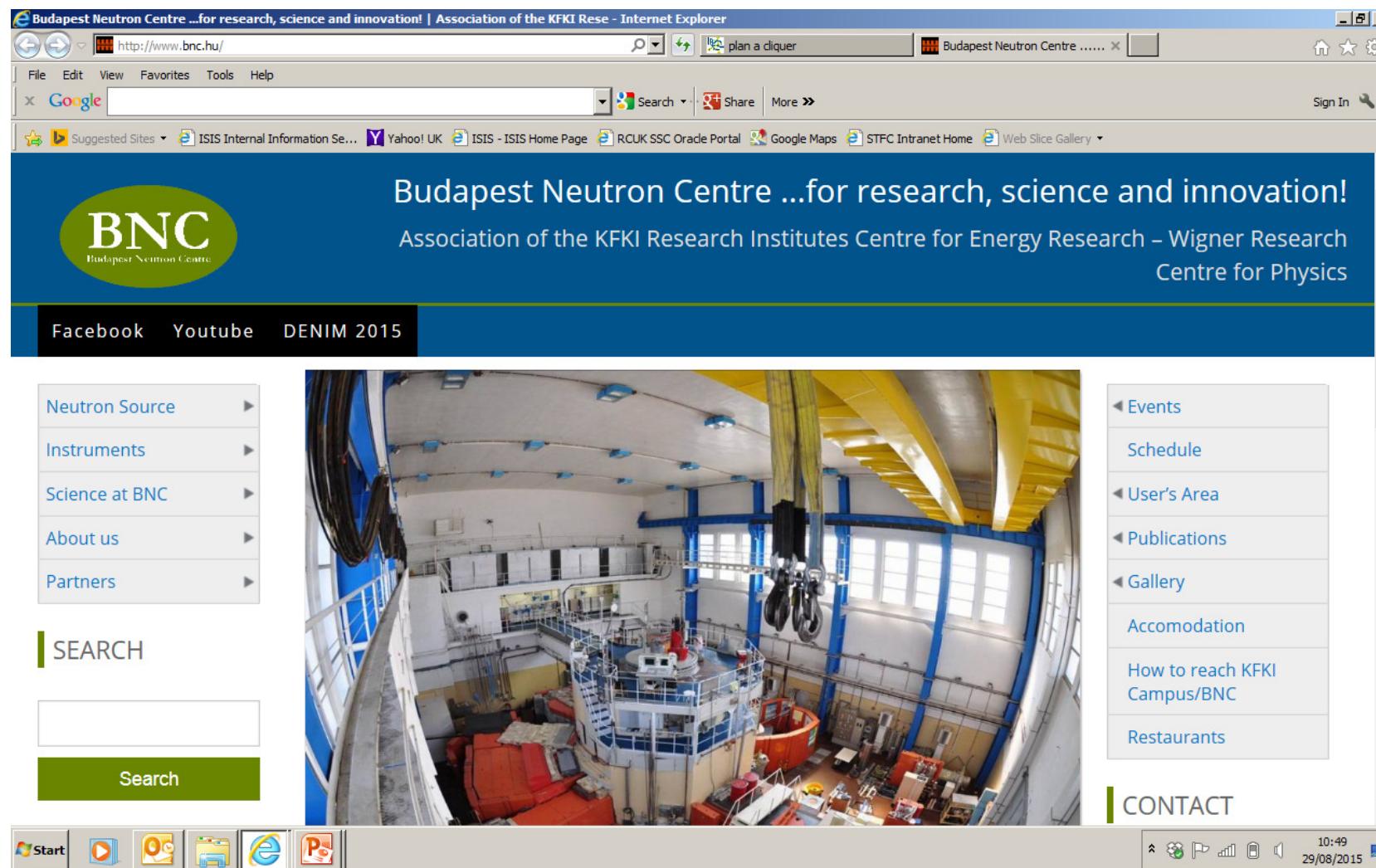
Search

Events
Schedule
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How to reach KFKI Campus/BNC
Restaurants

CONTACT

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10:49
29/08/2015



BNC (Hungary)

Instruments | Budapest Neutron Centre ...for research, science and innovation! - Internet Explorer

http://www.bnc.hu/?q=node/7

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NRD; Neutron induced Prompt Gamma Spectrometer

PGAA; Prompt Gamma Activation Analysis

REF; Polarised Beam Neutron Reflectometer

GINA; Polarized Reflectometer

NRAD; Dynamic n/y Radiography, Static Radiography

QR code

ADMINISTRATOR

Request new password

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Thermal Neutron Instruments:

- RAD-DYNAMIC N/GAMMA& STATIC RADIOGRAPHY
- BIO-PORT USED FOR BIOLOGICAL IRRADIATION
- MTEST: MATERIAL TESTING DIFFRACTOMETER
- TAST: TRIPLE AXIS SPECTROMETER
- PSD: POWDER DIFFRACTOMETER
- TOF: TIME-OF-FLIGHT DIFFRACTOMETER

Cold Neutron Instruments:

- GINA: POLARIZED NEUTRON REFLECTOMETER
- IMBS: IN-BEAM MÖSSBAUER SPECTROMETER
- SANS: SMALL ANGLE SCATTERING SPECTROMETER
- PGAA: PROMPT GAMMA ACTIVATION ANALYSIS
- NIPS: NEUTRON INDUCED PROMPT GAMMA SPECTROMETER
- REF: REFLECTOMETER
- ATHOS: TRIPLE AXIS SPECTROMETER

TOF Measuring Hall

The diagram illustrates the layout of the BNC facility. At the center is the reactor hall, from which several neutron beams emerge. One beam passes through a moderator cell (MC) and a scattering tunnel (ST) before reaching the GINA instrument. Another beam is directed towards the CNS Measuring Hall, which contains the IMBS, SANS, and ATHOS instruments. A third beam is used for dynamic radiography (NRAD). On the left, there is a material testing diffractometer (MTEST) and a triple axis spectrometer (TAST). A powder diffractometer (PSD) is also shown. The facility includes a bio-port for biological irradiation and a time-of-flight diffractometer (TOF). A legend at the bottom identifies these instruments.

Start

10:50
29/08/2015

NPI (Czech Republic)

The screenshot shows a Microsoft Internet Explorer window displaying the website for the Nuclear Physics Institute, ASCR, Department of Neutron Physics. The URL in the address bar is <http://neutron.ujf.cas.cz/>. The page title is "NPI About ONF". The browser interface includes standard buttons for back, forward, search, and refresh, along with a toolbar with icons for Google, Suggested Sites, and various links like ISIS Internal Information Se..., Yahoo! UK, etc.

The website header features the logo of the Nuclear Physics Institute, ASCR, and the text "Nuclear Physics Institute, ASCR" and "Department of Neutron Physics". It also includes the logo of The Academy of Sciences of the Czech Republic and links for "HOME", "INTRANET", "WEBMAIL", and "SITE MAP". A search bar and a "Login" button are also present.

The main content area has a blue header "Department of Neutron Physics". Below it, a section titled "Fundamental and Applied Research with Thermal Neutrons" discusses research at five horizontal beam channels of the reactor LWR-15. Another section, "Nuclear Analytical Methods with Charged Particles", describes work on electrostatic accelerators and ion beam techniques.

On the left sidebar, there are links for "NEWS", "ESS Science Symposium 2012", "ACCELERATORS" (listing Tandetron and Research reactor LVR-15), and "NEUTRON INSTRUMENTS" (listing HK3 - Neutron Analytical Methods, HK4 - Strain Scanner, MEREDIT - Powder Diffraction, MAUD - High Resolution SANS, HK8b - Neutron Optics, and HK9 - Strain Diffractometer).

The bottom of the screen shows the Windows taskbar with icons for Start, File Explorer, Internet Explorer, and Print, along with system status icons for battery, signal, and date/time (17:13, 29/08/2015).

ISIS (UK)

ISIS - ISIS Home Page - Internet Explorer

http://www.isis.stfc.ac.uk/

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Science & Technology Facilities Council

ISIS

About Science Instruments Industry Groups People User office Apply for Beamtime Beam Status Vacancies

Backstage Science : Muons

ISIS is a world-leading centre for research in the physical and life sciences at the STFC Rutherford Appleton Laboratory near Oxford in the United Kingdom. Our suite of neutron and muon instruments gives unique insights into the properties of materials on the atomic scale.

We support a national and international community of more than 3000 scientists for research into subjects ranging from clean energy and the environment, pharmaceuticals and health care, through to nanotechnology and materials engineering, catalysis and polymers, and on to fundamental studies of materials.

News and Events

ISIS Call for Studentships Monday 10 August 2015 The ISIS Call for Studentships is now open!

ISIS opens its doors! Monday 13 July 2015 The Harwell Open Day on Saturday 11 July saw around 15,000 people visiting the site, 4,300 of whom visited ISIS! They were treated to a liquid nitrogen show, the chance to make slime, grow crystal gardens and build their favourite crystal.

Science at ISIS

Staying safe in the skies Monday 10 August 2015 It may surprise you to learn just how much ISIS has contributed to airline safety over the last few years, so here are some examples of how science is helping to keep us safe.

ISIS features on the cover of the journal of Materials Chemistry A Thursday 06 August 2015 The cover picture on the most recent issue of Journal of Materials Chemistry A features a paper presenting results from an experiment carried out at ISIS using the POLARIS instrument.

Start

10:54
29/08/2015

ISIS (UK)

ISIS - Instruments - Internet Explorer

http://www.isis.stfc.ac.uk/instruments/instruments2105.html

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Science & Technology Facilities Council

ISIS

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Home > Instruments

Target Station 1

Muons

Target Station 2

Instruments by technique

Muon spectroscopy

Muons provide a complementary probe to neutrons, particularly in the areas of magnetism, superconductivity and charge transport.

Argus, Emu, Hifi, MuSR

Neutron diffraction

Neutron diffraction experiments determine the atomic and/or magnetic structure of a material. This technique can be applied to study crystalline solids, gasses, liquids or amorphous materials.

Gem, Engin-X, Hrpd, Nimrod, Oeiris, Pearl, Polaris

Instruments by target

Muons

Argus, Deva, Emu, Hifi, MuSR

TS1

Alf, Crisp, Engin-X, Fires, Gem, Het, Hrpd, Ires, Iris, Loq, MAPS, MARI, Merlin, Oeiris, Pearl, Polaris, Prisma, Rotax, Sandals, Surf, SXD, Tosca, Vesuvio

TS2

Chipir, Exeed, IMAT, Inter, Larmor, Let, Lmx, Nimrod, Offspec, Polref, Sans2d, Wish, Zoom

Start

10:55
29/08/2015

ISIS (UK)

The screenshot shows a Microsoft Internet Explorer window displaying the ISIS website. The title bar reads "ISIS - Newton Funding for Indian, Chinese and South African researchers - Internet Explorer". The address bar shows the URL "http://www.isis.stfc.ac.uk/apply-for-beamtime/newton-funding-for-indian-chinese-and-south-african-researchers". The page content is about Newton Funding for Indian, Chinese and South African researchers, mentioning funding from the UK Government's Newton Fund to support experiments at ISIS. It details the support provided by ISIS, including flights, accommodation, and food costs, and the application process through the ISIS online proposal system.

ISIS - Newton Funding for Indian, Chinese and South African researchers - Internet Explorer

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ISIS

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Home Apply for Beamtime

Newton Funding for Indian, Chinese and South African researchers

ISIS has been awarded funds as part of the UK Government's Newton Fund to support researchers from China, India and South Africa to use ISIS.

ISIS is able to support a limited number of experiments each round from users from these three countries. For supported experiments we can fund up to two researchers to come to ISIS for the experiment, and will pay for economy flights, accommodation and food costs for those researchers. Accommodation arrangements should be made through the ISIS user office, who will also provide a per diem amount for food; claims for flights should also be made through the user office and require supporting receipts.

To apply for Newton Funding for an ISIS experiment, please tick the box on page 4 of the ISIS online proposal system saying that you would like funding when you are creating your beamtime application (this mechanism will be available from ISIS round 16/2 onwards – for experiments approved before then, please contact [Philip King](#) to ask about the possibility of funding).

Details of the UK Government's Newton Fund can be found [online](#).

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ASTeC ISIS Call for Studentships Home Directions to ISIS

Central Laser Facility ISIS opens its doors! About People

17:26 29/08/2015

SINQ (Switzerland)

Paul Scherrer Institut (PSI) :: Swiss Spallation Neutron Source - SINQ - Internet Explorer

http://www.psi.ch/sinq/

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SINQ

PSI Home » Research with Neutrons and Muons (NUM) » SINQ

Instrumentation Access to SINQ SINQ Live Safety Regulations Publications The Neutron Source Contact



SINQ: The Swiss Spallation Neutron Source

Neutron scattering is one of the most effective ways to obtain information on both, the structure and the dynamics of condensed matter. A wide scope of problems, ranging from fundamental to solid state physics and chemistry, and from materials science to biology, medicine and environmental science, can be investigated with neutrons. Aside from the scattering techniques, non-diffractive methods like imaging techniques can also be applied with increasing relevance for industrial applications.

The spallation neutron source SINQ is a continuous source - the first of its kind in the world - with a flux of about 10^{14} n/cm²/s. Beside thermal neutrons, a cold moderator of liquid deuterium (cold source) slows neutrons down and shifts their spectrum to lower energies. These neutrons have proved to be particularly valuable in materials research and in the investigation of biological substances. SINQ is a user facility. Interested groups can apply for beamtime on the various instruments by using the SINQ proposal system.

Latest scientific SINQ highlights:

A new class of chiral materials hosting magnetic skyrmions beyond room temperature
Y. Tokunaga et al.

EDUCATION & JOBS EVENTS INFORMATION MATERIAL EN

[User Office](#)
[DUO Login](#)

Call for Proposals
Next submission deadline: November 15, 2015, 23:59 (CET)
[More Information](#)

SINQ OPERATION STATUS
[Accelerator Status](#)
[Experiment Schedule](#)

NUM
LNS
LDM
SINQ operation

PSI User Facilities Newsletter
Current News from PSI photon, neutron and muon user facilities

10:56 29/08/2015

SINQ (Switzerland)

Paul Scherrer Institut (PSI) :: Instrumentation - Internet Explorer

http://www.psi.ch/sinq/instrumentation

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Instrumentation

- Access to SINQ
- SINQ Live
- Safety Regulations
- Publications
- The Neutron Source
- Contact

Instrumentation

Neutron Scattering and Imaging Instruments at SINQ

Floor plan of the instruments located in the two SINQ halls.

Diffractometers

HRPT High resolution powder diffractometer (thermal neutrons)

FURTHER INFORMATION

- Information about SINQ sample environment equipment
- Information about SINQ computing, software, manuals and instrument control systems
- All methods offered at the PSI User Facilities, please make use of the filter options.

SINQ OPERATION STATUS

- Accelerator Status
- Experiment Schedule

User Contacts

- User Office
- DUO Login

PSI User Facilities Newsletter

Open Positions

10:56
29/08/2015

ESS (Sweden – under construction)

The screenshot shows the ESS website as it appeared in Internet Explorer. The page has a blue header with the ESS logo and navigation links for Home, Search, and Phone Book. Below the header is a menu bar with links to About ESS, Science & Instruments, Technology, Building ESS, Careers, and Partners & Industry. The main content area features three categories: Project, Science, and Society, each with an icon. A large image of a world map serves as the background for the main content area. At the bottom, there's a news section about the European Commission establishing ESS, a 'Latest News At ESS' section with four thumbnail images, and a 'Take Note' sidebar with links to current tenders and construction reports.

Home | ESS - Internet Explorer

https://europeanspallationsource.se/

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European Spallation Source

SEARCH Phone Book

ABOUT ESS SCIENCE & INSTRUMENTS TECHNOLOGY BUILDING ESS CAREERS PARTNERS & INDUSTRY

Project Science Society

Quick Jump: News | Partners | Science | Events | Procurement

European Commission Establishes ESS as a European Research Infrastructure Consortium

AUG 20, 2015

European Spallation Source ERIC. Yesterday the EC in Brussels formally adopted its decision to establish the European Spallation Source as a European Research Infrastructure Consortium, or ERIC.

Read more

Take Note

View Current and Forthcoming Tenders

Reports from the ESS Construction Site

Latest News At ESS

Delsarapport

Vertical proton (VGP) test

header image, rat (1.0 m), core (1.0m)

10:58 29/08/2015

ESS (Sweden – under construction)

SAC Recommends Four New Instruments to be built at the European Spallation Source | ESS - Internet Explorer

https://europeanspallationsource.se/article/sac-recommends-four-new-instruments-be-built- SAC Recommends Four New ...

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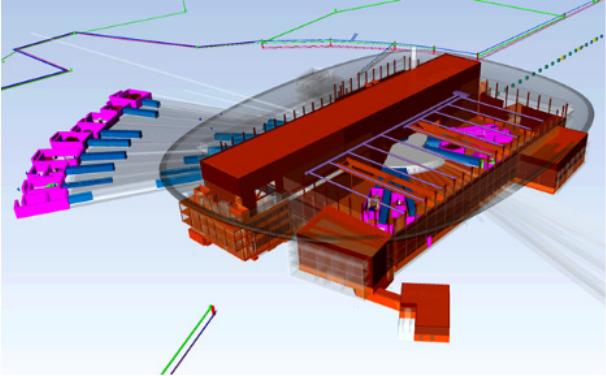
European Spallation Source

SEARCH Phone Book

ABOUT ESS SCIENCE & INSTRUMENTS TECHNOLOGY BUILDING ESS CAREERS PARTNERS & INDUSTRY

SAC Recommends Four New Instruments to be built at the European Spallation Source

JUN 16, 2015



The ESS Instrument Suite. The ESS peer-review instrument selection process nears conclusion as four new instrument proposals are recommended for inclusion within the facility's construction budget of 16 instruments.

NEWS

New Drug Carrier Aims to Treat Secondary Tumours of Breast Cancer AUG 14, 2015

BIFROST: A Prismatic Approach to Neutron Spectroscopy AUG 12, 2015

Dispersionless Spin Waves Provide Clues to Enigmatic Magnetic Ordering in Garnet Crystals JUL 2, 2015

Physics Underlying ESS 2015 Moderator Design Tested at J-PARC JUL 1, 2015

ESS and Chalmers University of Technology Sign Research MoU JUN 29, 2015

SAC Recommends Four New Instruments to be built at the European Spallation Source JUN 16, 2015

Start Internet Explorer

10:58 29/08/2015

NMI3 (European Access)

Access Programme - About NMI3 - The NMI3 information portal - Internet Explorer

http://nmi3.org/about-nmi3/access-programme.html?back=yes

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ABOUT NMIS NEUTRON RESEARCH MUON RESEARCH NEWS AND MEDIA

Access Programme Joint Research Activities Networking Industry Education Management Neutrons as probes to study matter – find out more here. Muons, multi-faceted elementary particles – find out more here. News from NMI3 and the neutron and muon worlds.

ACCESS PROGRAMME

Frequently Asked Questions Facilities – Submit a proposal

News Events Login Search

26. August 2015 European Commission Establishes ESS as a European Research Infrastructure Consortium

06. August 2015 Magnets made of non-magnetic metals

03. August 2015 SINE2020 Grant Agreement signed by the European Commission

Access Programme

Funding for scientists of European Institutions

Through its Access Programme, NMI3 provides access to all the major national neutron and muon sources in Europe.

This inclusive network of facilities offers experimental possibilities of unequalled capacity, quality and breadth of scope. Continuous investment has maintained the performance of European neutron and muon facilities at an outstanding level.

All the [NMI3 member facilities](#) have specificities that make what they offer either unique or particularly tailored to a certain thematic or geographic clientele. NMI3 is working to give researchers from all areas of science access to these resources.

Young neutron researcher at FRM II.

Funding through the NMI3 Access Programme is open to researchers [affiliated to Institutions from European member and Associated states](#). Researchers from all areas of science can apply. We particularly welcome young scientists and scientists who have never used neutrons or muons in their research before.

To apply, one young scientist in the group must fill in proposal form and send it to the user office of the facility of his/her choice. Please consult the list of member facilities and call calendar [here](#).

For more details about eligibility, evaluation of proposals, and how to apply, please read our [Frequently Asked Questions](#).

For more information about research carried out thanks to our Access Programme, please see our [Scientific Highlights](#) page. If you would like to [disseminate your results](#) once your paper is published, please contact us at info@nmi3.eu and we will prepare an article about it and promote it!

IMPORTANT NOTE

Start

17:24
29/08/2015

Americas

Reactors

- [NIST Centre for Neutron Research - NCNR \(USA\)](#)
- [High Flux Isotope Reactor – HFIR \(USA\)](#)
- [Canadian Neutron Beam Centre - CNBC \(Canada\)](#)

Spallation sources

- [Spallation Neutron Source – SNS \(USA\)](#)
- [Los Alamos Neutron Science Centre - LANSCE \(USA – reduced user programme\)](#)

NCNR (USA)

NIST Center for Neutron Research - Internet Explorer
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NIST Center for Neutron Research -- a national resource for industry, universities, and government agencies

Coming to the NCNR?
Click Here.
Visa question?
Logon to your NCNR-IMS account

NCNR SiteMap

About the NCNR
What We Do
Informal History
Staff
Annual Report
2015 Summer Schools
• Neutron Spectroscopy
Working at the NCNR

Facility Information
Live Data
Instrumentation
Instrument Contacts
Schedules
Center for High Resolution Neutron Scattering (CHRNS)
>Education and Outreach
Sample Environment
NCNR Staff Forms
Sample Prep Labs

User Information
Planning Your Experiment
Obtaining BeamTime
Data Reduction/Analysis
Shipping Samples
Publishing Your Results
Financial Assistance
Travel & Lodging
NCNR User Group

CHRNS → nSoft

RECENT RESEARCH HIGHLIGHTS

Neutron beams reveal how two pieces of Parkinson's puzzle fit details

From separation to transformation: metal-organic framework shows new talent details

NIST helps cancer treatment drugs get past their sticking point details C&E News item

NEWS FOR NCNR USERS

NCNR Seminar Schedule

CALL FOR PROPOSALS
The new deadline for proposals for NCNR instrument time is June 16, 2015. Successful proposals will be allocated instrument time from September 2015 through March 2016. details

We have posted some proposal statistics summarizing the last five calls.

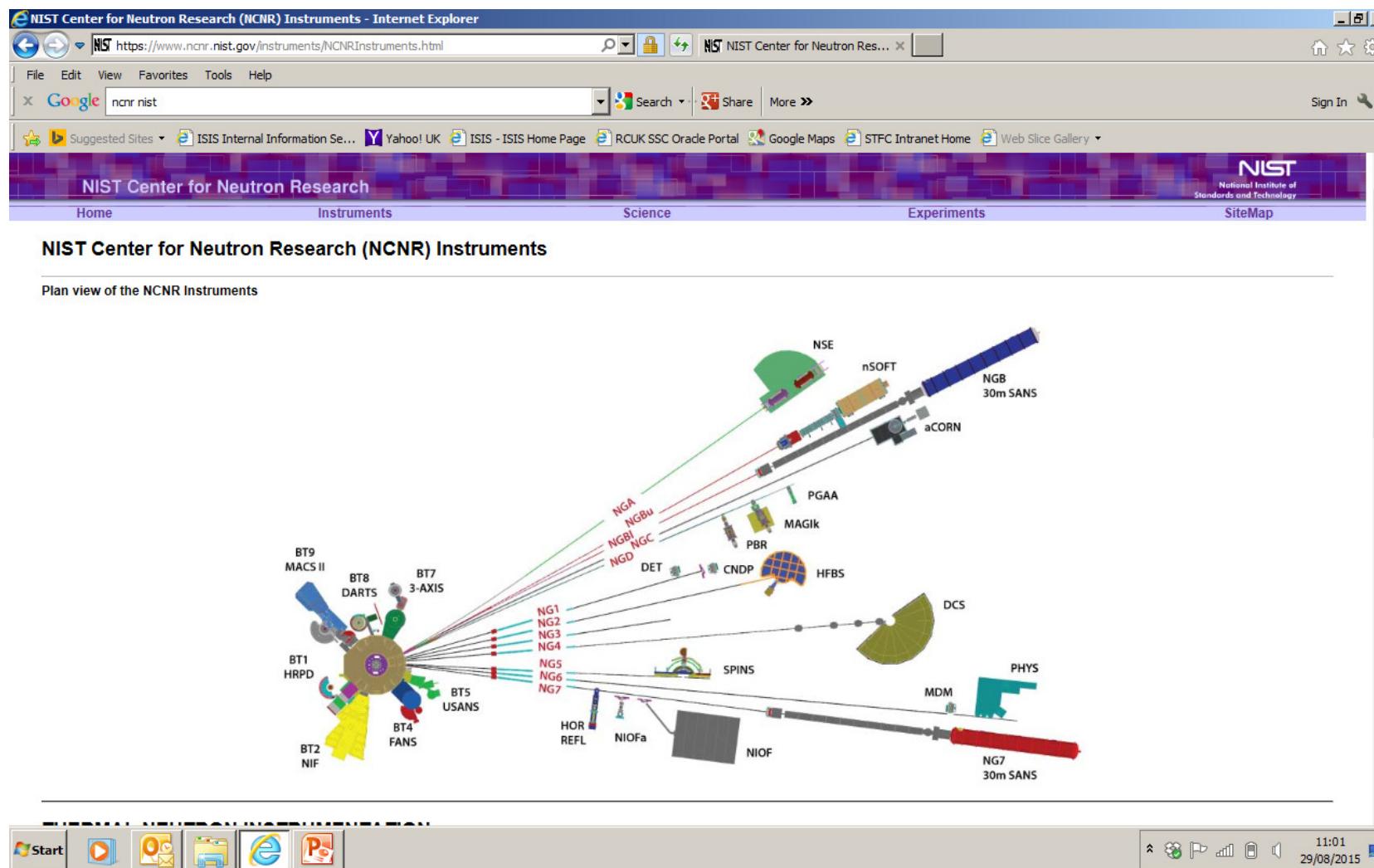
IMPORTANT CHANGE!!
NEW ACCESS CONTROL POLICY
Starting July 21, 2014, driver's licenses from 7 states/territories will not be accepted as valid ID for NCNR access. Only US citizen users are affected. details

INSTRUMENT DEVELOPMENT MEETING
A workshop on future directions for neutron instrument development for the benefit of the scientific community was held in Potomac, MD on Aug. 21-22, 2014. details
Executive Summary of outcome

TRAINING FROM OTHER LABS
NIST now accepts basic radiation safety training from other U.S. neutron facilities in place of the NIST offered on-line training. details

11:00
29/08/2015

NCNR (USA)



HFIR (USA)

Neutron Sciences | Neutron Science at ORNL - Internet Explorer

https://neutrons.ornl.gov/

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OAK RIDGE National Laboratory

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Neutron Sciences FOR USERS ABOUT SCIENCE INSTRUMENTS & SUPPORT PUBLICATIONS NEWS CAREERS

HFIR Refueling

Neutron Sciences at ORNL is home to the High Flux Isotope Reactor (HFIR) and Spallation Neutron Source (SNS), providing researchers with unmatched capabilities for understanding the structure and properties of materials, macromolecular and biological systems, and the fundamental physics of the neutron.

Start

11:06
29/08/2015

HFIR (USA)

Neutron Science Instruments | Neutron Science at ORNL - Internet Explorer

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Before submitting a proposal for a specific instrument, please contact the appropriate instrument scientist to make sure your research is feasible for that instrument.

Instrument Beam Line Layouts by Facility

OAK RIDGE HIGH FLUX ISOTOPE REACTOR

The United States' highest flux reactor-based neutron source NEUTRONS.ORNL.GOV

Fixed-Incident Energy Triple-Axis Spectrometer - HB-1A
Low-energy scattering, magnetic materials, thermal energies
Tel: (865) 204-1000; Fax: (865) 204-1001

Polarized Triple Axis Spectrometer - HB-1
Polarized scattering of magnetic materials, energy extinctions, structural transitions
Tel: (865) 204-1000; Fax: (865) 204-1001

Neutron Powder Diffractometer - HB-2
Structural, magnetic structures, texture and phase analysis
Tel: (865) 204-1000; Fax: (865) 204-1001

WAND - HB-2C
Diffuse-scattering studies of single crystals and fine-resolved polycrystalline textures
Tel: (865) 204-1000; Fax: (865) 204-1001

Polarized Neutron Development Station - HB-2D
Development of new components and techniques for polarized neutrons
Tel: (865) 204-1000; Fax: (865) 204-1001

Neutron Residual Stress Mapping Facility - HB-2B
Stress-strain mapping in engineering materials
Tel: (865) 204-1000; Fax: (865) 204-1001

Cold Neutron Source

Reactor Pressure Vessel

Development Beam Line - CG-1A
Detectors, optics, and epics
Tel: (865) 204-1000; Fax: (865) 204-1001

Optics Development Beam Line - CG-1B
Sample alignment and optics
Tel: (865) 204-1000; Fax: (865) 204-1001

Cold Neutron Imaging Beam Line - CG-1B
Transmission imaging of native and engineered materials
Tel: (865) 204-1000; Fax: (865) 204-1001

General-Purpose SANS - CG-2
Materials structure and processing - polymers, ceramics, geopolymers, high-TC superconductors, and complex fluids
Tel: (865) 204-1000; Fax: (865) 204-1001

Bio-SANS - CG-3
Proteins and complexes - polymers, biomaterials, viruses, and bacteria
Tel: (865) 204-1000; Fax: (865) 204-1001

HB-1 | PTAX
Polarized Triple-Axis Spectrometer

CG-4D | IMAGINE
Laue Diffractometer

HB-1A | FIE-TAX
Fixed-Incident-Energy Triple-Axis Spectrometer

HB-2A | POWDER
Neutron Powder Diffractometer

HB-2B | NRSF2
Neutron Residual Stress Mapping Facility

HB-2C | WAND
Wide-Angle Neutron Diffractometer

HB-3 | TAX
Triple-Axis Spectrometer

HB-3A | FOUR-CIRCLE
Four-Circle Diffractometer

Scattering Diffractometer

CG-3 | BIO-SANS
Biological Small-Angle Neutron Scattering Instrument

CG-4C | CTAX
Cold Neutron Triple-Axis Spectrometer

CG-4D | IMAGINE
Laue Diffractometer

HB-1 | PTAX
Polarized Triple-Axis Spectrometer

HB-1A | FIE-TAX
Fixed-Incident-Energy Triple-Axis Spectrometer

HB-2A | POWDER
Neutron Powder Diffractometer

HB-2B | NRSF2
Neutron Residual Stress Mapping Facility

HB-2C | WAND
Wide-Angle Neutron Diffractometer

HB-3 | TAX
Triple-Axis Spectrometer

HB-3A | FOUR-CIRCLE
Four-Circle Diffractometer

SNS Instruments

14.000/2.000

11:08
29/08/2015

CNBC (Canada)

Canadian Neutron Beam Centre - Internet Explorer
http://www.cnl.ca/en/home/facilities-and-expertise/cnbc.aspx

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Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

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Facilities & Expertise

- All Facilities
- Canadian Neutron Beam Centre
- National Research Universal
- ZED-2 Research Reactor

Canadian Neutron Beam Centre

The Canadian Neutron Beam Centre (CNBC) is a unique and versatile element of Canada's research infrastructure. The CNBC enables academia, government and industry to use neutron beams as tools for world-class materials research, providing new understanding of materials and improving products for businesses. Each year, over 200 scientists, engineers, and students participate in research that depends on access to the CNBC's six neutron beamlines.

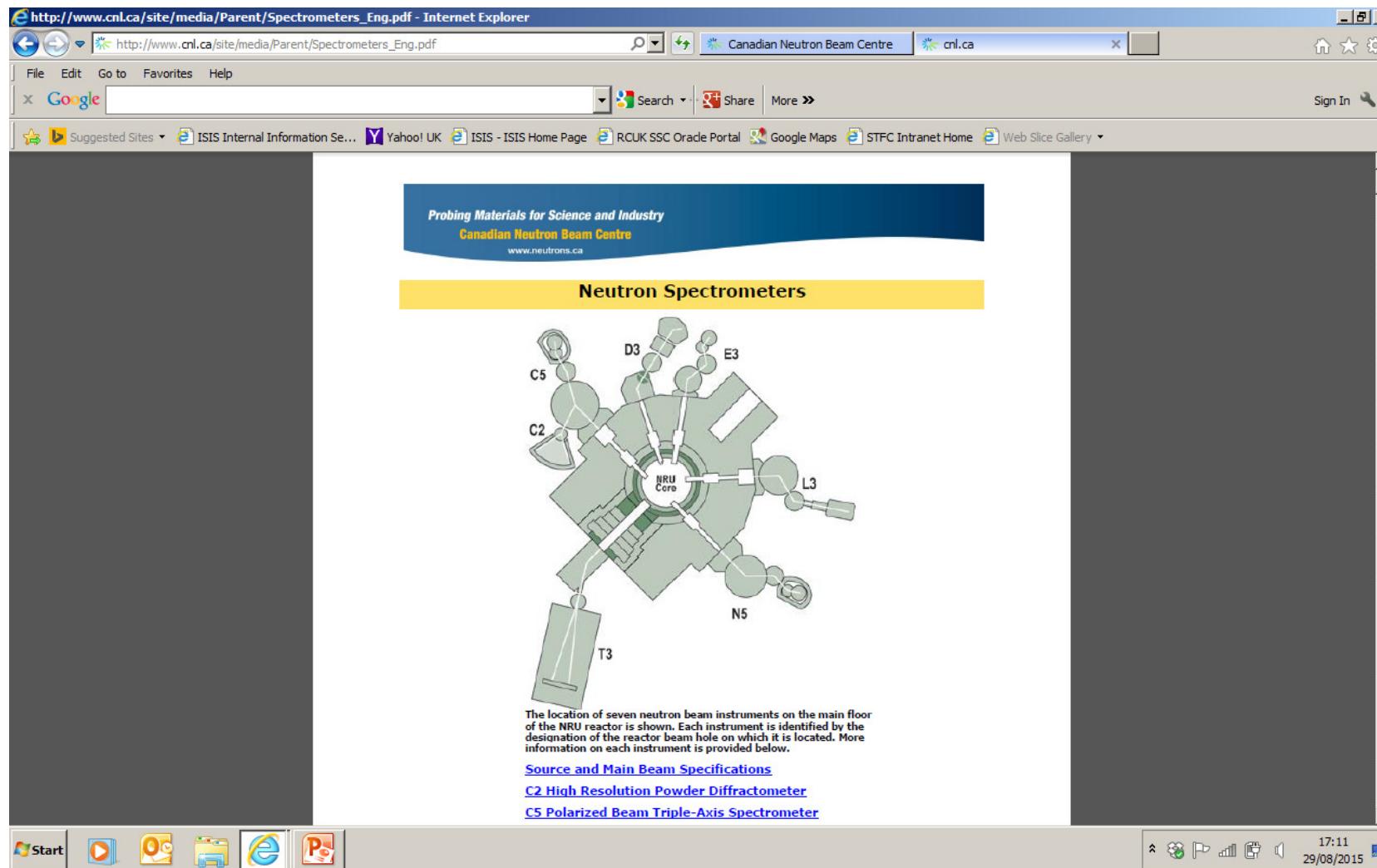
Why work with us

Improved safety and reliability, reduced costs, or opening of markets are a few of the benefits industrial clients have gained from employing neutron beams as part of their research

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17:08 29/08/2015

CNBC (Canada)



SNS (USA)

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https://neutrons.ornl.gov/

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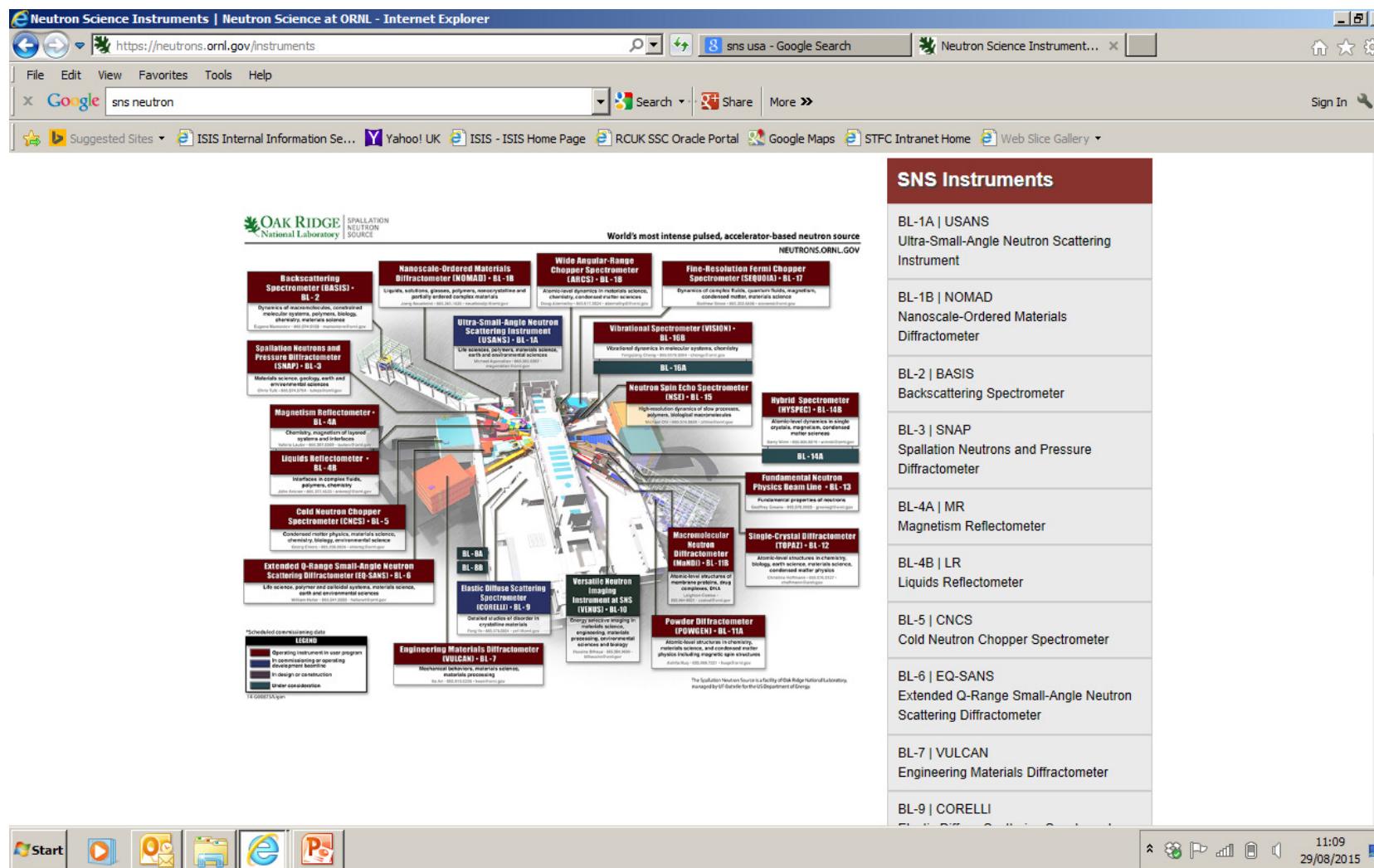
HYSPEC Gets High-Performance Upgrade

Neutron Sciences at ORNL is home to the High Flux Isotope Reactor (HFIR) and Spallation Neutron Source (SNS), providing researchers with unmatched capabilities for understanding the structure and properties of materials, macromolecular and biological systems, and the fundamental physics of the neutron.

Start

11:07
29/08/2015

SNS (USA)



Lujan centre (USA)

LANSCE | Lujan Center - Internet Explorer

http://lansce.lanl.gov/lujan/index.shtml

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Los Alamos NATIONAL LABORATORY EST. 1943

Lujan Center at LANSCE

LANSCE » Lujan Center

Lujan Center Mission

The Lujan Center delivers science by exploiting the unique characteristics of intense beams of moderated pulsed neutrons for academia, national security, and industry.

Lujan Center Vision

The Lujan Center will operate a world class user program in the service of the nation. Lujan Center scientists will be recognized for their leadership and innovation in neutron scattering.

Lujan Center at LANSCE

The Lujan Center is one of five user facilities supported by the LANSCE accelerator which is stewarded by NNSA. Together these instruments provide capability for basic and applied neutron science relevant to academia, national security and industry.

Lujan Center User Capabilities

The Lujan Center instruments operate in time of flight mode receiving neutrons from a tungsten spallation target. Four moderators provide epithermal, thermal and cold neutrons to specialized beamlines. The facility operates for a total of 3,000 hours per year. At the core of the Lujan Center is a 20Hz spallation neutron target and the LANSCE proton accelerator, which operates at an energy of 800 MeV with typical beam currents of 100 – 125 μA. The Lujan Center's highly optimized tungsten spallation target provides a high peak flux with a broad wavelength bandwidth per frame. Two liquid hydrogen moderators provide high intensity cold neutron beams ideally suited for nuclear physics, reflectometry, inelastic scattering and small angle scattering. Water moderators provide thermal neutrons for neutron imaging, nuclear physics and diffraction beamlines. In addition, because of its low repetition rate, long wavelength neutrons can be used without significant frame overlap allowing the collection of data over a broad range of time constants and length scales, ideally suited for Total scattering and diffraction studies. The Lujan Center offers access to a large variety of specialized sample environments, including low temperatures down to 40mK, magnetic fields up to 7T, high temperature furnaces up to 2400C and uniaxial stress ($F_{max}=250kN$) and fluid as well as anvil cell pressure capabilities (30GPa-2000K).

Instrument Suite

Crystallography: NPDF, HIPD, HIPPO, PCS
Engineering and Strain: HIPPO, SMARTS, NPDF
Disordered Materials: NPDF, HIPD, HIPPO
Large Scale Structures: LQD, ASTERIX
Magnetism: ASTERIX, HIPD, HIPPO
Biology: PCS, LQD
Neutron Imaging: HIPPO, SMARTS, NPDF
Nuclear Science and Technology: DANCE, FP5, FP12

Start

11:10
29/08/2015

Asia-Oceania-Africa

Reactors

- [Japan Research Reactor 3 - JRR3 \(Japan - awaiting permission to restart\)](#)
- [Australia Nuclear Science and Technology Organisation – ANSTO, OPAL reactor \(Australia\)](#)
- [High flux Advanced Neutron Application Reactor - HANARO \(South Korea\)](#)
- Bombay Atomic Research Centre - BARC (India)
- South Africa Nuclear Energy Corporation – NECSA, Safari reactor (South Africa)
- [China Advanced Research Reactor \(CARR – not yet operational\)](#)
- China Mianyang Research Reactor(CMRR)

Spallation sources

- [J-PARC Materials and Life Science Facility - MLF \(Japan\)](#)
- [China Spallation Neutron Source \(CSNS – under construction\)](#)

JRR-3 (Japan)

Screenshot of a Microsoft Internet Explorer browser window displaying the JRR-3 reactor page on the Japan Atomic Energy Agency (JAEA) website.

The URL in the address bar is https://www.jaea.go.jp/english/04/ntokai/kasokuki/kasokuki_01.html.

The browser interface includes standard buttons for Back, Forward, Stop, Refresh, and Home, along with search and share functions.

The main content area shows the JAEA logo and navigation menu with links to Home, About us, Resident divisions, Publish, Users' offices, and Access.

The main title of the page is "JRR-3".

The central text describes the JRR-3 reactor's history and capabilities:

JRR-3 achieved its first criticality in 1962 as the first research reactor constructed with domestic technology and has been utilized by a multitude of researchers since the dawn of nuclear research and industry. In 1990, JRR-3 was modified to improve its performance, and it resumed operation as a high-performance and multipurpose research reactor with thermal power of 20 MW. JRR-3 has several facilities for neutron beam experiments, irradiation experiments for nuclear fuel and material, and production of RI and silicon semiconductors. Cold neutron (very low energy neutron) beams are available and utilized for research of life phenomena by analyzing the structure of polymer molecules, for example.

Two images are shown: "An outside view of the JRR-3 reactor building" and "A bird's-eye view of the JRR-3 reactor building".

The right sidebar contains three sections:

- Research reactors and Accelerators**: Includes links to JRR-3, JRR-4, NSRR, and Tandem Accelerator & Tandem Booster.
- Publish**: Includes links to JAEA Reports and Peer-reviewed papers.
- Users office**: Includes links to JRR-3 Users Office and J-PARC Center Users' Office.

The taskbar at the bottom shows icons for Start, File Explorer, Task View, Edge, and Print. The system tray indicates the date as 29/08/2015 and the time as 09:53.

JRR-3 (Japan)

Japan Atomic Energy Agency JRR-3 - Internet Explorer
http://jrr3.jaea.go.jp/jrr3e/2/21.htm

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Japan Atomic Energy Agency **JRR-3** Japanese Japan Research Reactor-3

About JRR-3 Utilization facilities Applications Gallery PAGE TOP

Utilization facilities of JRR-3

The JRR-3 has been utilized as a top-level high performance research reactor in the world for beam experiments and neutron irradiations. There are 9 irradiation facilities for irradiation tests on nuclear fuel and material, production of RI and silicon semiconductor and neutron activation analysis. Furthermore, there are total 31 instruments for neutron beam experiments including 13 and 18 instruments belonging to universities and the JAEA, respectively. List of neutron irradiation facilities and instruments are shown below.

The diagram illustrates the layout of the JRR-3 reactor facility. On the left, the 'Reactor room' contains several experimental stations labeled: PRO-3G, TAG-1, TAG-2C, TAG-3G, PCN-A 3G, PCN-A 9G, TOPAN 9G, and TNMF 7G. A central vertical axis represents the reactor core, with various beam ports and instruments attached. The 'Beam hall' on the right contains numerous experimental stations, each with its own label: AGNES C3-1, VIN C3-1-2, NDF C3-1-2, SANS-II C3-2, SUREN C2-2, GMR C2-3-1, CHOP C2-3-2, SANS-I C1-2, ULS C1-3, RESA-1 T2-1, FOUNDR T2-2, VUSAS T2-3-1, VUSAS T2-3-2, HGR T4-1, and HGR T4-2. A legend at the bottom left identifies the color coding for different types of beams: blue for JAEA Thermal neutron beam, cold neutron beam; orange for UNIV Thermal neutron beam; and light blue for UNIV Cold neutron beam. Below the main diagram are two smaller circular cross-sections of the reactor core labeled '3G', '1G', '4G', 'RG-2', 'PN-1', 'SI-1', 'CNS', and 'BR-1'.

10:19
29/08/2015

Opal (Australia)

OPAL reactor - ANSTO - Internet Explorer

http://www.ansto.gov.au/ResearchHub/Bragg/Facilities/OPALReactor/index.htm

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OPAL Reactor

▼ Bragg Institute
▼ Facilities
OPAL reactor

- ▶ Institute for Environmental Research
- ▶ Institute of Materials Engineering
- ▶ ANSTO LifeSciences
- Centre for Accelerator Science
- Facilities and instruments
- User access
- Scholarships
- Research staff profiles

ANSTO's Open Pool Australian Lightwater (OPAL) reactor is a state-of-the-art 20 Megawatt reactor that uses low enriched uranium (LEU) fuel to achieve a range of research, scientific, industrial and production goals.

Opened by the Prime Minister in 2007, OPAL is one of a small number of reactors with the capacity for the commercial production of radioisotopes. This capacity, combined with the open pool design, the use of LEU fuel and the wide range of applications, places OPAL among the best research reactors in the world.

While OPAL is the centrepiece of ANSTO's research facilities, the suite of neutron beam instruments housed next to the reactor building and operated by the Bragg Institute represent a significant addition to ANSTO's research capabilities. Former Minister for Industry, Innovation, Science, Research and Tertiary Education, Senator Kim Carr, described ANSTO's contribution to Australian science by saying:

"Having started out as a specialist organisation...at Lucas Heights, ANSTO is now driving innovation in nuclear science and technology right around the country. The Government is very aware of how important this work is."

OPAL is operated and maintained by the Reactor Operations group within the Nuclear Operations division.

The role of research reactors

While virtually every research reactor is unique, OPAL is one of a number of similar production facilities around the world, including the Safari-1 reactor in South Africa, the HFR reactor at Petten in the Netherlands and the NRU reactor at Chalk River in Canada. These reactors play a vital role in



9:57 29/08/2015

Opal (Australia)

The screenshot shows a Microsoft Internet Explorer window displaying the ANSTO Instruments page. The URL in the address bar is <http://www.ansto.gov.au/ResearchHub/Bragg/Facilities/Instruments/>. The page header includes the Australian Government logo, the Ansto logo, and links for News & Media, Visiting ANSTO, Careers, and Safety at ANSTO. A search bar and social media links (YouTube, Facebook, Twitter, LinkedIn) are also present. The main content area is titled "Instruments". A sidebar on the left lists categories: Bragg Institute, Facilities, and Instruments, with the Instruments category expanded to show a list of instruments: Bilby, Dingo, Echidna, Emu, Joey, Koala, Kookaburra, Kowari, Pelican, Platypus, Quokka, Sika, Taipan, Wombat, SAXS, X-ray Reflectometer, Neutron Beam, and Analysis of neutron scattering. The main content area describes the OPAL reactor and its instruments, mentioning 11 operational instruments named after Australian and overseas fauna, such as ECHIDNA, WOMBAT, KOALA, KOWARI, PLATYPUS, QUOKKA, TAIPAN, KOOKABURRA, PELICAN, DINGO, and SIIKA.

Instruments - ANSTO - Internet Explorer
http://www.ansto.gov.au/ResearchHub/Bragg/Facilities/Instruments/

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Google opal reactor neutron instruments Search Share More >

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Australian Government | Ansto | Australian Nuclear Science and Technology Organisation

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Instruments

Thirteen neutron beam instruments are either operational or commissioning at the new OPAL reactor. ANSTO expects to add more instruments within five years. The facility has the capacity for further expansion, including potential for a second neutron guide hall.

A suite of [sample-environment equipment](#) allows studies at different temperatures, pressures and magnetic fields. [Scientific references](#) are available for most of our instruments.

11 Operational Instruments (named after Australian and overseas fauna):

ECHIDNA High-Resolution Powder Diffractometer (*Tachyglossus aculeatus*)
WOMBAT High-Intensity Powder Diffractometer (*Vombatus ursinus*)
KOALA Laue Diffractometer (*Phascolarctos cinereus*)
KOWARI Strain Scanner (*Dasyurodes byrnei*)
PLATYPUS Neutron Reflectometer (*Ornithorhynchus anatinus*)
QUOKKA Small-Angle Neutron Scattering (*Setonix Brachyurus*)
TAIPAN Thermal Neutron 3-Axis Spectrometer (*Oxyuranus scutellatus*)
Beryllium-filter option on TAIPAN - completed in 2014, currently in commissioning
KOOKABURRA Ultra Small-Angle Neutron Scattering (*Dacelo novaeguineae*)
PELICAN Time-of-Flight Spectrometer (*Pelecanus conspicillatus*)
DINGO Neutron Radiography/Imaging/Tomography (*Canis lupus dingo*)
SIIKA Cold Neutron 3-Axis Spectrometer (*Cervus nippon*)

Start

10:18 29/08/2015

Hanaro (South Korea)

korea Atomic Energy Research Institute -> Research Reactor Utilization - Internet Explorer

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Reactor Research
Fuel Cycle Research
Innovative Tech. Research
Radiation Research
Research Reactor Utilization

Neutron Beam Facilities

- Old Neutron Research Facilities
- Capsule Irradiation Test Facility
- Fuel Test Loop

Neutron Beam Facilities

► Neutron Radiography Facility(NRF), High Resolution Powder Diffractometer(HRPD), Four Circle Neutron Diffractometer (FOD), Residual Stress Instrument(RSI), Vertical Neutron Reflectometer(REF-V), Horizontal Neutron Reflectometer(REF-H), High Intensity Powder Diffractometer(HIPD), Ex-core Neutron Irradiation Facility(ENF) and Prompt Gamma Neutron Activation Analysis system(PGAA) are operating at the HANARO reactor hall. In addition there is a Neutron Activation Analysis system (NAA) consisting of the irradiation facility and the radiation measurement equipment in the HANARO reactor. A 9m SANS instrument installed at CN horizontal port was dismantled and moved to the cold neutron laboratory and currently the cold neutron guide system is installed at CN port area. The Bio-Diffractometer(Bio-D) at ST3 port and Triple Axis Spectrometer (TAS) at ST4 are scheduled to be installed at the reactor hall. Three new cold neutron scattering instruments currently existing in the reactor hall will be developed and installed in the cold neutron guide hall and three neutron instruments currently existing in the reactor hall will be moved after upgrades. Three new instruments are 40M Small Angle Neutron Scattering Instrument(SANS), Cold Triple Axis Spectrometer(Cold-TAS) and Disk Chopper Time of Flight(DO-TOF) and three upgrade instruments are 12M-SANS, REF-V and Bio-REF.

In-service Under way

NR Port
Neutron Radiography Facility (NRF), 1997 Upgrade

ST4 Port
Triple Axis Spectrometer (TAS), 2010

Neutron Reflectometer (REF-V), 2006 To be moved 2010

Bio-Diffractometer (Bio-D), 2010

Neutron Reflectometer (REF-H), 2008 To be moved 2010

High Intensity Powder Diff. (HIPD), 2008

ST2 Port
Four Circle Diffractometer (FCD), 1999 Upgrade 05-06

High Resolution Powder Diff. (HRPD), 1998

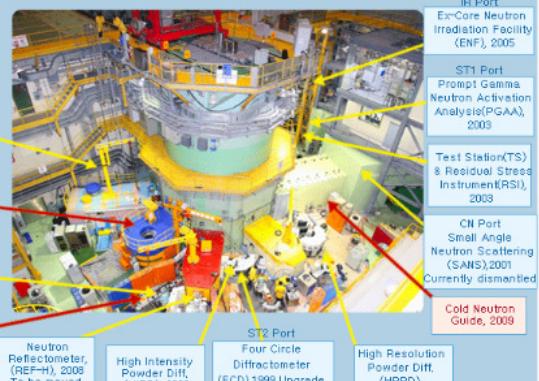
IR Port
Ex-Core Neutron Irradiation Facility (ENF), 2005

ST1 Port
Prompt Gamma Neutron Activation Analysis(PGAA), 2003

Test Station(TS)
& Residual Stress Instrument(RSI), 2003

CN Port
Small Angle Neutron Scattering (SANS), 2001 Currently dismantled

Cold Neutron Guide, 2009



10:01
29/08/2015

BARC (India)

Screenshot of a Microsoft Internet Explorer browser window displaying information about the DHRUVA reactor at BARC, India.

The title bar reads "Reactors - Internet Explorer". The address bar shows the URL <http://barc.gov.in/reactor/index.html>. The search bar contains "barc india dhruba". The toolbar includes standard buttons for Back, Forward, Stop, Refresh, Home, Favorites, Tools, and Help. A "Sign In" link is visible in the top right corner.

The main content area features a large image of the DHRUVA reactor building with its tall chimney against a blue sky. Below the image, the text reads:

DHRUVA REACTOR

During early 1970s a strong need was felt for building a research reactor with higher neutron flux to meet the growing demand of radioisotopes and advanced research in basic sciences. This led to the setting up of a research reactor at BARC which was named Dhruba by Dr. Giani Zail Singh, the then President of India. Construction of DHRUVA was an important milestone in the development and implementation of indigenous nuclear technology in India. The reactor incorporates several features catering to the requirements of a broad-based multidisciplinary user community as also in the production of radioisotopes of high specific activity. Dhruba has been declared as a National Facility for Neutron Beam Research to cater to the needs of Indian scientific community where scientists from BARC, other units of the Department of Atomic Energy (DAE), universities and national laboratories work under collaborative projects. Many of the collaborations are supported by the University Grants Commission - DAE Consortium for Scientific Research (UGC-DAE-CSR), the Board of Research in Nuclear Sciences (BRNS) and other agencies. At present there are about 40 active projects running under the UGC-DAE-CSR scheme.

A small table at the bottom lists items and descriptions:

No.	Item	Description
1	1	2

The taskbar at the bottom shows icons for Start, File Explorer, Task View, Internet Explorer, and Paint. The system tray indicates the date as 29/08/2015 and the time as 10:09.

BARC (India)

Reactors - Internet Explorer

http://barc.gov.in/reactor/index.html

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SHABHA ATOMIC RESEARCH CENTRE MUMBAI, INDIA

National Facility for Neutron Beam Research

DHRUVA REACTOR



During early 1970s a strong need was felt for building a research reactor with higher neutron flux to meet the growing demand of radioisotopes and advanced research in basic sciences. This led to the setting up of a research reactor at BARC which was named Dhruba by Dr. Giani Zail Singh, the then President of India. Construction of DHRUVA was an important milestone in the development and implementation of indigenous nuclear technology in India. The reactor incorporates several features catering to the requirements of a broad-based multidisciplinary user community as also in the production of radioisotopes of high specific activity. Dhruba has been declared as a National Facility for Neutron Beam Research to cater to the needs of Indian scientific community where scientists from BARC, other units of the Department of Atomic Energy (DAE), universities and national laboratories work under collaborative projects. Many of the collaborations are supported by the University Grants Commission - DAE Consortium for Scientific Research (UGC-DAE-CSR), the Board of Research in Nuclear Sciences (BRNS) and other agencies. At present there are about 40 active projects running under the UGC-DAE-CSR scheme.

No.	Item	Description
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Safari (South Africa)

Products and Services - Internet Explorer

http://www.necsa.co.za/Products-and-Services

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Analytical and Calibration Services (ACS)

The ACS laboratories consist of three specialised laboratories with nuclear licenced and SANAS accredited services:

Radio Analysis Laboratories - radioactivity analysis
Pelindaba Analytical Services - chemical analysis, and
Calibration Service - calibration of ionising radiation and contamination monitoring/protection equipment

Office of Technology Transfer

The Necsa Office of Technology Transfer is responsible to cultivate the innovation ecosystem, record and evaluate new ideas, management, legal protection and licensing of intellectual property (IP). Read more about:
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Research

Nuclear Manufacturing

Specialises in the design, repair and manufacturing of the following:

Pressure Vessels
Heat Exchangers
Tanks and Piping Systems
Hi-Tech fabrication

High quality components

[Read more](#)

The Research and Development Division of the South African Nuclear Energy Corporation, the anchor for nuclear energy research, development and innovation in South Africa.

What we do:
Radio pharmaceuticals & Radiotracers
Material Characterisation
Heritage Studies
Agriculture
Geology
Mineral Beneficiation
Waste Handling, Treatment and Disposal Technology
Uranium Beneficiation

10:04
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Start

Internet Explorer

CARR (China)

CIAE - Internet Explorer

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- Key Research Projects
- Research Facilities
- Key Laboratories

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- Annual Reports
- Patents
- Papers

Products & Techniques

- Honor & Awards

First Phase Neutron Sattering Instrumentation at the China Advanced Research Reactor

After 50 years of service for the Research & Development in neutron science and technology, the Heavy Water Research Reactor (HWRR) (maximum power 10 MW) at China Institute of Atomic Energy (CIAE) was shut down in 2007. The 60MW China Advanced Research Reactor (CARR) at CIAE has taken over this role, which has reached the first criticality in May, 2010. It is a tank-in-pool type reactor using a D₂O reflector for inverse neutron trap, and the designed optimal undisturbed thermal neutron flux is 8×10¹⁴ n/cm²s. The reactor experiment hall houses a set of instruments connecting to 7 horizontal thermal neutron beam tubes, two of which are dual beam ports. Additionally, cold neutrons produced by a liquid hydrogen cold source are transported via 4 guide systems to the 30 × 60m² guide hall, where a suite of scattering instruments are placed.



Guide hall

CARR is devoted to fundamental and applied research, of which the Neutron Scattering Laboratory (NSL) is responsible for neutron scattering and radiography research programs open to users in China

Start | E-mail | Print | Back | Forward | Stop | Home | Help | 10:05 | 29/08/2015

CMRR (China)

Chinese Neutron Scattering Society - Internet Explorer
http://english.ihep.cas.cn/cnss/zzzzz/201406/t20140620_123024.html

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CNSS
Chinese Neutron Scattering Society

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Chinese Neutron Facilities

- China Spallation Neutron Source (CSNS)
- China Advanced Research Reactor (CARR)
- China Mianyang Research Reactor (CMRR)

China Mianyang Research Reactor

The China Mianyang Research Reactor (CMRR) with the power of 20 MW is located in the NF campus of Institute of Nuclear Physics and Chemistry, Mianyang city, Sichuan Province. It was open to users officially from 2012, including the thermal and cold neutron halls. The liquid hydrogen cold neutron source began to work from September 2013. The measured thermal and cold fluxes for neutron scattering experiments are $2.4 \times 10^{14} \text{ n/cm}^2 \cdot \text{s}$ and $10^9 \text{ n/cm}^2 \cdot \text{s}$, respectively.



NP campus of Institute of Nuclear Physics and Chemistry

CMRR is devoted to both fundamental and applied research. Its spectrometer layout is shown in the figure. In the first phase, eight neutron scattering instruments have been installed and start operation from the middle of 2014. Four thermal neutron instruments were installed in the reactor hall: a high resolution neutron diffractometer (HRND), a residual stress neutron diffractometer (RSND), a thermal

10:06
29/08/2015

J-PARC MLF (Japan)

Screenshot of the J-PARC Materials and Life Science Experimental Facility (MLF) website as viewed in Internet Explorer.

The URL in the address bar is <http://www.j-parc.jp/MatLife/en/>.

The page title is "Material and Life Science Experimental Facility | Facilities at J-PARC | J-PARC - Internet Explorer".

The main content area features a large image of the Japan Proton Accelerator Research Complex (J-PARC) facility, with the text "Japan Proton Accelerator Research Complex" overlaid.

The left sidebar contains a navigation menu with sections for INDEX, Announcements, Facilities at J-PARC (which is currently selected), Accelerators, J-PARC Center, and other links like MUON, NEUTRON, ABOUT MLF, and JAPANESE PAGE.

The right sidebar displays news & events and meetings information.

At the bottom, there is a taskbar with icons for Start, File Explorer, Internet Explorer, and Print, along with system status indicators for battery level, signal strength, and date/time (10:12, 29/08/2015).

J-PARC MLF (Japan)

Material and Life Science Experimental Facility | Facilities at J-PARC | J-PARC - Internet Explorer

http://www.j-parc.jp/researcher/MatLife/en/instrumentation/ns.html

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J-PARC HOME

Japan Proton Accelerator Research Complex

HOME Facilities at J-PARC Materials and Life Science Experimental Facility HOME Japanese

Materials and Life Science Experimental Facility

For MLF Users

- Inquiry
- Call for Proposals
- J-PARC Center Users Office
- Call for LOI on Neutron Instruments
- Instruments
- Accepted Proposals / Experimental Reports
- Post-visit Procedures

Research Achievements

Committees / Meetings

Publications

Neutron/Muon Calender

available on 1-Sept

J-PARC Operation Status

JLAN (Internal Use Only)

MLF-Intra (JLAN only, Japanese)

(as of April, 2014)

Proton beam line

CM Coupled moderator DM Decoupled moderator PM Poisoned moderator

10:13 29/08/2015

CSNS (China – under construction)

China Spallation Neutron Source - Internet Explorer
http://csns.ihep.ac.cn/english/

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SNS China Spallation Neutron Source

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Photo & Videos

College students visit CSNS

49 college students from the School of Sciences, South China University of Technology, visited the China Spallation Neutron Source (CSNS) on April 24.

Upcoming Events

The Second Announcement of The _____ 5th AONSA Neutron School
Program of 5th AONSA Neutron School
• The Sixth OCPA Accelerator School
will be held in Beijing from Jul 29 to Aug 7, 2010

• (NEW!)CSNS Parameter List

Conference

OCPA-2010
SIAN-2008
ICANS-XVIII

Contact Us

CSNS project office,
Institute of High Energy Physics,
Chinese Academy of Sciences,
19B YuquanLu,
Shijingshan District,
Beijing,
China,
100049
FAX: 86-10-88235967
TEL: 86-10-88235967

Quick Links to

J-PARC
SNS
PSI
KEK

Start

10:16
29/08/2015

Compact Neutron Sources

UCANS - Microsoft Internet Explorer provided by STFC

<http://www.ucans.org/>

The Official Web Page of
Union for Compact Accelerator-driven Neutron Sources
(UCANS)

NEW UCANS-V May 12–15, 2015 @ Padova, Italy

UCANS
Union for Compact Accelerator-driven Neutron Sources

The Union for Compact Accelerator-driven Neutron Sources (UCANS) was formed in 2009 to support the ongoing development of small accelerator based neutron sources around the world, and to promote the exchange of information on emerging science and novel applications relevant to long-pulsed and/or medium-flux neutron sources.

Accelerator-driven Neutron Sources for Science (this map is under construction)

UCANS
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EN | ? | 9:59 | 20/08/2015

Compact Neutron Sources

Member Institutes



Part of the [Center for the Exploration of Energy and Matter](#), a OVPR Center at [Indiana University](#)



The Compact Pulsed Hadron Source at [Tsinghua University](#)



Hokkaido University Neutron Source, [Laboratory of Quantum Beam System Engineering](#) of Hokkaido University



RIKEN Accelerator-driven Neutron Source, [RIKEN](#)



Neutron Science Division of KEK



ESS Bilbao, Spain



Sun Yat-Sen University



INFN (Istituto Nazionale di Fisica Nucleare), Italy



Neutron Imaging Facility at Peking University, Part of the [State Key Laboratory of Nuclear Physics and Technology](#)



Kyoto University Accelerator-driven Neutron Source, Japan



Nagoya University Accelerator-driven Neutron Source, Japan

Compact Neutron Sources



Center for Exploration of Energy and Matter
an OVPR Research Center
at Indiana University

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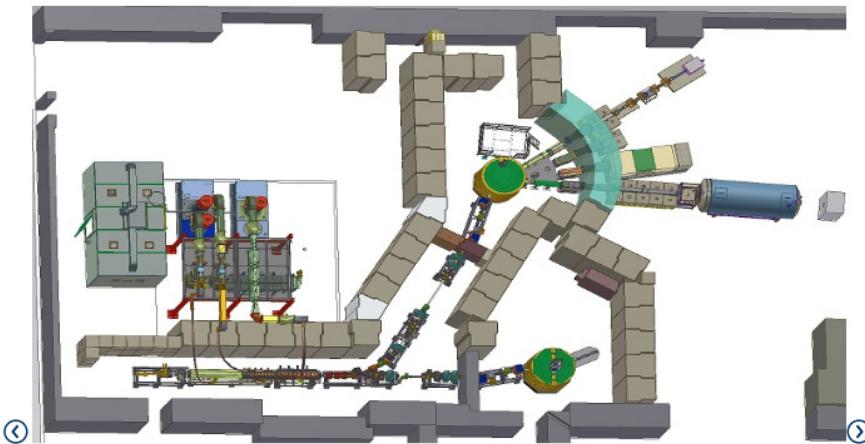
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[Center for Exploration of Energy and Matter \(CEEM\)](#)

[IU Department of Physics](#)

[IU Office of Vice Provost for Research \(OVPR\)](#)

[Neutron Radiation Effects \(NREF\) at LENS](#)



Welcome!

The Low Energy Neutron Source (LENS) is a pulsed neutron source at the [Indiana University](#) Center for Exploration of Energy and Matter ([CEEM](#)) . The source utilizes a low energy p-n reaction in Be coupled with a high-current, variable-pulse-width proton accelerator to produce either short or long neutron pulses. A highly optimized moderator produces cold neutrons for use by a suite of neutron scattering instruments and development facilities.

Major on-going activities include the development of new neutron instrumentation (in particular for [neutron spin manipulation](#) and improved [moderators](#)), large scale structure studies in materials using [SANS](#), [SESAME](#), and [neutron radiation effects](#).

Compact Neutron Sources

HUNS
Hokkaido University Neutron Source

HUNS is an accelerator-driven neutron source at Hokkaido University.
Now HUNS is in operation.

(Details)

Specification

Accelerator	Electron LINAC(s-band RF)
Accelerated Particle	electrons
Max. Acc. Energy	45 MeV
Max. Current	140 uA
Repetition	single - 200 Hz
Pulse width	10 ns ~ 3 us
Neutron Target	Pb
Neutron Energy	eV - Thermal - Cold
Moderator	Water, Solid Methane
Neutron Flux	→ Ohnuma's Lab. → Furusaka's Lab.

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左ビームライン

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冷中性子源