Nuclear Data in the NuPECC Long Range Plan 2024 for European Nuclear Physics

IAEA, Vienna, Austria
April 25-27, 2023

Marek Lewitowicz
Chair of NuPECC

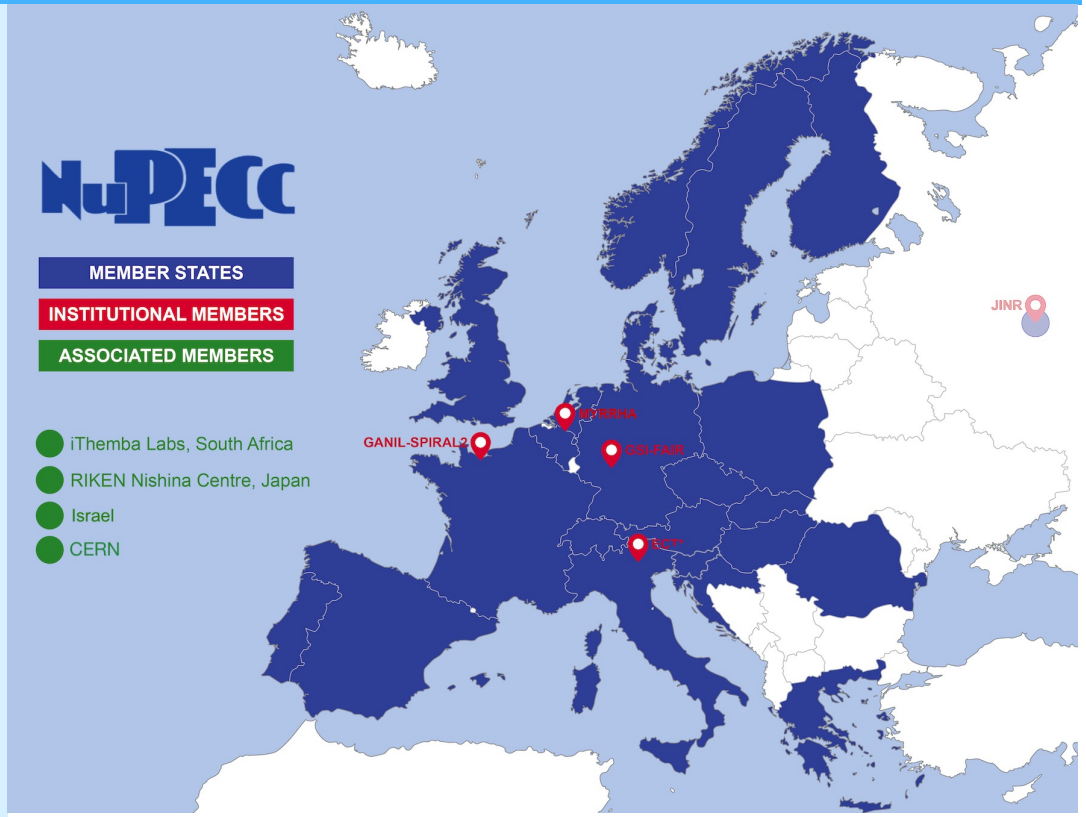
What is NuPECC ?

Nuclear Physics European Collaboration Committee (NuPECC)
Is the European Expert Board for Nuclear Physics
hosted by European Science Foundation

Representing
about 6000 scientists

Composition:

- 34 representatives from 22 countries (new members Slovakia, Slovenia), 3 ESFRI NP Infrastructures & ECT*
  JINR Dubna – suspended in March 2022
- 4 associated members
  - CERN
  - Israel
  - iThemba Labs
  - Nishina Center
- 9 observers (ESF, NPD/EPS, ECFA, NSAC, ANPhA, ALAFNA, CINP, IAEA, APPEC)



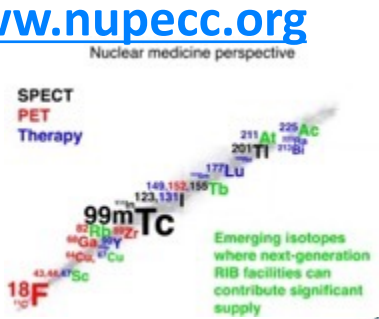
3 regular Committee meetings/y

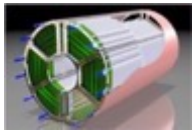
34 Years of NuPECC activities

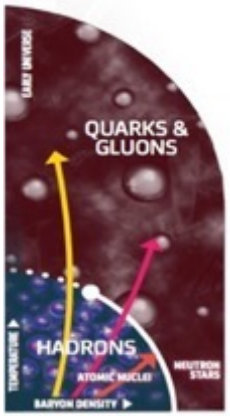
https://nupecc.org

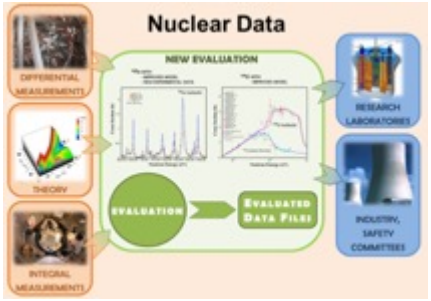
Nuclear Physics in Europe

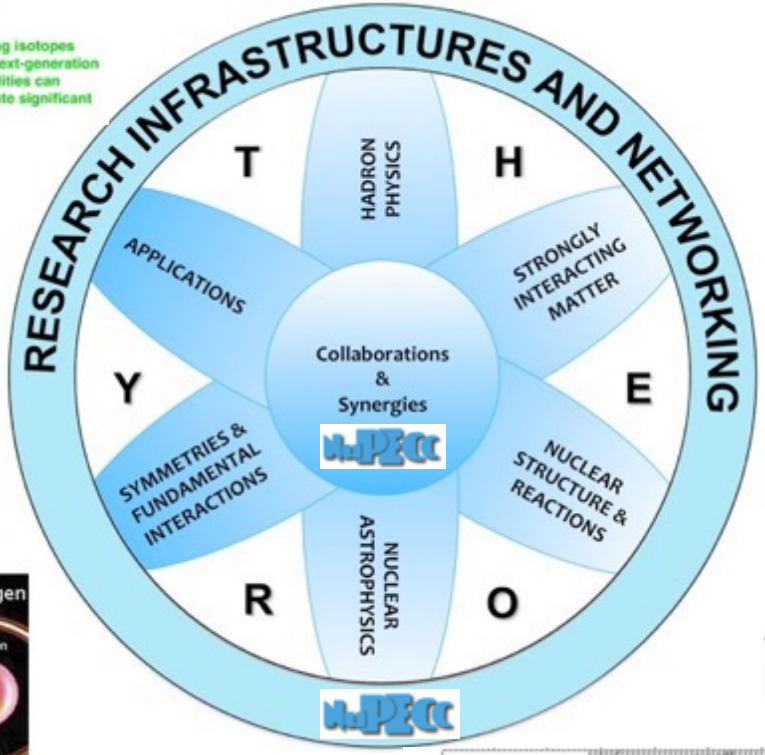
http://www.nupecc.org

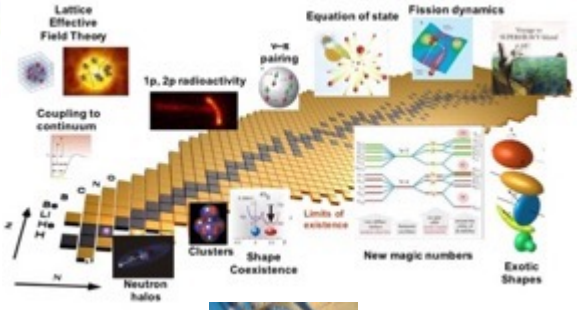


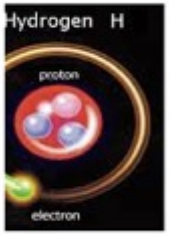


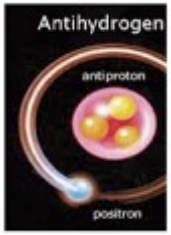


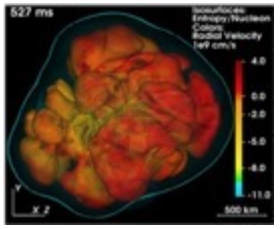


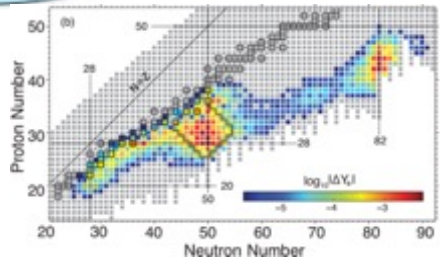




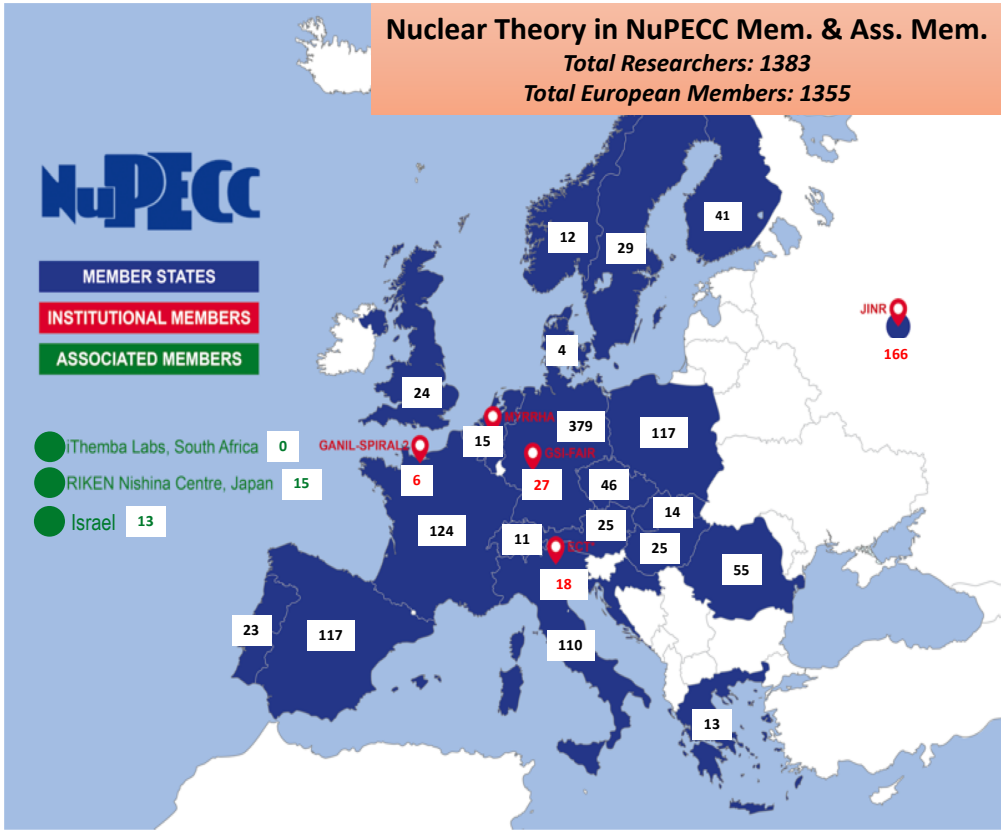




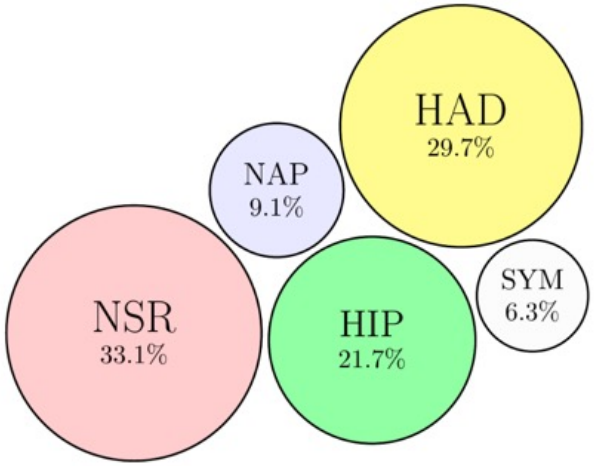




2021 NuPECC Survey of Nuclear Theory in Europe



- Nuclear structure and reactions (**NSR**)
- Nuclear astrophysics (**NAP**)
- Heavy-ion physics (**HIP**)
- Hadron physics (**HAD**)
- Nuclei as laboratories/symmetry tests (**SYM**)



- **In order for the field to prosper, healthy nuclear theory is absolutely essential: the numbers show that this is indeed the fact**
- **There is an approximate equal partition among the big fields (except SYM)**
- **A concentration on specific sites/labs seems to occur (e.g. Germany, Czech Republic, Romania)**
- **Much lower number of PhD students & post-docs per permanent staff researcher in some countries**

http://nupecc.org/snt/meissner_sep21.pdf

Ulf-G. Meißner et al.

Integrating community with EU projects

Support for users and facilities

New! Joint PP – NP
EU Horizon Europe project
EURO-LABS
Contract 2022-2026 (14,5M€)
Started on September 1st 2022
Coord. Navin Alahari
GANIL, France
Coordinating institution INFN, Italy
39 Research Infrastructures

- CERN
- GANIL (France)
- LNL-LNS (Italy)
- JYFL (Finland)
- IJCLab (CNRS, France)
- FAIR/GSI (Germany)
- NLC (HIL/IFJ PAN, Poland)
- IFIN-HH(Romania)
- ECT* (Italy)
- …

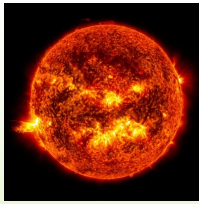
Hadron physics H2020
STRONG-2020
Contract 2019 -2024 (10M€)

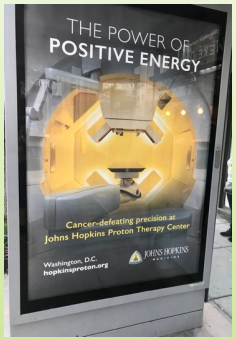
Coord. Barbara Erazmus IN2P3, France
Coordinating Inst. IN2P3/CNRS, France

- CERN
  LHC & fixed target exp.
- GSI/FAIR (Germany)
- LNF, Frascati (Italy)
- MAMI, Mainz (Germany)
- ECT*, Trento (Italy)
- ELSA, Bonn (Germany)
- COSY, Jülich (Germany)

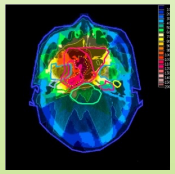
Applications of nuclear science

- **Climate & Environment** (Sun activity, heat in the Earth interior, ocean monitoring, wastewater treatment, mapping of groundwater resources, ...)

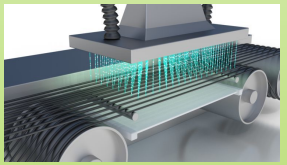




- **Energy** (electric power generation, waste management, **nuclear data**)

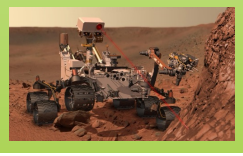


- **Health** (radioisotopes for therapy and diagnosis, hadrontherapy)



- **Everyday life products** (sterilization, radiation processing, cross-linked coatings, material modification, food and agriculture)

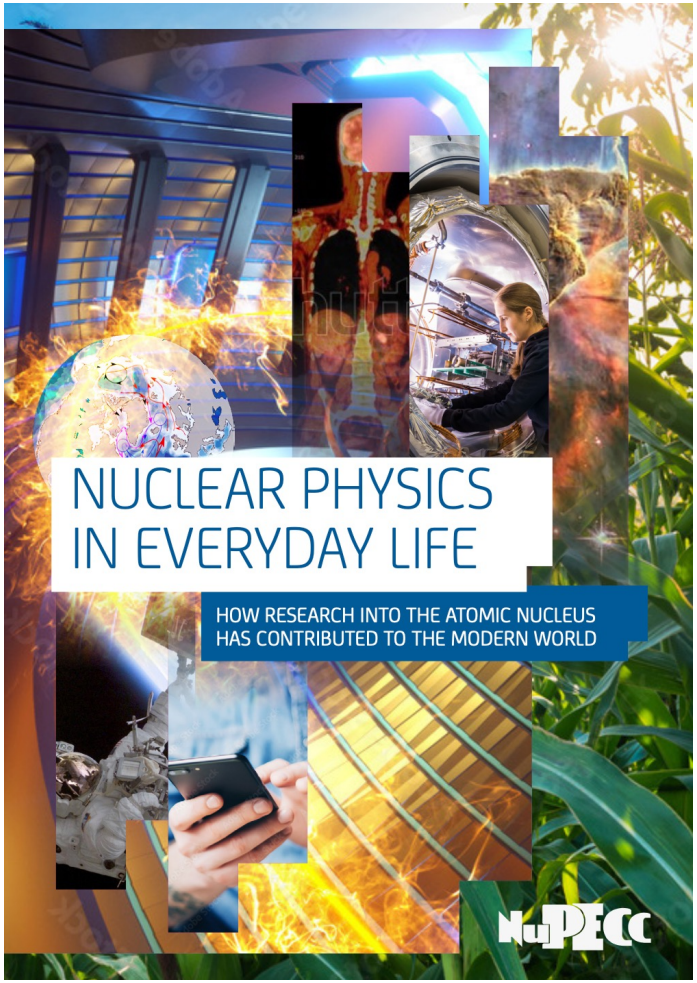
- **Cultural heritage and Forensics**



- **Space technology & exploration**

Important role of large and smaller scale facilities

Applications of nuclear science



NuPECC report on

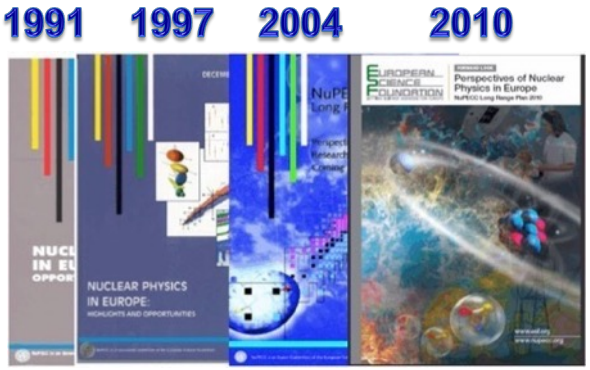
Nuclear Physics in Everyday Life

(100 pages, on-line and printed version available)

https://nupecc.org/pub/np_life_print.pdf

"The profound understanding of nuclear structure and behaviour, plus all the data collected on nuclear reactions, which are achieved through major nuclear physics experimental programmes, also underpin progress in developing advanced forms of nuclear energy."

NuPECC Long Range Plan



- The LRP identifies opportunities and priorities for the nuclear science in Europe
- The LRP provides national funding agencies, ESFRI and European Commission with a framework for coordinated advances in nuclear science in Europe

NuPECC LRP 2017

http://www.nupecc.org/lrp2016/Documents/lrp2017.pdf

Recommendations for European Nuclear Physics facilities

NuPECC 2017 LRP

Complete urgently the construction of the ESFRI flagship FAIR and develop and bring into operation the experimental programme of its four scientific pillars APPA, CBM, NUSTAR and PANDA

FAIR ESFRI

Support for construction, augmentation and exploitation of world leading ISOL facilities in Europe towards EURISOL

ESFRI

GANIL/SPIRAL2
ISOLDE, SPES, JYFL

Support for the full exploitation of existing and emerging facilities

ELI-NP ESFRI
NICA, SHEF
MYRRHA ESFRI
IFMIF-DONES ESFRI

Support for ALICE and the heavy-ion programme at the LHC with the planned experimental upgrades

Support to the completion of AGATA array in full geometry

Nuclear Data in NuPECC LRP 2017

References to "data" on 110 pages of the LRP 2017 report

Nuclear Data in and for:

- **HADRON AND HIGH ENERGY HEAVY-ION PHYSICS (role of Particle Data Group)**
- **NUCLEAR STRUCTURE AND REACTIONS**
- **NUCLEAR ASTROPHYSICS**
- **SYMMETRIES AND FUNDAMENTAL INTERACTIONS**
- **INFRASTRUCTURES**
- **APPLICATIONS AND SOCIETAL BENEFITS**

Key issues

- **Accurate nuclear data and predictive modelling of nuclear processes**
- **Ensure that the new measurements performed in the European facilities are incorporated promptly into the available databases and are therefore used in both reaction modelling and evaluations that are important for energy and non-energy applications.**

Reliable, up-to-date and well-structured data libraries are indispensable both for Applied and Fundamental Nuclear Physics research. The ability to develop and maintain a high level of expertise in the area of nuclear data to meet the data needs of a continuously developing European Nuclear Physics landscape is a key issue that needs to be addressed by the European Nuclear Physics community as a whole.

Box: Nuclear Data

- **An important part of the activity is related to nuclear data evaluation, with complete uncertainty and covariance analysis needed, as well as compilation and continuous maintenance of the nuclear data libraries as the JEFF European library.**

Infrastructures for experimental nuclear data:

- High-flux neutron facilities: **ILL, Grenoble, n_ToF at CERN and NFS at GANIL** complementing the well-established EU facilities for nuclear data in the **Joint Research Centres (in particular IRMM in Geel, Belgium)**.
- Fission yields and decay data can be collected in various laboratories around Europe, such as **Lohengrin at ILL, ISOLDE at CERN or the future SPIRAL2 and SPES** radioactive ion beam facilities.
- Reactor facilities to constrain nuclear data evaluation. **VENUS-F reactor at SCK*CEN**, **MASURKA** in France and **BFS** in Russia (both under reconstruction).

Recommendations

- **Efforts in nuclear data measurements, evaluation and modelling are needed and should be supported**
- **Development for high power and high stability particle accelerators should continue**
- **A high level of competence in applied nuclear physic through training and education of young researchers must be maintained**
- **Synergies with other fields (detectors, accelerators, materials science, …) should be exploited**
- **Specific European projects as MYRRHA and IFMIF/DONES should be supported**

Recommendations (continued)

- **Considering the large effort required on the evaluation process, it is important that a continuous support be ensured to the evaluation community, at present rather weak, with fresh new forces needed all over Europe. In this respect, the training of a new generation of young researchers is becoming mandatory.**

- The European research funding programs bring together the majority of European neutron sources. The projects ERINDA, CHANDA, ANDES, etc., help to prepare the methodologies, facilities, detectors, interpretation and tools to produce and use nuclear data with very high quality. Such intensive cooperation is the main reason of significant improvement of the experimental (EXFOR) and evaluated (ENDF) databases and the TALYS code during last years. It will be important to use the Horizon 2020 program in the same way.

NuPECC LRP

- **The 2017 NuPECC Long Range Plan defined an ambitious strategy for European Nuclear Physics (including Nuclear Data)**
- **Development of a global international approach to nuclear science in collaboration with IAEA, IUPAP, NPD/EPS, ECFA, APPEC, NSAC (US), ANPhA (Asia), ALAFNA (S. America), CINP (Canada)**
- **NuPECC efforts to transform the LR Plan into reality -> Task Force meetings**

Joint activities of ECFA, APPEC & NuPECC (Particle, Astroparticle and Nuclear Physics)

- **Joint "JENAS" seminars**
- **Diversity Charter**
- **Recognition of young scientists**
- **Big data and Computing**

NuPECC Task Force

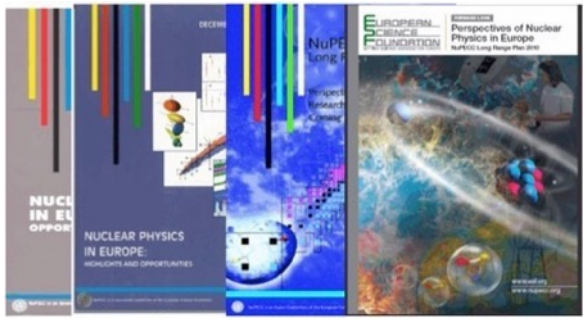
- **Goal of the NuPECC Task Force**
  - promote and lobby for the implementation of the LRP recommendations in the European countries
- **Composition**
  - NuPECC representatives of the ESFRI facilities under construction, namely of ELI-NP, FAIR/GSI, GANIL/SPIRAL2, MYRRHA
  - NuPECC Chair, Deputy Chair, NuPECC Scientific Secretary
  - NuPECC representative(s) of visited country
- **Modus Operandi**
  - meetings with major European organizations and national ministries/funding agencies

NuPECC Task Force (since 2018)

- ***So far meetings of the NuPECC Task Force took place in:***
  - Norway – Ministry of Research,
  - UK – STFC,
  - Romania - Ministry of Research,
  - IAEA Vienna,
  - Poland - Ministry of Research & funding agencies,
  - JINR Dubna,
  - France – CEA/Irfu - CNRS/IN2P3
  - Spain - Ministry of Research & funding agencies
  - Italy - INFN
  - Belgium – Ministry of Research & funding agencies
  - Slovenia **-** Ministry of Research & funding agencies
  - ***Austria - Federal Ministry of Education, Science, and Research***
  - *Next meeting in Hungary and Slovakia*
- ***Goal of the meeting (in Vienna on 21/04/2023)***
  - Present the strategy of Austria for nuclear physics research
  - Present NuPECC Long Range Plan for nuclear physics in Europe and the major European (ESFRI-roadmap) facilities
  - Discuss the synergies

Towards NuPECC Long Range Plan 2024

1991 1997 2004 2010



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Assessment of Implementation of the NuPECC Long Range Plan 2017

February 2022

LIAISONS: G. AARTS, D. BETTONI, S. COURTIN, P. GIUBELLINO, J. GÓMEZ CAMACHO, A. GÖRGEN, R.-D. HERZBERG, D. IRELAND, B. KRUSCHE, M. LEWITOWICZ, A. MAJ, U. MEISSNER, E. NAPPI, G. NEYENS, L. POPESCU, B. SHARKOV, E. WIDMANN,

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NuPECC LRP 2017

https://www.nupecc.org/lrp2016/Documents/lrp2017.pdf

February 2022

https://nupecc.org/2017_LRP_Assessment_of_Implementation_final.pdf

NuPECC LRP 2024

Launched in May 2022 in Madrid

Implementation of LRP2017
Nuclear Data for Applications

Assessment of Implementation of the NuPECC Long Range Plan 2017

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https://nupecc.org/2017_LRP_Assessment_of_Implementation_final.pdf

- **Collaborative efforts to improve data relevant for nuclear energy have been developed. The involvement of international institutions such as the IAEA and the Nuclear Energy Agency of OCDE has been very important to set up a Joint Evaluated nuclear data Library for Fusion and Fission (JEFF).**
- **The Horizon 2020 program has supported several projects: SANDA, which is focused on the safety of European nuclear installations, and ARIEL, which provides transnational access to a variety of neutron facilities across Europe.**

Implementation of LRP2017
Nuclear Data for Applications

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https://nupecc.org/2017_LRP_Assessment_of_Implementation_final.pdf

- **The JEFF collaboration was central in assessing and addressing nuclear data needs for the MYRRHA project. A collaboration agreement between SCK CEN and the Joint Research Centre (JRC) of the European Commission focused on the neutron-induced cross section for lead and bismuth.**
- **Neutrons for Science (NFS) at SPIRAL2 began experiments in 2021**

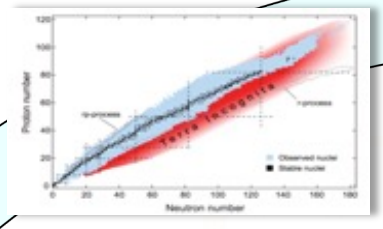
GANIL: a multidisciplinary and multi-users laboratory

Caen, France

Nuclear Astrophysics

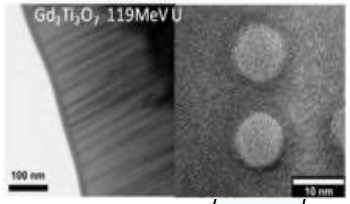
Astrochemistry

Nuclear Physics

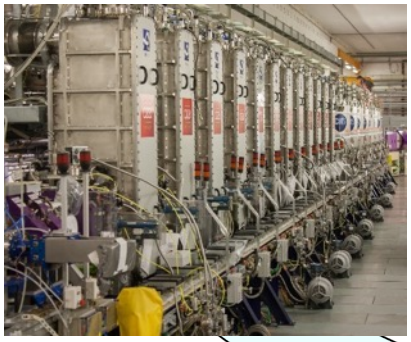


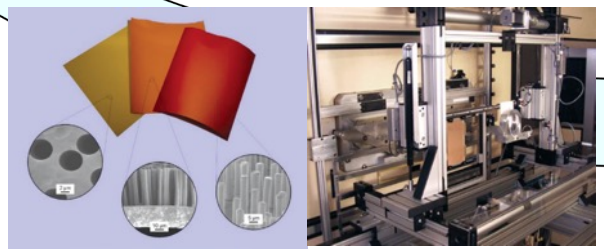
SPIRAL2

Materials under irradiation



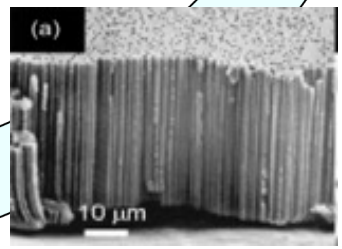
Detectors and accelerators R&D





Industrial applications: microporous membranes, electronic components irradiation

Radiobiology



Nanostructuration

SPIRAL2 LINAC and the new experimental rooms

Caen, France

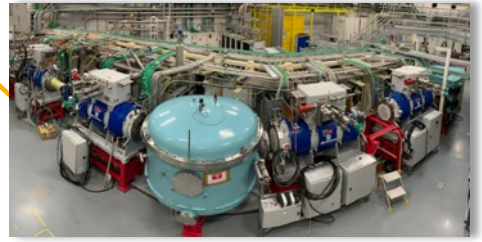
EXPERIMENTAL ROOM NFS (NEUTRONS FOR SCIENCE)

Convertor room

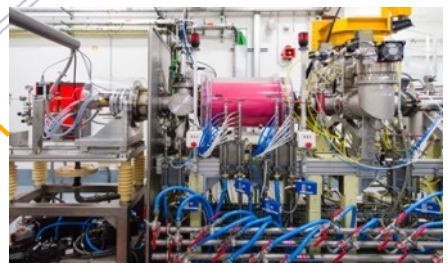
Time of Flight room

EXPERIMENTAL ROOM DESIR (Desintegration, Excitation and Storage of Radioactive Ions)

LINEAR accelerator (LINAC)



EXPERIMENTAL ROOM S3 (SUPER SEPARATOR SPECTROMETER)

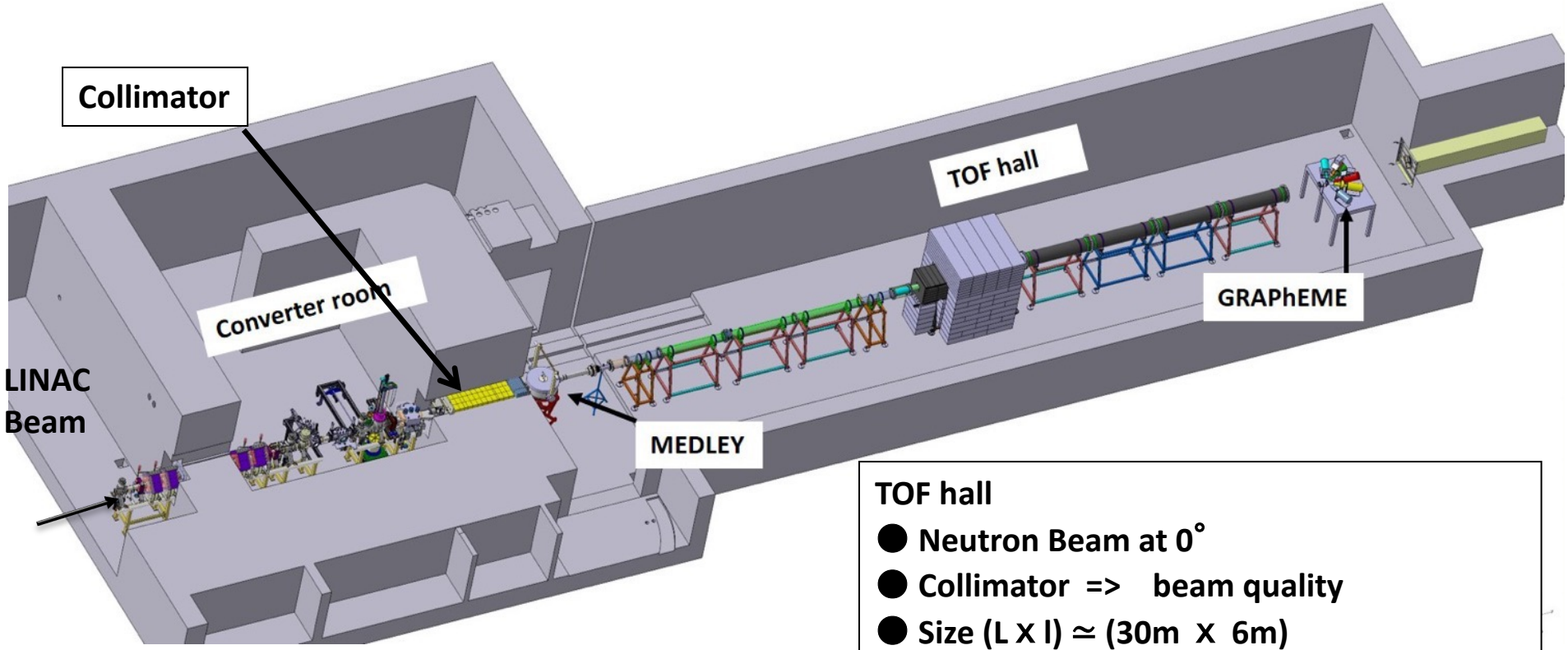


ION SOURCE

NEWGAIN NEW GANIL INJECTOR

High intensity beams :
5 mA, 33 MeV protons
5 mA, 40 MeV deutrons
1 mA, <14,5 MeV/A heavy ions

Layout of NFS facility



Converter room

- Ion and neutron induced reactions
- Irradiation station (n, p, d)

TOF hall

- Neutron Beam at 0°
- Collimator => beam quality
- Size (L X l) ≃ (30m X 6m)
  - TOF measurements
  - different set-up positions : several experiments can be carried out at the same time, corresponding to different flight paths
  - actinide targets (nuclear ventilation)

X. Ledoux et al, Eur. Phys.J. A (2021) 57:257

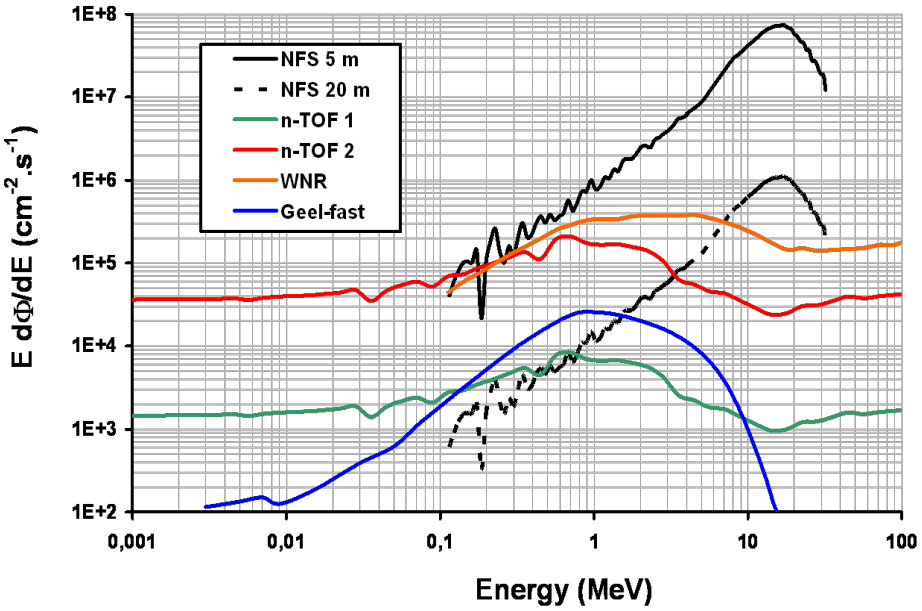
The Neutrons For Science facility

NFS is the first operational experimental area of SPIRAL2 at GANIL

International collaboration
50 physicists
15 laboratories
6 partners

Physics case

- ❑ Fundamental physics
- ❑ Astrophysics
- ❑ New generation of reactor
- ❑ Fusion technology
- ❑ Radioisotopes production for medical applications
- ❑ Biology (cells irradiation..)
- ❑ Development and characterization of new detectors
- ❑ Study of the single-event upsets

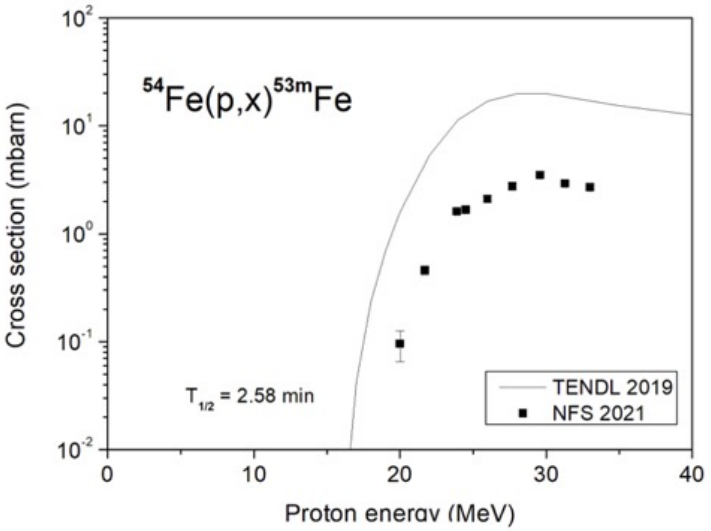


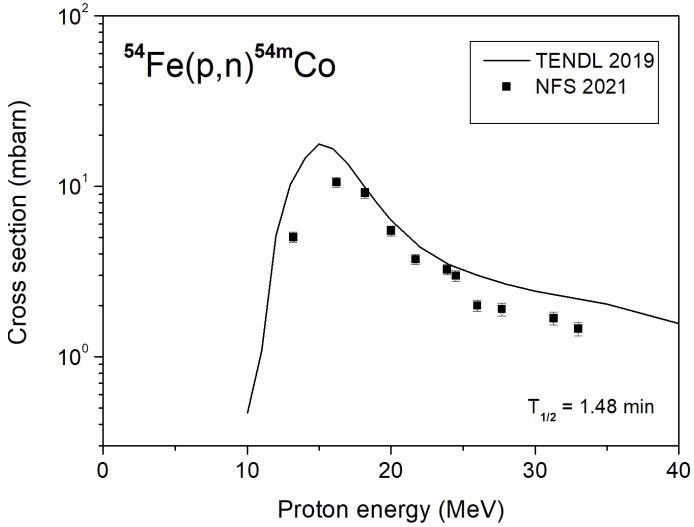
High neutron flux and good complementarity with other facilities

NFS first results

Gammas from ^{53m}Fe (2.58 m *4*)

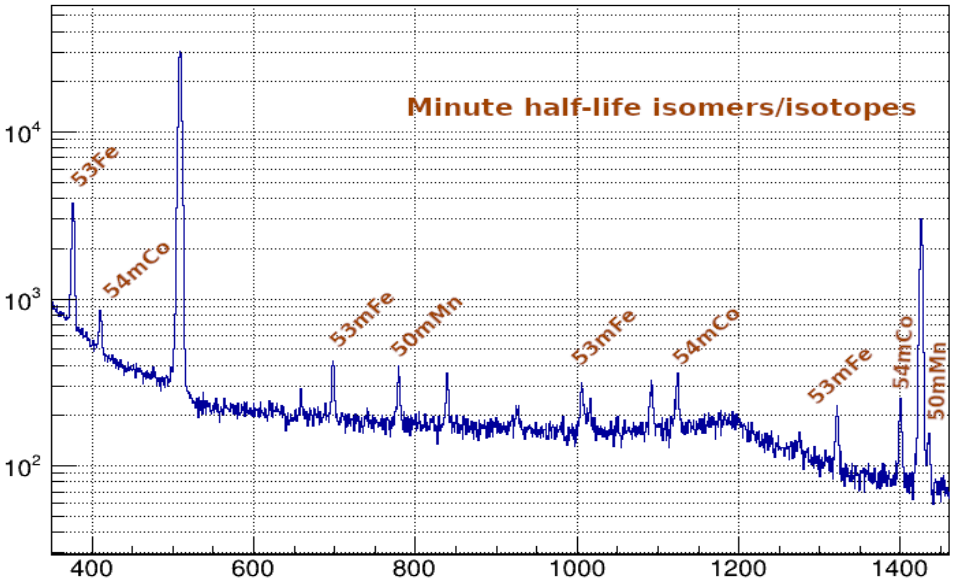
Eγ (keV)	Iγ (%)	Decay mode
701.1 *1*	99	IT
1328.2 *3*	87 *8*	IT
1011.2 *2*	86 *9*	IT
2338.3 *5*	12.8 *20*	IT
1712.6 *3*	1.28 *10*	IT
3040.6 *5*	0.059 *10*	IT





Gammas from ^{54m}Co (1.48 m *2*)

Eγ (keV)	Iγ (%)	Decay mode
411.4 *5*	97 *7*	ε+β$^+$
1129.9 *3*	98 *5*	ε+β$^+$
1408.1 *2*	100 *5*	ε+β$^+$



Preliminary excitation functions p+^{54}Fe vs. TENDL predictions

NFS first results

Study of the (n,xn) and (n,f) reaction for ^{238}U

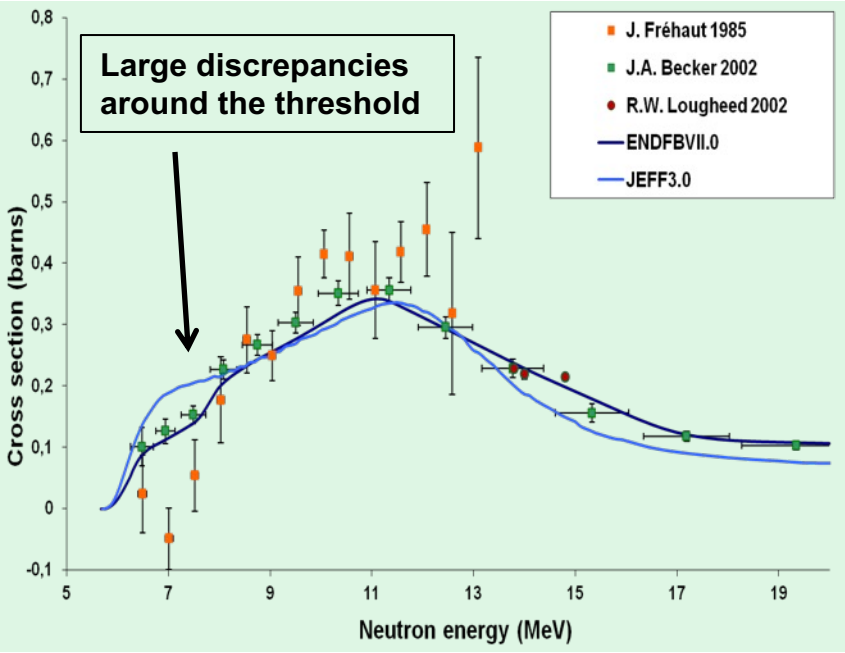
Spokesperson : G. Bélier, CEA-DAM-DIF

- (n,xn) reaction are important channels in the 5-50 MeV range
- (n,xn) cross-section measurement of actinides is very difficult:
  - radioactive sample
  - prompt neutron fission

Experimental technique :

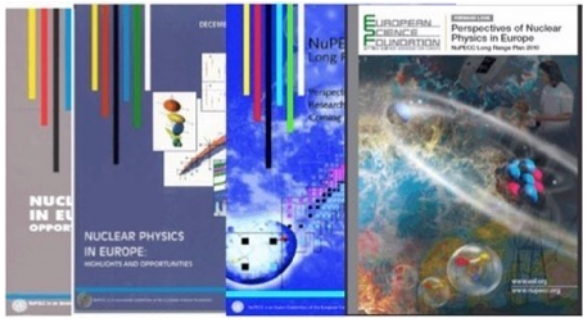
- ❑ Veto fission (fission chamber)
- ❑ 4π neutron detector SCONE
- ❑ 6 MeV<En< 20 MeV

Next Step : $^{239}Pu(n,2n)$



Towards NuPECC Long Range Plan 2024

1991 1997 2004 2010



- **The LRP identifies opportunities and priorities for the nuclear science in Europe**
- **The LRP provides national funding agencies, ESFRI and European Commission with a framework for coordinated advances in nuclear science in Europe**

Assessment of Implementation of the NuPECC Long Range Plan 2017

February 2022

LIAISONS: G. AARTS, D. BETTONI, S. COURTIN, P. GIUBELLINO, J. GÓMEZ CAMACHO, A. GÖRGEN, R.-D. HERZBERG, D. IRELAND, B. KRUSCHE, M. LEWITOWICZ, A. MAJ, U. MEISSNER, E. NAPPI, G. NEYENS, L. POPESCU, B. SHARKOV, E. WIDMANN,

Contributors: H. Abele, N. Alahari, W. Barth, D. Bemmerer, K. Blaum, F. Bossi A. Bracco, M. Chiossi, A. Denig, M. Doser, S. Freeman, M. Gazdzicki, F. Gélis, H. Goutte, M. Grecco, M. Harakeh, M. Hori, G. Imbriani, E. Khan, K. Kirch, W. Korten, A. Laird, J. P. Lansberg, D. Lunney, F. Maas, G. Martinez-Pinedo, S. Masciocchi, A. Mengoni, O. Navillat-Cuncic, D. Rifuggiato, P. Rossi, E. Scomparin, J. Simpson, H. Schmieden, O. Schneider, N. Severijns, Th. Stöhlker, J. Stroth, H. Ströher, U. Thoma, S. Ulmer, C. A. Ur, Ch. Weinheimer, U. Wiedner, H. Wittig

NuPECC LRP 2017

https://www.nupecc.org/lrp2016/Documents/lrp2017.pdf

February 2022

https://nupecc.org/2017_LRP_Assessment_of_Implementation_final.pdf

NuPECC LRP 2024

Launched in May 2022 in Madrid

NuPECC LRP 2024 – Steering Committee

Steering Committee of NuPECC LRP 2024

27 members

NuPECC Members
Associated Members
and Observers

Name	Country/Institution
Gert Aarts	UK/ECT*
Daniel Bemmerer	Germany
Diego Bettoni	Italy
Sandrine Courtin	France
Paolo Giubellino/Yvonne Leifels	Germany
Joaquin Gomez-Camacho	Spain
Paul Greenlees	Finland
Andreas Haungs	APPEC
Rolf-Dietmar Herzberg	UK
Dave Ireland	UK
Karl Jakobs	ECFA
Sissy Koerner	NuPECC
Marek Lewitowicz Chair	NuPECC
Adam Maj	Poland
Ulf Meißner	Germany
Joachim Mnich	CERN
Eugenio Nappi	Italy
Lucia Popescu	Belgium
Patricia Roussel-Chomaz	France
Hervé Moutarde	France
Hiroyoshi Sakurai	Japan
Raimond Snellings	The Netherlands
Martin Venhart	Slovakia
Jelena Vesic	Slovenia
Vladimir Wagner	Czech Republic
Eberhard Widmann	Austria
Gail Dodge	NSAC/US

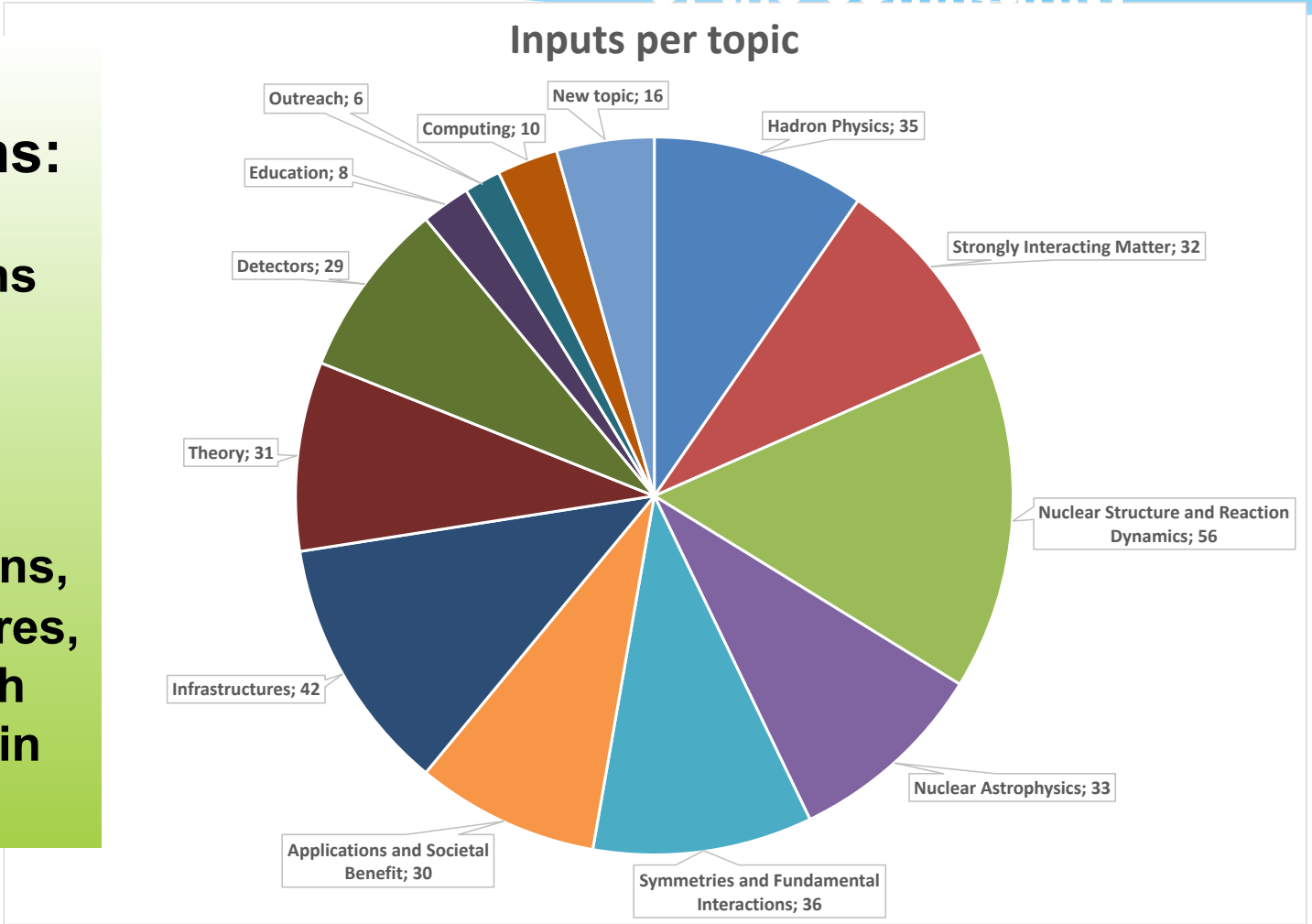
NuPECC LRP 2024 – organisation & timeline

- **June 2021 – March 2022**: Assessment of the implementation of the 2017 LRP **http://nupecc.org/2017_LRP_Assessment_of_Implementation_final.pdf**
- **Beginning of May 2022: Nomination of the LRP Steering Committee chosen among the NuPECC representatives**
- **May 2022-October 2022: Call for contributions from the community**
- **October 2022 – November 2022:**
  - initial analysis of **159** community contributions by the Steering Committee;

NuPECC LRP 2024 – Contributions of the community

LRP Contributions:

- 159 contributions submitted
- by > 400 individual scientists, collaborations, infrastructures, and research institutions in Europe



Nuclear Data explicitly mentioned in 18 contributions to LRP2024

https://nupecc.org/?display=lrp2024/call_for_input

NuPECC LRP 2024 – Contributions of the community

Nuclear Data explicitly mentioned in 18 contributions to LRP2024

- Rare Isotope Production and TArget Manufacturing (RITA)
- A unique probe for nuclear structure in a future European radioactive ion –electron collider
- Photo-nuclear reactions of light nuclei for propagation and disintegration of ultra-high energy cosmic-rays
- INDRA-FAZIA contribution to the NuPECC LRP24
- The CMS Heavy Ion Group contribution
- Quantum computing for nuclear physics
- **Research at small accelerators - CANAM research infrastructure**
- **TOF-DONES: a new neutron time of flight facility coupled to the IFMIF- DONES accelerator in Granada**
- **Beta decay studies for the prediction of the reactor antineutrino spectrum**
- **Perspectives of Nuclear Astrophysics Activities at CERN n_TOF**
- **Nuclear Data for Innovation in Advanced Nuclear Technologies: New Opportunities and Developments at CERN n_TOF**
- **The n_TOF Facility at CERN: Perspectives and New Opportunities**
- **Medical radioisotope research**
- **The Neutrons For Science facility in the next decade**
- **The Spanish Nuclear Physics Network (FNUC) framework contribution**
- **Small-scale accelerator facilities and interdisciplinary applications**
- **Nuclear Physics at the ILL high-flux reactor**
- **Nuclear Data for Science and Technologies (A.Junghans@hzdr.de)**

12 Contributions directly related to applications

162. Nuclear Data for Science and Technologies

by Arnd Junghans (A.Junghans@hzdr.de)

https://indico.ph.tum.de/event/7050/contributions/6292/

- **Scientific context**
  - needs for data at the few % level precision, role of EUROTOM projects and OECD/NEA and IAEA
- **Nuclear data for nuclear technology**
  - new reactor designs, safety, waste management
- **Nuclear data applications for fundamental research**
  - resonant structure at low neutron energy, nuclear astrophysics
- **Important cross cutting applications with radiation therapy**
  - secondary reactions with neutrons and ions
- **Maintenance of competencies in the nuclear data field**
  - importance of infrastructures and well trained scientists

NuPECC LRP 2024 – organisation & timeline

- **October 2022 – November 2022:**
  - definition of Thematical Working Groups (TWG) of LRP by the Steering Committee;
  - proposal for Conveners of TWG by the Steering Committee
- **1&2 Dec. 2022: Conveners approved at the NuPECC meeting**
- **December 2022 – February 2023: TWG formed**
- **Now: Thematical Working Groups Kick-off meetings (see https://nupecc.org/?display=lrp2024/main)**
- **Analysis of submitted contributions by TWG**

TWG coordinators and SC liaisons

Theory/Exp.

TWG Number	TWG	Coordinators	Coord. e-mails	Liaisons	Liaisons e-mails
1	Hadron Physics	Karin Schönning (Uppsala)	karin.schonning@physics.uu.se	Diego Bettoni	bettoni@fe.infn.it
		Constantia Alexandrou (CY)	c.alexandrou@cyi.ac.cy alexand@ucy.ac.cy	Dave Ireland	david.ireland@glasgow.ac.uk
2	Strongly Interacting Matter at Extreme Conditions	Laura Fabbietti (TUM)	laura.fabbietti@ph.tum.de	Gert Aarts	g.aarts@swansea.ac.uk
		Urs Wiedemann (CERN)	Urs.Wiedemann@cern.ch	Raimond Snellings	R.Snellings@uu.nl
3	Nuclear Structure and Reaction Dynamics	Silvia Leoni (Univ. Milano)	silvia.leoni@mi.infn.it	Adam Maj	adam.maj@ifj.edu.pl
		Tomas Rodriguez(UCM)	tomasrro@ucm.es	Jelena Vesic	jelena.vesic@ijs.si
4	Nuclear Astrophysics	Anu Kankainen (JYFL)	anu.kankainen@jyu.fi	Daniel Bemmerer	d.bemmerer@hzdr.de
		Jordi Jose (Barcelona)	jordi.jose@upc.edu	Sandrine Courtin	sandrine.courtin@iphc.cnrs.fr
5	Symmetries and Fundamental Interactions	Pierre Delahaye (GANIL)	pierre.delahaye@ganil.fr	Eberhard Widmann	Eberhard.Widmann@oeaw.ac.at
		Paolo Crivelli (ETH)	Paolo.Crivelli@cern.ch	Klaus Kirch	klaus.kirch@psi.ch
6	Infrastructures	Wolfram Korten (CEA, Saclay)	w.korten@cea.fr	Joaquin Gomez-Camacho	gomez@us.es
				Patricia Roussel-Chomaz	patricia.chomaz@ganil.fr
7	Applications and Societal Benefit	Thomas Cocolios (KU Leuven)	thomas.cocolios@kuleuven.be	Lucia Popescu	lucia.popescu@sckcen.be
		Charlot Vandevoorde (GSI)	C.Vandevoorde@gsi.de	Vladimir Wagner	wagner@ujf.cas.cz
8	Nuclear Physics Tools Detectors and experimental techniques Computing, Machine Learning and Artificial Intelligence	Silvia Dalla Torre (INFN)	Silvia.DallaTorre@cern.ch	Eugenio Nappi	Eugenio.Nappi@ba.infn.it
		Valerio Bertone (CEA Saclay)	valerio.bertone@cea.fr	Hervé Moutarde	herve.moutarde@cea.fr
		Jana Guenther (U. Wuppertal)	jguenther@uni-wuppertal.de		
9	Open Science and Data	Antoine Lemasson (GANIL)	antoine.lemasson@ganil.fr	Marek Lewitowicz	marek.lewitowicz@ganil.fr
10	Nuclear Science - People and Society Training, Careers & Diversity Education and Outreach	María García Borge (Madrid)	mj.borge@csic.es	Rolf-Dietmar Herzberg	rdh@liverpool.ac.uk
		Christian Diget (York)	christian.diget@york.ac.uk	Yvonne Leifels	Y.Leifels@gsi.de

TWG 9 Open Science and Data Coordinator(s): Antoine Lemasson (GANIL)			
First Name	Last Name	Institute	Country
Hector	Alvarez-Pol	USC	Spain
Stefano	Bianco	INFN Frascati	Italy
Vivian	Dimitriou	IAEA	Austria
Xavier	Espinal	CERN	Switzerland
Michel	Jouvin	CNRS/IJCLab	France
Adrien	Matta	CNRS / LPC Caen	France
Caterina	Michelagnoli	ILL	France
Andrew	Mistry	GSI/FAIR	Germany
Panu	Rahkila	JYFL	Finland
Manuela	Rodriguez	Sevilla	Spain
Olivier	Stezowsky	CNRS/ IP2I	France
Enrico	Vigezzi	INFN Mi	Italy

Open Kick-Off meeting May 17, 2023

NuPECC LRP 2024 TWG 9

TWG9 - Open Kick-off meeting

Wednesday 17 May 2023, 09:30 → 13:30 Europe/Berlin

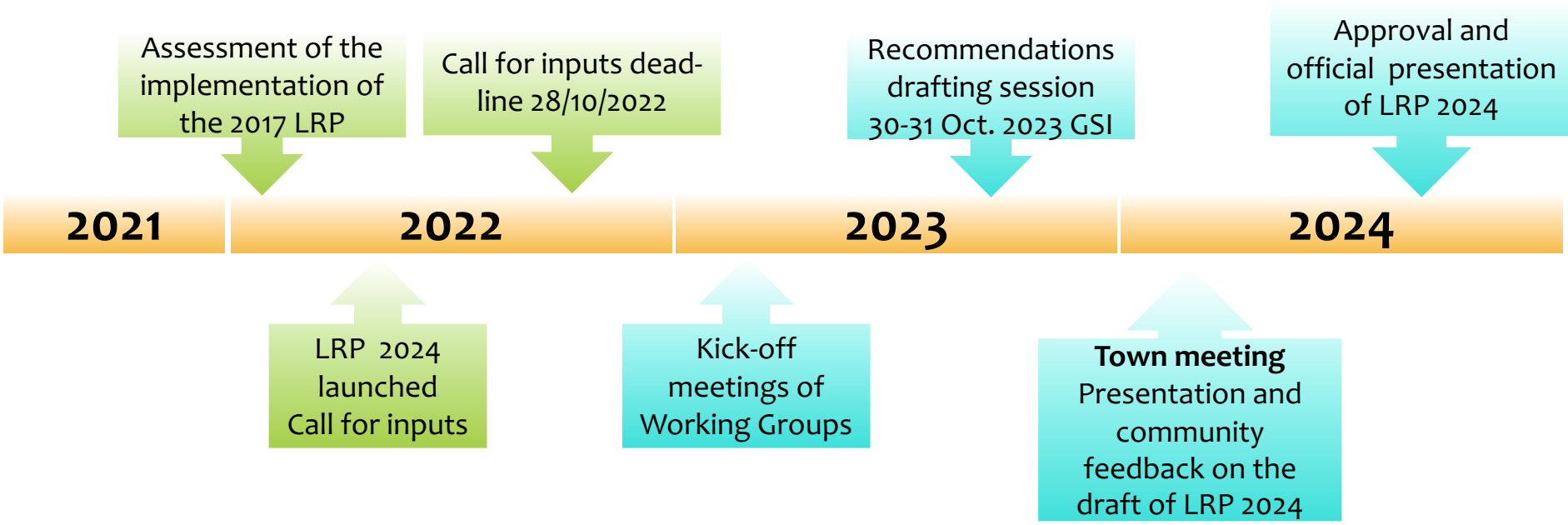
https://cnrs.zoom.us/j/96842220384?pwd=aTJHcmsvQ3VDcWt6VmJOMGM1c0dkZz09 (OnLine)

Antoine Lemasson (GANIL)

Registration — Participants — Register

09:30 → 09:50	**Challenges of Open Science and Data for Nuclear Physics**	20m
09:50 → 10:10	**TWG9 - Organisation and road map**	20m
10:10 → 10:30	**Open Science Policies** Open Publications Establishing policies Long Term Coordination at National and European Scale	20m
10:30 → 10:50	**FAIR Data**	20m
10:50 → 11:10	**Softwares**	20m
11:10 → 11:30	**Infrastructures**	20m
11:30 → 11:50	**Nuclear Data and Evaluation**	20m
11:50 → 12:10	**Synergies with TWG 7-8-10**	20m
12:10 → 12:40	**Open to contributions**	30m

NuPECC LRP2024 Timeline



Conclusion and Outlook

- Nuclear data for fundamental research and applications is one of the major topics in the past and in the current NuPECC LRP2024
  - *Draft of Recommendations of the NuPECC LRP2024 is expected in the end of 2023*
- NuPECC is ready to play a role of facilitator and trigger new concrete initiatives related to Nuclear Data
  - Presentation on Nuclear Data by Paraskevi Dimitriou at the NuPECC meeting in Vienna in Dec. 2022
  - IAEA Consultant's meeting in April 2023
- Implementation of the recommendations related to Nuclear Data will require much more important than today efforts in terms of resources and organisation to be provided by national, European and international funding organisations