

The NuPECC Long Range Plan 2024

www.nupecc.org

E. Widmann

Deputy chair, NuPECC

Stefan Meyer Institute, Vienna

Contributions by M. Lewitowicz, GANIL (NuPECC chair)

IOP Meeting, Liverpool, 11 Apr 2024

**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**
- **10 observers (ESF, NPD/EPS, ECFA, NSAC, ANPhA, ALAFNA, CINP, IAEA, APPEC, EPS-HEPP)**

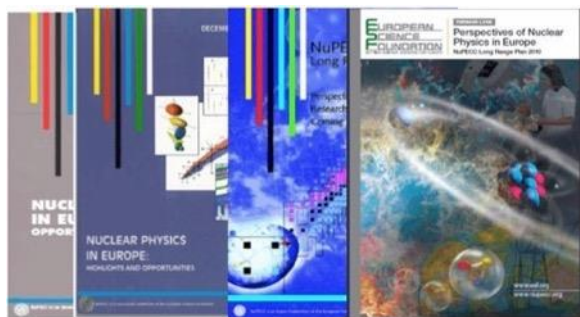
3 regular Committee meetings/y



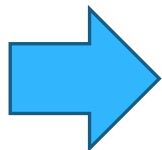
35 Years of NuPECC activities

<https://nupecc.org>

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

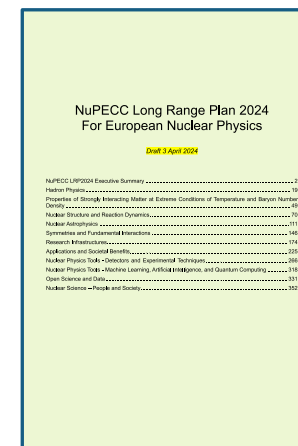
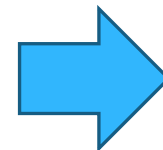


Assessment of Implementation of the NuPECC Long Range Plan 2017

February 2022

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1st complete draft April 2024

NuPECC LRP 2017

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

February 2022

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

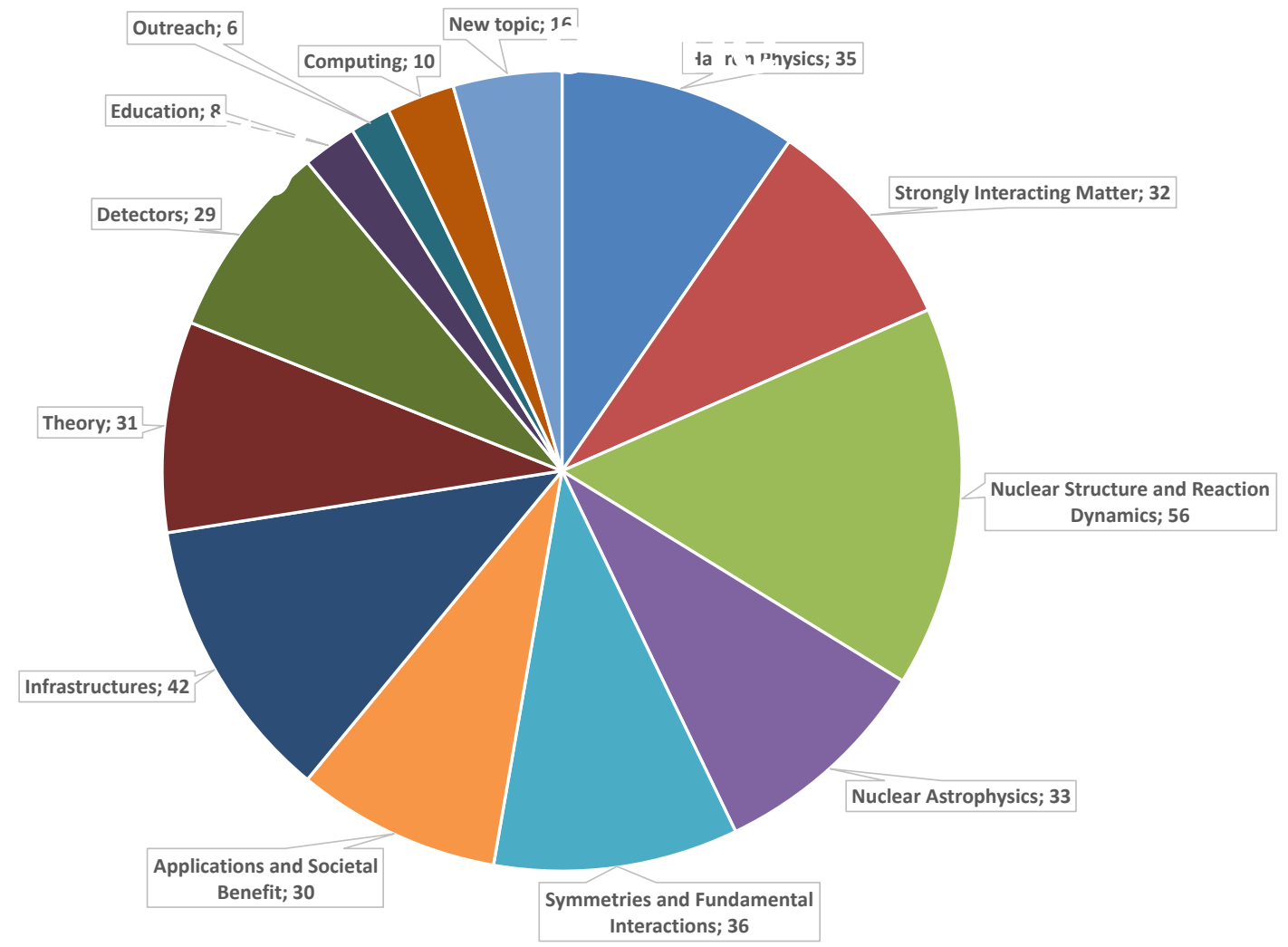
NuPECC LRP 2024

Launched in May 2022 in Madrid

LRP Contributions:

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

Inputs per topic



Steering Committee of NuPECC LRP 2024

29 members

**NuPECC Members
Associated Members
and Observers**

**UK
Members** →

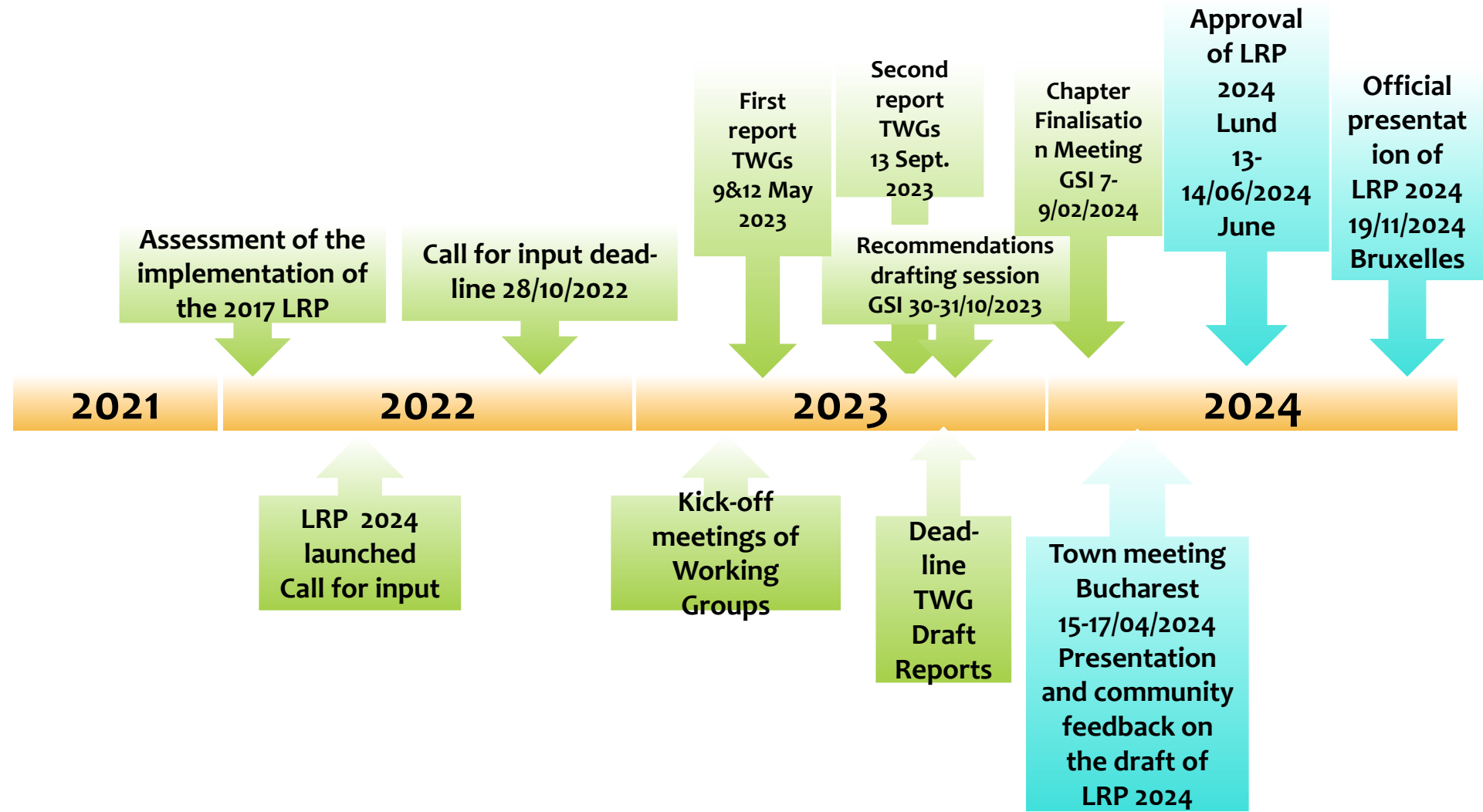
Name	Country/Institution
Gert Aarts	UK/ECT*
Daniel Bemmerer	Germany
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Sandrine Courtin	France
Paolo Giubellino/Yvonne Leifels	Germany
Joaquin Gomez-Camacho	Spain
Paul Greenlees	Finland
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Rolf-Dietmar Herzberg	UK
Dave Ireland	UK
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Ihor Kadenko	Ukraine
Klaus Kirch	Switzerland
Sissy Koerner	NuPECC
Marek Lewitowicz	NuPECC
Adam Maj	Poland
Ulf Meißner	Germany
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Hiroyoshi Sakurai	Japan
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Martin Venhart	Slovakia
Jelena Vesic	Slovenia
Vladimir Wagner	Czech Republic
Eberhard Widmann	Austria
Gail Dodge	NSAC/US
Byungsik Hong	ANPhA/Korea

Theory/Exp.

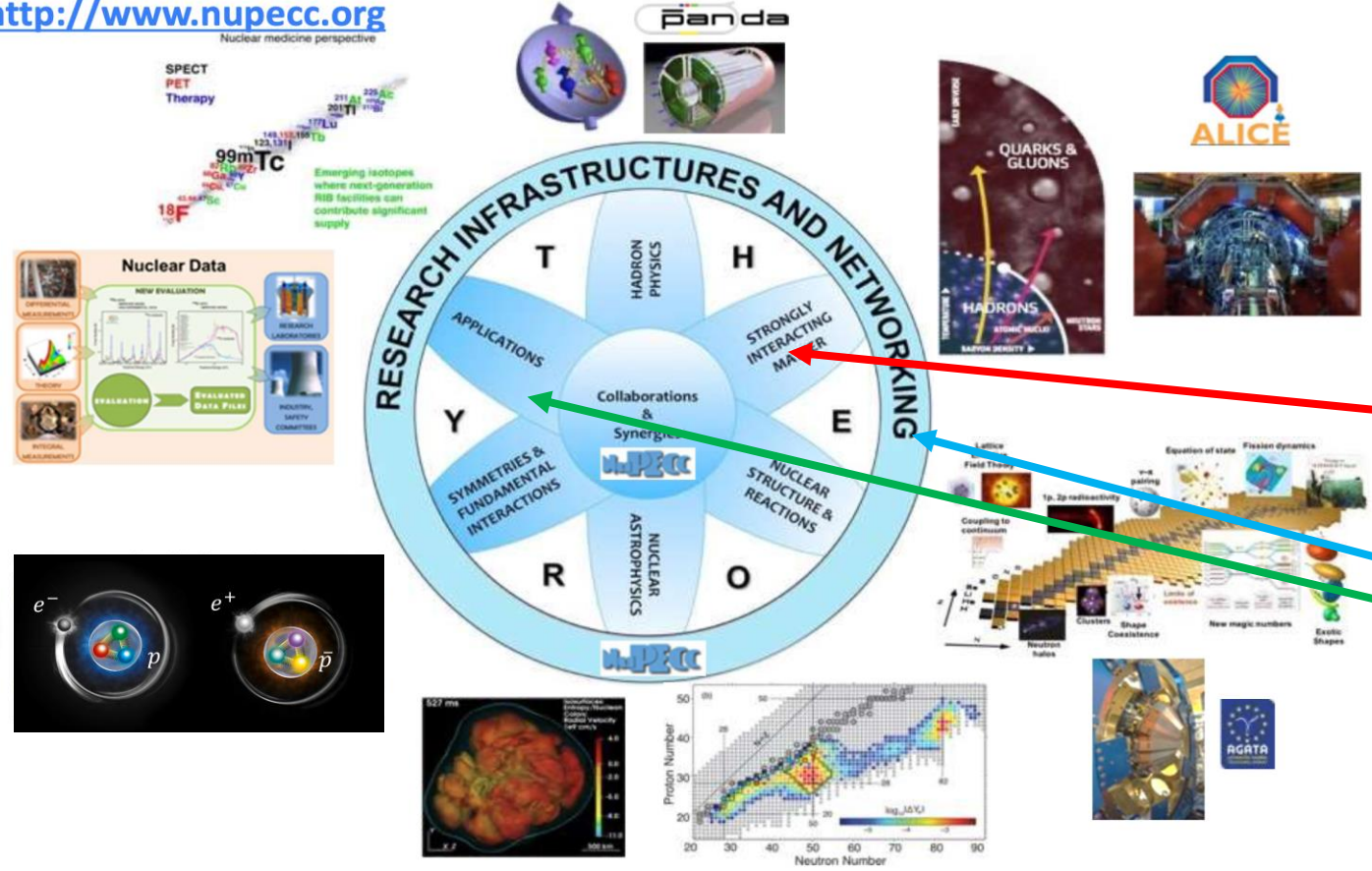
TWG Number	TWG	Coordinators	Coord. e-mails	Liaisons	Liaisons e-mails
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10	Nuclear Science - People and Society Training, Careers & Diversity Education and Outreach	María García Borge (Madrid)	mi.borge@csic.es	Rolf-Dietmar Herzberg	rdh@liverpool.ac.uk
		Christian Diget (York)	christian.diget@york.ac.uk	Yvonne Leifels	Y.Leifels@gsi.de

268 members & liaisons of TWGs

Important role of liaisons during the work of TWG and in preparation of their reports



<http://www.nupecc.org>



NuPECC Long Range Plan 2024 For European Nuclear Physics

Draft 3 April 2024

Physics topics

NuPECC LRP2024 Executive Summary	2
Hadron Physics.....	19
Properties of Strongly Interacting Matter at Extreme Conditions of Temperature and Baryon Density	49
Nuclear Structure and Reaction Dynamics	70
Nuclear Astrophysics	111
Symmetries and Fundamental Interactions	146
Research Infrastructures.....	174
Applications and Societal Benefits.....	225
Nuclear Physics Tools - Detectors and Experimental Techniques	266
Nuclear Physics Tools - Machine Learning, Artificial Intelligence, and Quantum Computing	318
Open Science and Data.....	331
Nuclear Science – People and Society.....	352

[Link to full document](#)

What does nuclear physics stand for (1/2)?

- How does the majority of the visible mass of the universe emerge from the almost massless quarks?
- What are the properties of the quark-gluon plasma, which is the qualitatively novel state of nuclear matter at extreme conditions of temperature and density?
- What can Nuclear Physics teach us about the limits of the Standard Model of Particle Physics?
- How do nuclei and nuclear matter emerge from the underlying fundamental interactions?
- What are the limits of the existence of nuclei, and what phenomena arise from open quantum systems?

[Link to full document](#)

What does nuclear physics stand for (2/2)?

- What shapes can nuclei take, how do nuclear shells evolve, and what role do nuclear correlations play?
- What are the mechanisms behind nuclear reactions and nuclear fission?
- What is the role of the strong interaction in stellar objects?
- How can we better understand the synthesis of heavy elements and the chemical evolution of the visible universe?
- How might Nuclear Physics strengthen its role in society's sustainable development?

[Link to full document](#)

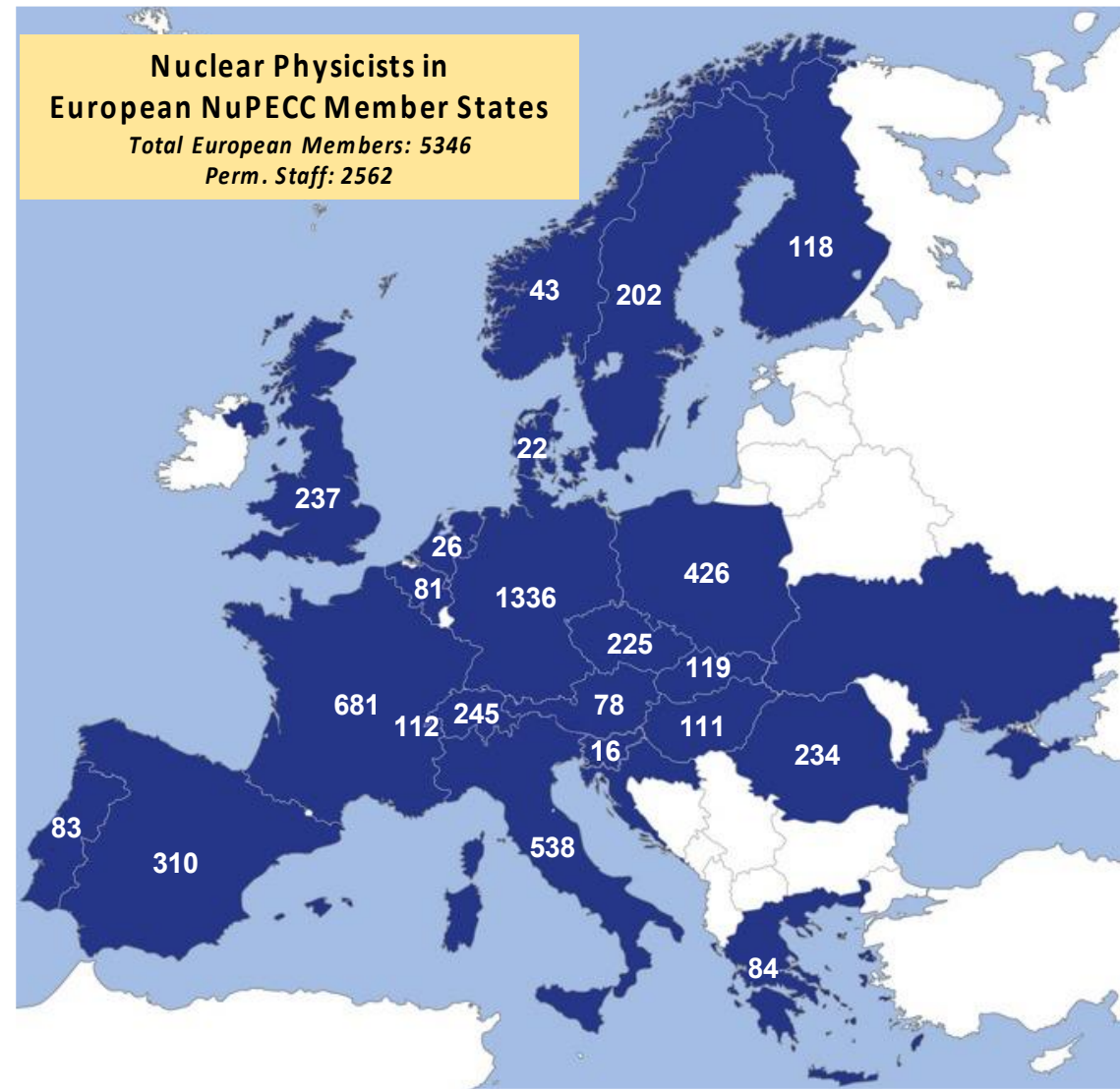
Nuclear Physics and Society

United Nations Sustainable Development Goals (SDGs) to which nuclear contribute the most.

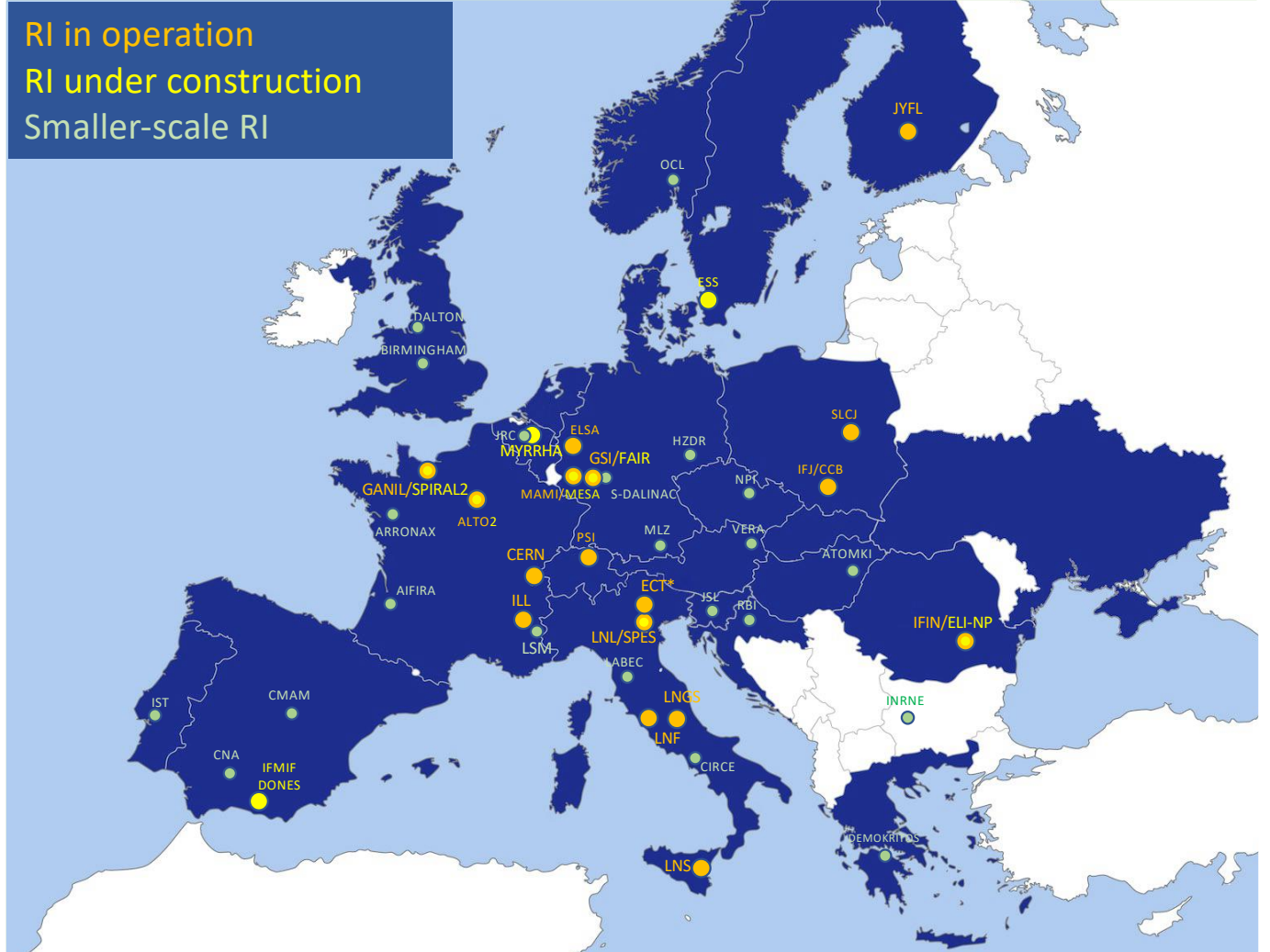


Nuclear science and technology have benefited human progress, culture, and our understanding of our delicate environment in general, as well as health, economic growth, and security in nations all over the world.

- Data exist on
 - Experiment and theory
 - Gender (partially)
 - Career stage
 - Etc.



- Taking data > 20
- Under construction and update >10



European landscape of nuclear physics infrastructures.

JENAS-2019

Joint ECFA-NuPECC-APPEC Seminar
jointly organized by LAL, IPNO, IRFU and LPNHE

October 14-16, 2019
Auditorium Pierre Lehmann, bât. 200, Faculté d'Orsay

ECFA-NuPECC-APPEC Organizing Board

ECFA
Jorgen D'Hondt, IIHE/Vrije Universiteit Brussel
Manfred Krauss, CERN
Carlos Lacasta, IFIC/CSIC-Universitat de València

NuPECC
Angela Bracco, INFN Milano/Università di Milano
Marek Lewitowicz, GANIL
Eberhard Widmann, Stefan-Meyer-Institut für subatomare Physik der OAW/Universität Wien

APPEC
Stan Bentvelsen, Nikhef
Antonio Masiero, INFN
Teresa Montaruli, University of Geneva

Local Organizing Committee
G. BILLORE, LIPHE
E. BILLORE, LIPHE
C. BOURG, LAL
W. BRUNER, LAL
F. CASALIERI, LAL
V. CIRIO, IPNO
M. GARDAL, IPNO
A. KROCH, CERN
D. MANCHICOR, LIPHE
N. PALANQUE-ELABOUILLE, IRFU
F. SAGATE, IRFU
G. WUNDERLICH, LAL

JENAS-2022

2nd Joint ECFA-NuPECC-APPEC Seminar
Exploring synergies between Particle, Astroparticle and Nuclear Physics

TOPICS:
- Physics highlights
- Future projects and overall strategies
- Detector technologies
- Computing and software
- Diversity and recognition
- Education and Outreach
- Transfer of knowledge

May 3-6, 2022
Madrid, Spain

JENAS 2022 Committee

ECFA: Karl Jakob (Univ. Freiburg)
Patriola Conde Muñio (LIP, Lisboa)
Jorgen D'Hondt (VUB, Brussels)

APPEC: Andreas Haungs (KIT, Karlsruhe)
Katharina Henke-Kunze (DESY, Hamburg)
Teresa Montaruli (Univ. Geneva)

NuPECC: Marek Lewitowicz (GANIL, Caen)
Eberhard Widmann (SMI, Wien)
Gabriele-Elisabeth Körner (NuPECC)

Local Committee

María José García Borge (IEM, Madrid)
Antonio Bueno (UGR, Granada)
Carlos Peña Garay (LSC, Cantabria)
Joaquín Gómez Camacho (CNA, Seville)
Celso Martínez Rivero (FCA, Santander)
Luis Mario Fraile (UCM, Madrid)

Proposals should include information about

- the **venue**,
- the proposed three-day **period(s)** in March-May 2025,
- the plenary meeting room to host **300** participants,
- a few **additional** rooms with 20 to 40 seats,
- the initial composition of the local organizing team,
- options for accommodation and potential transport, and the
- initial estimate of the participation **fee**. To attract a large number of participants, especially Early Career Researchers, the fee should be kept as low as possible.
- Proposals should be sent to all three chairs of APPEC, ECFA & NuPECC by 30 April 2024 at the latest. The host site will be selected shortly afterwards by the JENAS organising board.