

**Joint ICTP-IAEA School (*smr 2741*)**

**Nuclear Data Measurements  
for Science and Applications**

***19 - 30 October 2015, Trieste, Italy***

**web: <http://indico.ictp.it/event/a14288>**

**Organizers:**

**S. Simakov, D. Ridikas (IAEA, Austria)**

**J. Niemela, L. Iannitti (ICTP, Italy)**

# School Goal and pre-History

## School aims:

to introduce and deliver concise and the most recent information on nuclear data and measurements required for fundamental research and various applications

## Pre-History:

IAEA organized in Budapest (Dec 2012 ) the Technical Meeting (TM) “Use of Neutron Beams for High Precision Nuclear Data Measurements” (proceedings are available as Report [IAEA-TECDOC-1743](#), 2014)

One of Recommendation of that TM:

“Organization of periodic technical meetings, education and training workshops/schools is necessary to ensure knowledge transfer and preservation”

# **Content: Data & Applications to be covered by Lectures**

## **Basic Nuclear Physics and Nuclear Data**

- **Neutron induced capture and fission reactions**
- **Total Cross Section and Neutron Transmission**
- **Thermal and cold neutron scattering**
- **Nuclear Fission**
- **Fission Fragment Properties and De-excitation**
- **Neutron induced Charged Particles Production Reactions**
- **Photo-nuclear Reactions**
- **Nuclear Astrophysics**
- **Delayed Neutrons**
- **Properties of Neutrino**

## **Nuclear Data for Applications**

- **Prompt Gamma-ray Activation Analysis**
- **Non-energy applications of research reactors**



# **Content: Facilities, Instrumentations, Data Analysis to be covered by Lectures and Exercises**

## **Neutron sources/facilities (accelerators or research reactor):**

**N\_TOF at CERN, LANSCE at LANL, LINAC Center at Rensselaer,  
and other Facilities in USA, GELINA at IRMM/JRC,  
J-PARC at JAEA, BNC in Hungary, ILL at Grenoble, NFS at GANIL,  
LINAC neutron source at Bariloche, Van der Graaf at IPPE and PTB ....**

## **Instrumentations:**

**Time of Flight and Lead Slowing-down Spectrometers  
Detectors of Neutrons, Fission Chambers  
Digital charged particle spectrometry in Gaseous Detectors  
Bragg Curve Counter for Charged Particles ...**

## **Data Taking, Processing, Analysis (Hands-on Exercises):**

**Mono-energetic Neutron Source Properties  
Neutron Flux Measurements  
R-matrix analysis of Cross Sections and Uncertainty propagation  
EXFOR and ENDF – data search, retrieving, plotting ...**



# Organizational Settings

## ***Main Organizers/Sponsors:***

- Abdus Salam International Centre for Theoretical Physics (ICTP – Trieste)
- Nuclear Data and Physics Sections of International Atomic Energy Agency (IAEA – Vienna)

## ***Collaborator:***

- The Neutron Time Facility (n\_TOF/CERN – Geneva)

## ***Co-sponsor:***

- European project Neutron Science in Europe and Spain (EU NeutAndalus - Sevilla)

## ***School comprises:***

- 25 Lectures and 8 practical Exercises
- Poster Session with awarding of Prices/Certificates to 3 best Posters



# Thanks for Contributions and Wishes of Success

**to ICTP staff - for practical implementation of School  
*especially to:***

**School Secretary – Mrs. L. Iannitti,  
Housing, Visa and IT Offices**

**to Lecturers – for coming and Knowledge transfer (lecturing,  
tutoring, direct communications with Students)**

**to Students – we wish to learn intensively the Subject,  
be active during School,  
establish partnership with leading Experts/Labs**