NuSpIn

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

Optimization
of the use, construction and maintenance of the resources

http://nuspin.pd.infn.it

motivation

High-resolution gamma-ray spectroscopy is the principal tool for the nuclear structure investigations as it allows to study the excited nuclear states and their properties with high precision.

The sensitivity of gamma-ray devices increases significantly if combined with ancillary detectors for charged particles, heavy ions and neutrons.

High-efficiency gamma-ray detectors and calorimeters based on scintillator materials are essential tools to study weak processes, nuclear dynamics and structure far from stability.

The exchange of information and the development of synergies are of great benefit to the whole research community

organization and budget

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

Scientific Committee

Michael Bentley (York)
Alison Bruce (Brighton)
Giacomo de Angelis (LNL)
Gilles de France (GANIL)
Gilbert Duchene (Strasbourg)
M. 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)

the actors

Collaborations on the design, construction, and operation of:

High-resolution Ge arrays
Highly-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

specific actions

To ensure the efficient and innovative use of the valuable European gamma-ray spectroscopy resources at the different infrastructures, each with its specificity in beam species and energy ranges

To promote the collaboration and sharing of expertise between different research and technical domains

To promote the coordination of the experimental campaigns at the different infrastructures providing and exchanging information on their potential opportunities

specific actions (2)

To promote the cooperation in the development, design and construction of gamma-ray and particle detectors

To encourage and organize the pooling of distributed equipment in order to enhance synergies between complementary resources for common large-scale projects

To encourage and facilitate the exploration of ground-breaking solutions to pave the way for future generation arrays, both high-resolution gamma spectrometers and complementary devices

To build bridges between the scientific developments and the applications for the society.

The tasks

task 1

Coordination, promotion and dissemination

1.1 Steering Committee: to coordinate and organize different activities and tasks

The SC has met on different occasions for organizational issues such as the workshops, the calls for abstracts, and the plans for the future activities.

WEBSITE: The NUSPIN web site, http://nuspin.pd.infn.it, has been created and contains: the description of the tasks and committees, links to minutes of various meetings and documents, announcements and news.

task 1

Coordination, promotion and dissemination

1.2 Scientific Committee: represents different collaborations on gamma-spectroscopy instrumentation and ancillary devices
task: to promote collaborative ventures and to encourage the pooling of distributed equipment

The first meeting of the ScC in San Servolo, Venice International University on June 28th, 2016.
-presentations from the members of the ScC illustrating the activities in the respective institutions or collaborations.

The second meeting of the ScC in GSI, Darmstadt, on June 28th, 2017.
- discussion on maintaining of the valuable equipment, in particular Ge detectors. Some laboratories and/or collaboration have engineers and technicians that have developed useful skills that could be shared and transferred to other laboratories. It was decided to organize a workshop in 2018 where for the first time these experts will meet and exchange experience and techniques. This will help to transfer of know-how and the collaboration between the different laboratories

task 1

Coordination, promotion and dissemination

1.3 Coordination between the Infrastructures: to organize annual meetings between the management of the gamma-spectroscopy collaborations and the directors of the hosting infrastructures

Action: coordination with AGATA Steering Committee and the Management of the involved hosting laboratories

- ✓First meeting in LNL, Legnaro,12th November 2010
- ✓Second meeting in CNRS, Paris, 19th December 2011
- ✓Third meeting in GSI, Darmstadt, 13th December 2012
- ✓Fourth meeting in GANIL, Caen, 19th May 2014
- ✓ Meeting of the Directors of hosting laboratories and the AGATA management. GANIL, 22 February 2018

task 2

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

2.1 WG1: High-resolution gamma-ray spectroscopy.
Convener: Francesco Recchia

2.2 WG2: Particle detectors. Convener: Marlene Assie

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

2.4 WG4: Devices for nuclear moments and transition probabilities.
Convener: Alain Goasduff

Meetings of about 1/2 day long took place attached to each NUSPIN workshop

task 3

Collaboration Workshops

organized on an annual basis in different countries, allow the whole community to meet together, to present scientific results, to discuss common problems, to strengthen collaborations and to start new ventures.

- Extended travel support for young scientists
- Slides available at the NUSPIN website.

task 3

Collaboration Workshops

The First NUSPIN Workshop, the Venice International University, in San Servolo, Venice on June 27th – July 1st 2016. Focus on experiment-theory confrontation. The Workshop hosted the AGATA Physics Workshop and AGATA Collaboration Council. About 85 scientists from 17 countries participated to the Workshop.

The Second NUSPIN Workshop, GSI Darmstadt on June 26th – 29th 2017, and hosted the AGATA Collaboration Meeting.
Focus on the instrumentation for nuclear structure research at the European facilities presented and the perspectives discussed. The latest results obtained at the gamma-ray facilities in Europe, the preparation status of the RIB facilities, and the discussion of the challenges of future research, the development of new instrumentation and technical developments with gamma-ray techniques and particle detectors were presented.
Workshop had about 94 participants from 15 countries.

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

First NUSPIN School in Liverpool on Gamma-ray detectors: for PhD and postdocs

task 4

Transfer of knowledge

4.2 exchange of key personnel

to ensure common knowledge base

IPHC staff training on encapsulated germanium detector

Michel FILLIGER and Marie-Hélène SIGWARD trained at IKP Cologne March 13 to 16, 2017 on encapsulated germanium detectors:

- preparing germanium capsules and electrical test of inner part of test cryostats,
- mounting the capsules in the test cryostats,
- testing the performances of the capsules.

Hands-on Workshop on Ge detectors at Cologne (Sept 2018): for physicists, engineers and technician working in the maintenance and repairing of Ge detectors

MILESTONES and DELIVERABLES

MS4.1 Setup of the website, Scientific Committee and Working groups,

due date: month 12, date of achievement: month 4.

Website: http://nuspin.pd.infn.it

The Scientific Committee and the Working Groups have been formed and the first meeting took place in San Servolo, Venice, on June 28th, 2016

MS1.2 Scientific Committee and Working groups meetings

due date: month 20. Report delivered month 19.

ScC Meeting: decided to organize a hands-on workshop for technicians and physicists dealing with Ge detectors.

WG meeting: approximately 30 scientists participated to the meeting. There were 11 oral presentations.

D4.1 Report on the setup of the website, members and chairs of the Scientific Committee and Working Groups

due date: month 12

date of achievement: month 11

Perspectives

2018

- The third NUSPIN Workshop will take place in Valencia on June 25-29 2018. The Workshop will host the AGATA Physics Workshop and Collaboration Council Meeting. During the same week the Scientific Committee and Working groups will meet.

✓ Meeting of the Directors of hosting laboratories and the AGATA management. GANIL, 22 February 2018.

- Hands-on Workshop on Ge detectors at Cologne: for experts
- First NUSPIN School in Liverpool on Gamma-ray detectors: for PhD and postdocs

2019

- The fourth NUSPIN Workshop will take place in France on June 24-28 2019. The Workshop will host the AGATA Collaboration Council Meeting. During the same week the Scientific Committee and Working groups will meet.
- Second NUSPIN School

Participants

Croatia:	Ruder Boskovic Institute (Zagreb), U-Zagreb
Finland:	JYFL
France:	GANIL, CEA, CSNSM-Orsay, IPN-Orsay, IPHC-Strasbourg; Subatech, Nantes
Germany:	GSI, U-Koln, TU-Darmstadt
Greece:	NCSR-Demokritos
Hungary:	ATOMKI-Debrecen
Italy:	INFN: LNL, Padova, Milano, Firenze, Napoli
Poland:	HIL, U-Warsaw, IFJ-Pan Krakow
Romania:	NIPNE, IFIN-HH/ELI-NP
Spain:	IFIC-Valencia, UAM-Madrid, U-Huelva, U-S. de Compostela, IEM-CSIC; CIEMAT-Madrid, GFN-U-Complutense, U-Salamanca
Sweden:	KTH, U-Lund, U-Uppsala
Turkey:	U-Ankara, U-Istambul
UK:	STFC Daresbury, U-Liverpool, U-Manchester, U-Surrey, U-York, U-Birmingham, U-West Scotland

13 Countries, 46 Institutes