WP4: Nuclear-Spectroscopy Instrumentation Network

Silvia M. Lenzi
University of Padova and INFN
Nuclear-Spectroscopy Instrumentation Network

the network for the gamma-spectroscopy and complementary-instrumentation community

Promotion and Coordination of scientific and technological activities for frontline research

Exchange of knowledge and Transfer of expertise between the working groups and towards young researchers

Development of synergies and Optimization of the use, construction and maintenance of the resources
Collaborations on the Operation, Design, Construction and Maintenance of:

High-resolution Ge arrays
High-efficient scintillator arrays (high energy and fast timing)

Charged-particle detector arrays
Neutron-detector arrays

Setups for beta-decay measurements
Setups for nuclear-moments measurements
The network is managed by a Steering Committee:
- INFN-Padova: Silvia M. Lenzi (coordinator)
- GSI: Magdalena Gorska (deputy-coordinator)
- IN2P3-Orsay: Araceli Lopez-Martens
- IFIC-Valencia: Andres Gadea
- Uni Liverpool: Andrew Boston

The total budget is 170 k€ distributed in these 5 nodes to allow an efficient and optimized use of the funds

Website: http://nuspin.pd.infn.it
The tasks
task 1
Coordination, promotion and dissemination

1.1 Scientific Committee: to promote collaborative ventures and to encourage the pooling of distributed equipment

Michael Bentley (York)  
Alison Bruce (Brighton)  
Giacomo de Angelis (LNL)  
Gilles de France (GANIL)  
Gilbert Duchene (Strasbourg)  
Maria Jose’ Garcia Borge (Madrid)  
Juergen Gerl (GSI)  
Georgi Georgiev (Orsay)  
Paul Greenless (Jyvaskyla)  
Jan Jolie (Cologne)  
Wolfram Korten (Saclay)  
Silvia Leoni (Milano)  
Adam Maj (Krakow)  
Gerda Neyens (CERN)  
Johan Nyberg (Uppsala)  
Peter Reiter (Cologne)  
Berta Rubio (Valencia)  
Calin Ur (Bucharest)

1.2 Coordination between the Infrastructures: to organization of meetings between the management of the gamma-spectroscopy collaborations and the directors of the hosting infrastructures

✓ Meeting of the Directors of hosting laboratories and the AGATA management: GANIL, 22nd February 2018
Working Groups (D. Mengoni):
to cooperate on the use, research and development of the detectors and to improve the performance and compatibility of the devices: mechanics, electronics, data acquisition, simulations tools, R&D

**WG1**: High-resolution gamma-ray spectroscopy  
Convener: Francesco Recchia

**WG2**: Particle detectors. Convener: Marlene Assie

**WG3**: High-efficiency and fast-timing scintillator detectors  
Convener: Enrique Nacher

**WG4**: Devices for nuclear moments and transition probabilities  
Convener: Alain Goasduff
Collaboration Workshops

organized on an **annual basis** in different countries, to allow the whole community to meet together

- to present scientific results
- to discuss on common problems
- to strengthen collaborations
- to start new ventures
task 4

Transfer of knowledge

4.1 training courses for new users

for a new generation of researchers, ready to exploit in the best way all the essential tools needed for their research

4.2 exchange of key personnel

to ensure common knowledge base
Achievements
NUSPIN Workshops

Since 2016 there have been four Collaboration Workshops during the last week of June where recent results at the different TNA and theoretical developments were presented and discussed:

1. Venice 2016 (85 participants)
2. Darmstadt 2017 (94 participants)
3. Valencia 2018 (80 participants)
4. Orsay 2019 (84 participants)

In the same week of the Workshops, took place the meetings of:

- the Working Groups:
  - presentation of recent developments
  - discussion on collaboration and exchange of expertise
- the Scientific Committee: coordination
NUSPIN 2016 Workshop

Nuclear Spectroscopy Instrumentation Network

Associated Events
• Kick-off Meetings of the NUSPIN Scientific Committee and Working Groups
• Annual Meeting of the AGATA Collaboration Council

AGATA Physics Workshop

San Servolo, Venice, 27 June - 1 July, 2016

Organizing Committee
S. M. Lanza (Chair, Padova), A. Boston (Liverpool), A. Gades (Valencia), M. Góreka (Darmstadt), A. Lopez-Martens (Orsay), S. Lunardi (Padova), D. Mengoni (Padova), D. R. Napoli (Legnaro), J. Nyberg (Upplands), F. Recchia (Padova), J. J. Velez Dobón (Legnaro)

Secretariat
Ekta Prasad (INFN, Padova)
Adriana Schiaon (Università di Padova)
Infor https://nuspin.pd.infn.it/nuspin2016
Other Meetings and Workshops

A topical workshop on **Total Absorption Spectroscopy: present and near future**, was organized at IFIC, Valencia (Spain) on 16-19th December 2019.

NUSPIN Workshops have hosted the two AGATA Physics Workshops (2016, 2018) and all the AGATA Annual Collaboration Council Meetings.

Experts on Ge detectors have visited other labs to train new users.
Cologne Training School

Hands-on Workshop on Ge detectors in Cologne (September 4-7, 2018): for physicists, engineers and technician working in the maintenance and repairing of Ge detectors: thought for 20 participants → 40 accepted (the request was larger but the goal was really a “hands-on”)
Cologne Training School (cont.)

Topics:

· Introduction to the basics of Ge detectors
· History of Ge detectors
· Production of Ge detectors: Planar, coaxial, segmented detectors
· Cryostats and vacuum issues
· Properties and test procedures of Ge detectors
· Diagnosis of failures and strategies for repairs
· Specific problems of different detector types: standard n-type, p-type, Clover detectors, segmented detectors, encapsulated detectors (MINIBALL, AGATA)
Liverpool training school

NUSPIN School in Liverpool on Gamma-ray detectors: for PhD and postdocs
Liverpool 3-7th June 2019

Aimed at postgraduate students, postdoctoral researchers and electronics engineers who are not experts in germanium detector systems.
- introduction to germanium detector systems
- training in essential measurement techniques.

There were 22 participants to the School
Liverpool training School (cont.)

The course was located in the state-of-the-art CTL Radiation laboratory. Provided hands-on experience with germanium detector systems.

Lectures presented by:
• A. Boston, C. Unsworth, D. Judson (UoL & STFC Daresbury Lab)
• B. Pirard (Mirion Technologies)

Five practicals:
(1) and (2) Germanium detector testing, energy resolution and efficiency
(3) Managing detector vacuum systems
(4) Segmented detector data analysis
(5) Customer Acceptance Testing & Trouble shooting detector systems
The study of **Nuclear Structure** at the new facilities with radioactive beams requires a deep knowledge of the reaction dynamics and mechanisms involved in order to optimize the production and selectivity with reduced beam intensities with respect to those delivered by stable ion facilities.

**A training course on Nuclear Reactions theory and techniques** will be held on 9-10 June 2020 in Seville with theoretical and practical lectures.

The school is open to young and experienced researchers.
#February11

5\textsuperscript{th} International Day of Women and Girls in Science
Thank you for your attention