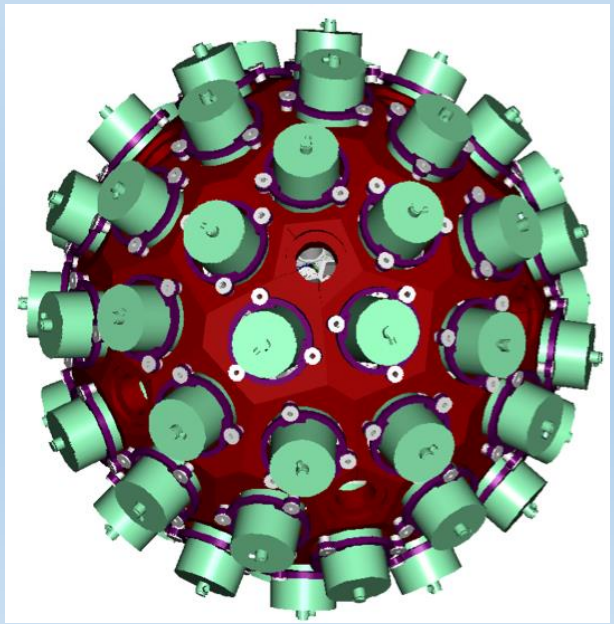
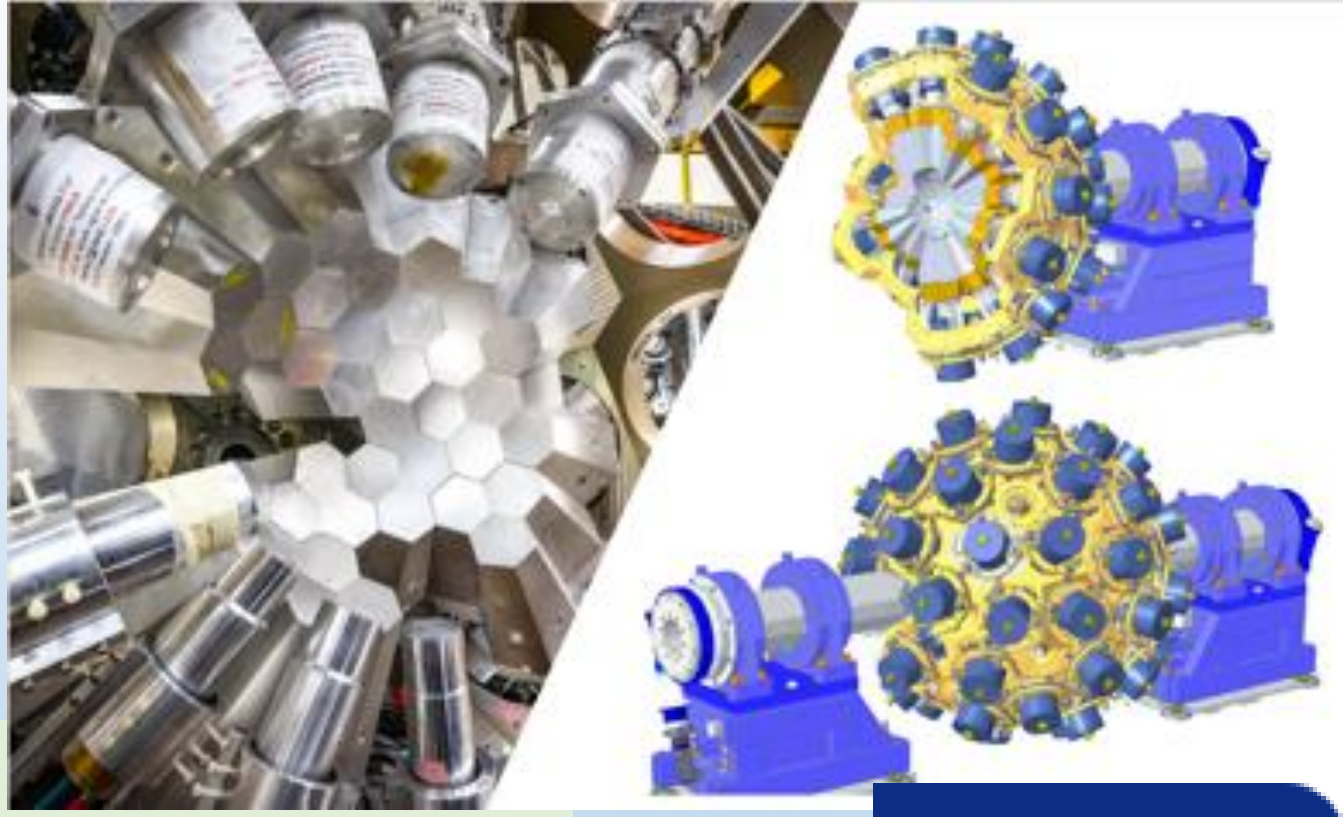
News from the AGATA Steering Committee meeting 1st/2nd April 2025



Magda Górska (chair) & Magda Zielińska (vice chair)
GSI Darmstadt CEA Saclay

Input from Silvia Leoni (ACC Chair)
INFN Milano

Outline



Status of AGATA (as of the Review 2025)

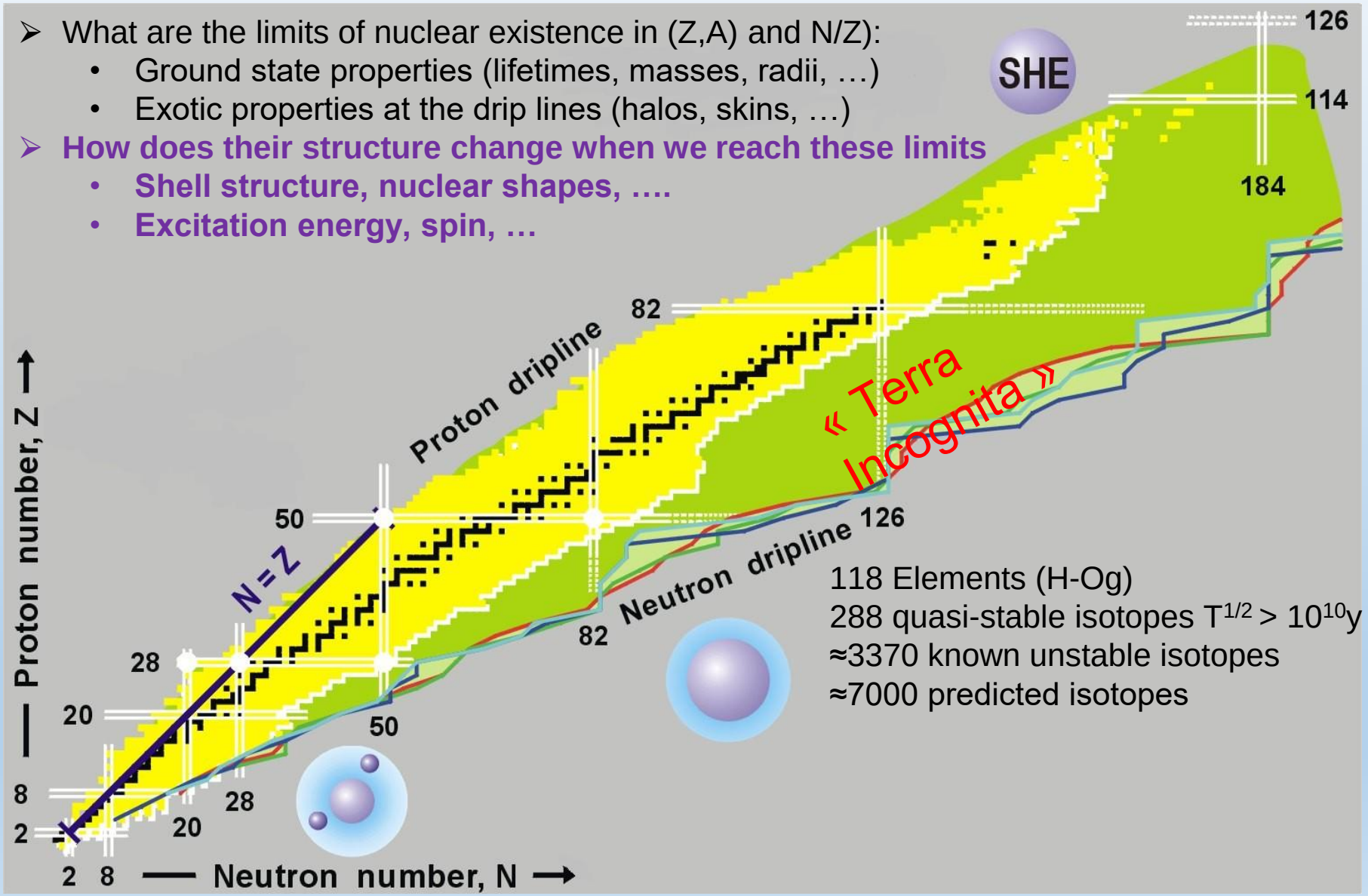
Science performance/publications

Project Manager report (Emmanuel Clément)

Budget report (Benedicte Million)

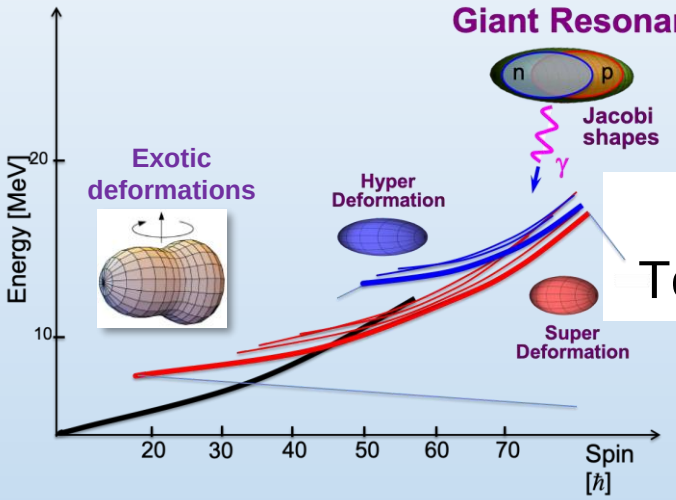
Challenges in Nuclear Structure Physics

- What are the limits of nuclear existence in (Z,A) and N/Z):
  - Ground state properties (lifetimes, masses, radii, …)
  - Exotic properties at the drip lines (halos, skins, …)
- **How does their structure change when we reach these limits**
  - **Shell structure, nuclear shapes, ….**
  - **Excitation energy, spin, …**

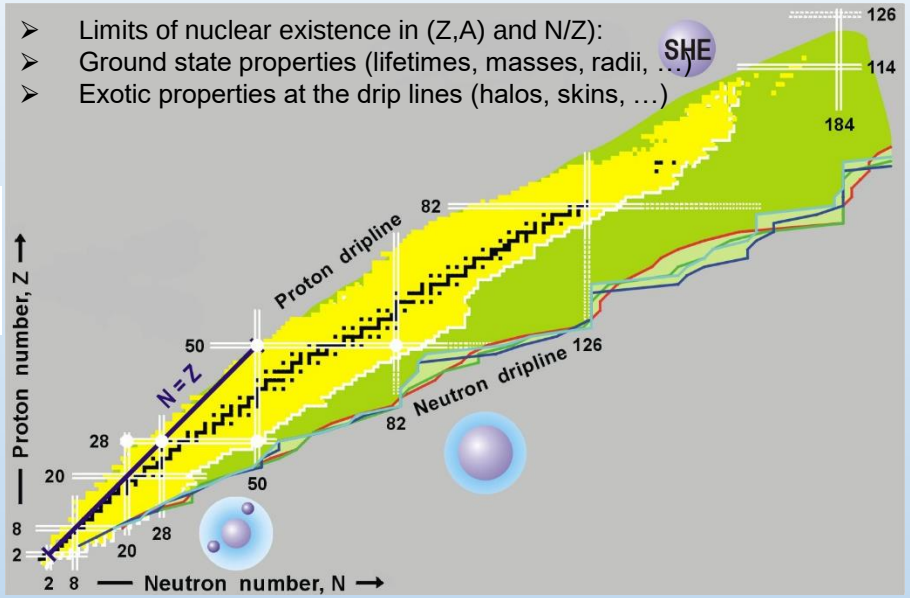


118 Elements (H-Og)
288 quasi-stable isotopes $T^{1/2} > 10^{10}$y
≈3370 known unstable isotopes
≈7000 predicted isotopes

The AGATA Science Case

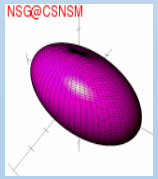


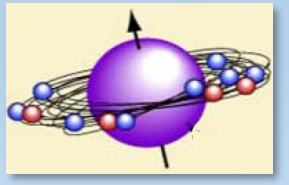
Energy/ Temperature



N/Z - isospin

Spin

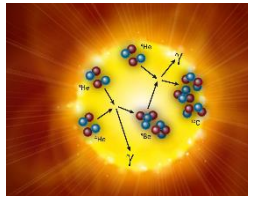




Properties of excited states
→ γ-ray spectroscopy
→ AGATA

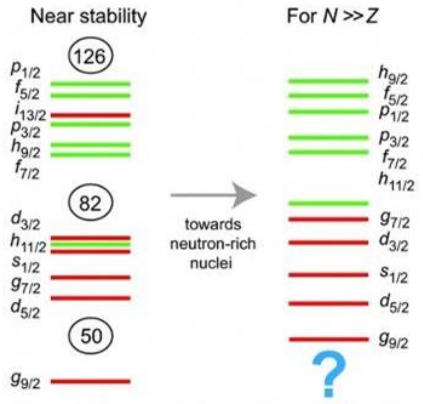
The AGATA Science Case

Astrophysical Reactions

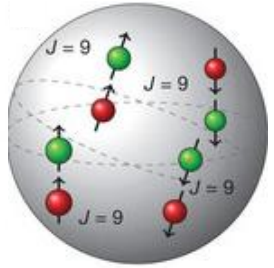


Resonances & Continuum

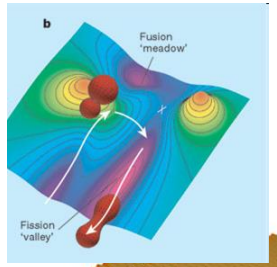
Nuclear Shell Structure



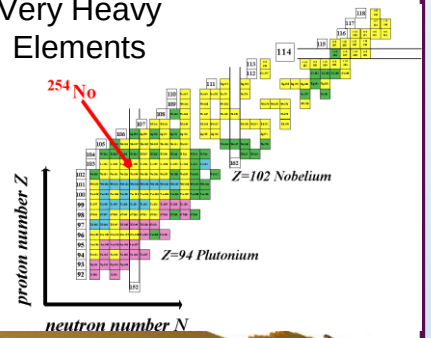
Nuclear Pairing

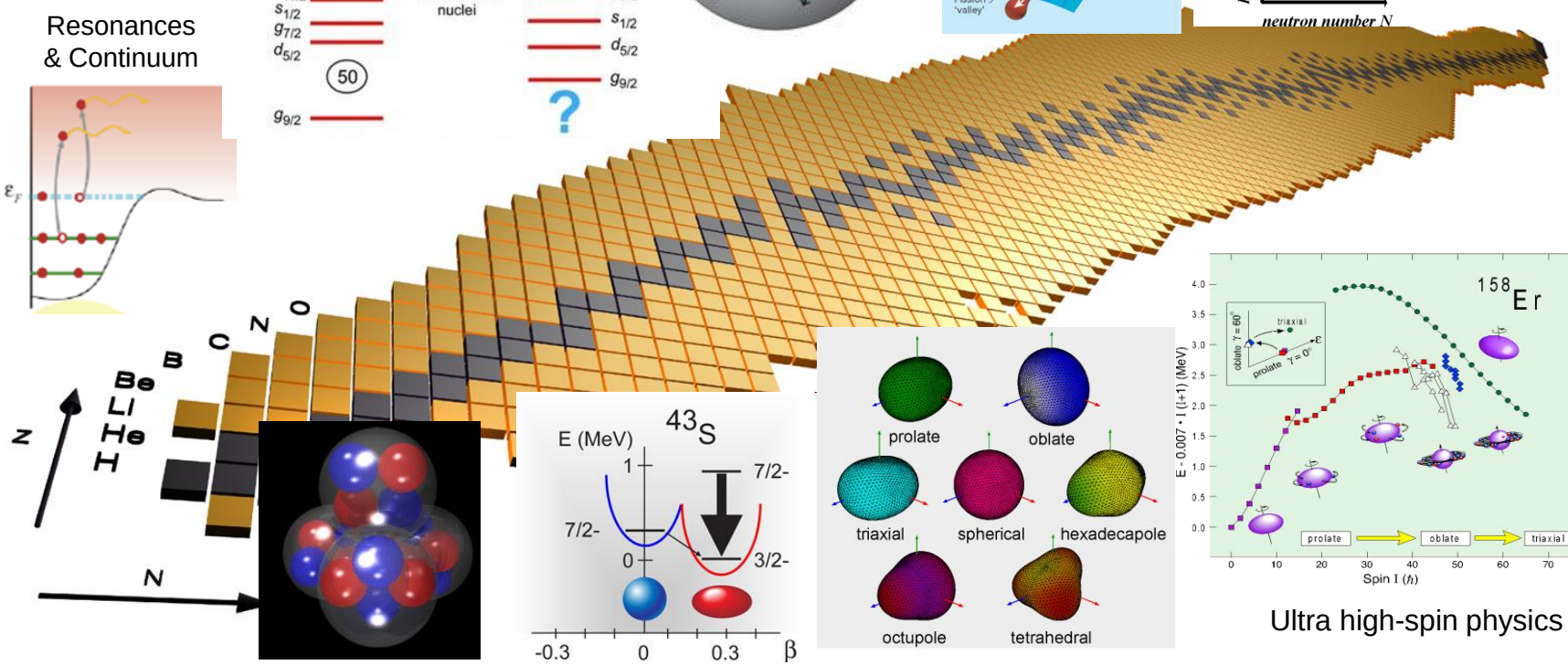


Fusion & Fission



Very Heavy Elements



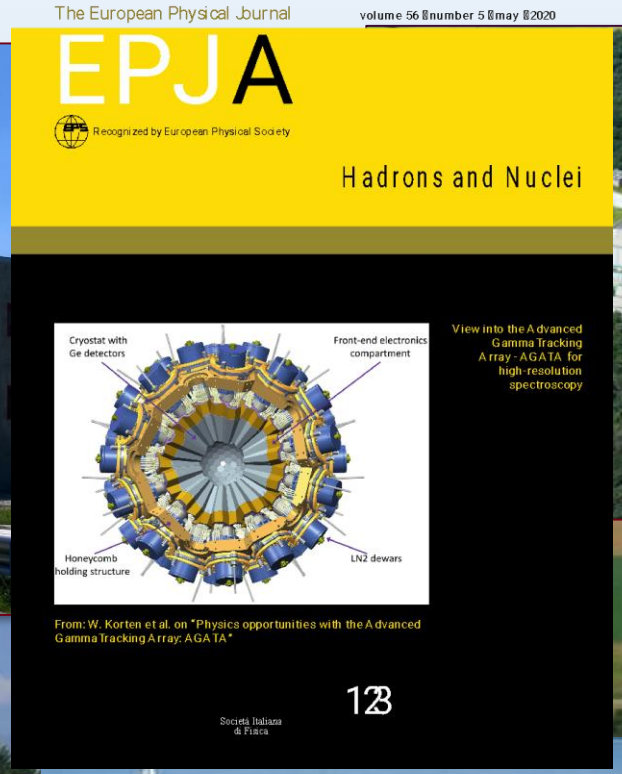


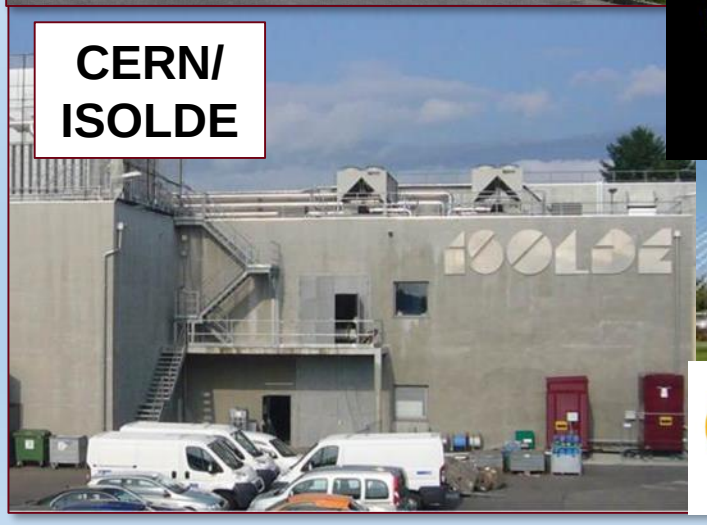
Cluster Structure

Shape Isomers and Exotic Shapes

Ultra high-spin physics

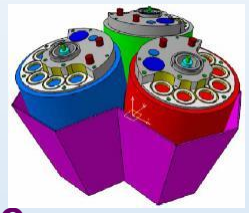
AGATA – THE NEXT DECADE

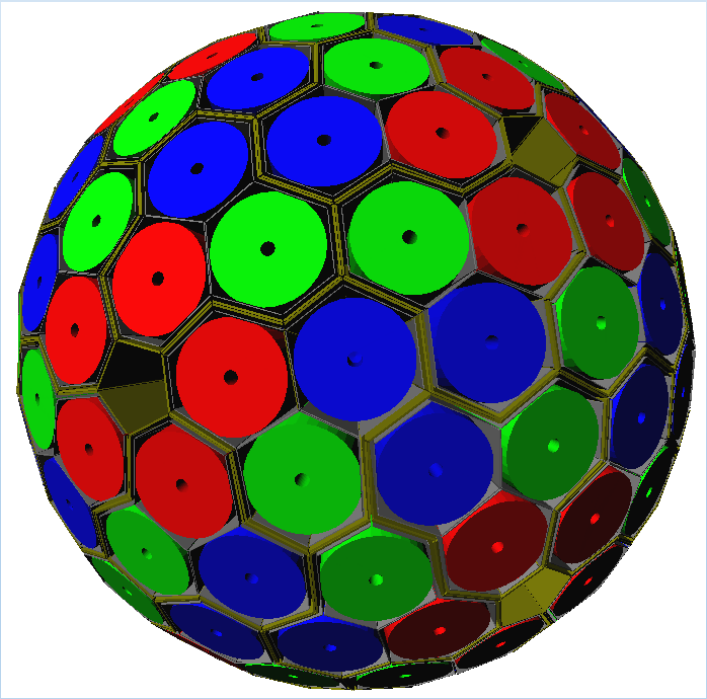




AGATA Properties

- 4π array from 180 large-volume HPGe crystals
- Each crystal is 36-fold segmented and encapsulated
- Pulse Shape Analysis algorithms → **position sensitive mode**
- **γ-ray tracking algorithms → maximum efficiency and P/T**



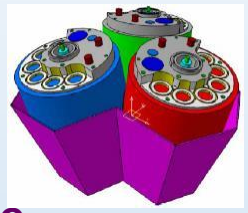


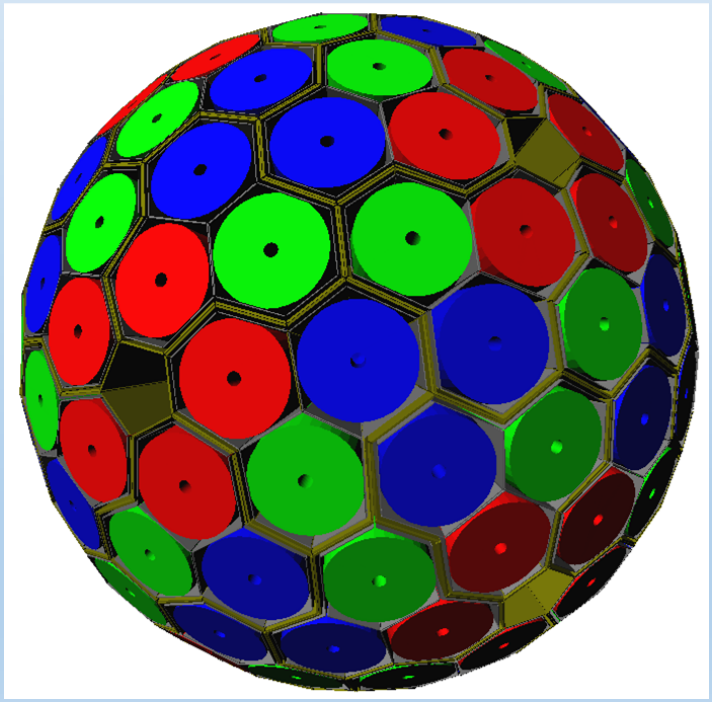
180 hexagonal crystals:	3 shapes
Triple clusters (cold FET):	60 all equal
Inner radius (Ge):	23.5 cm
Amount of germanium:	362 kg
Solid angle coverage:	~82 %
36-fold segmentation:	6480 segments
Crystal singles rate	~50 kHz
Efficiency (Mγ=1 [30]):	35% [23%]
Peak/Total (Mγ=1 [30]):	55% [46%]

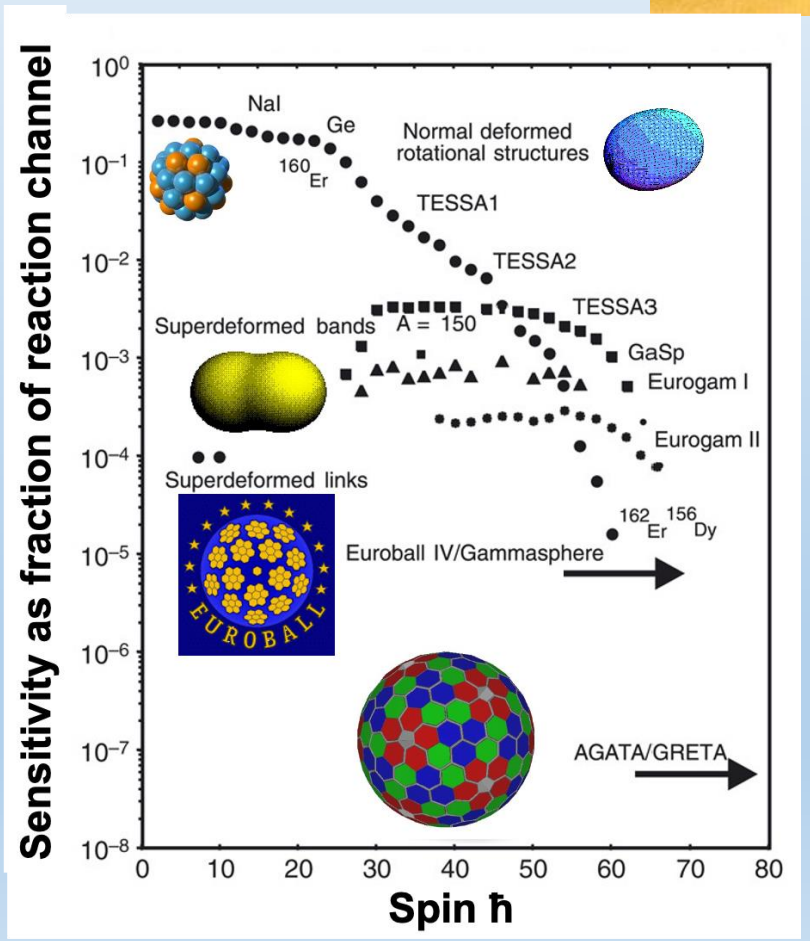
AGATA Collaboration NIM A 668 (2012) 26

AGATA Properties

- 4π array from 180 large-volume HPGe crystals
- Each crystal is 36-fold segmented and encapsulated
- Pulse Shape Analysis algorithms → **position sensitive mode**
- **Increase sensitivity by a factor ~100**

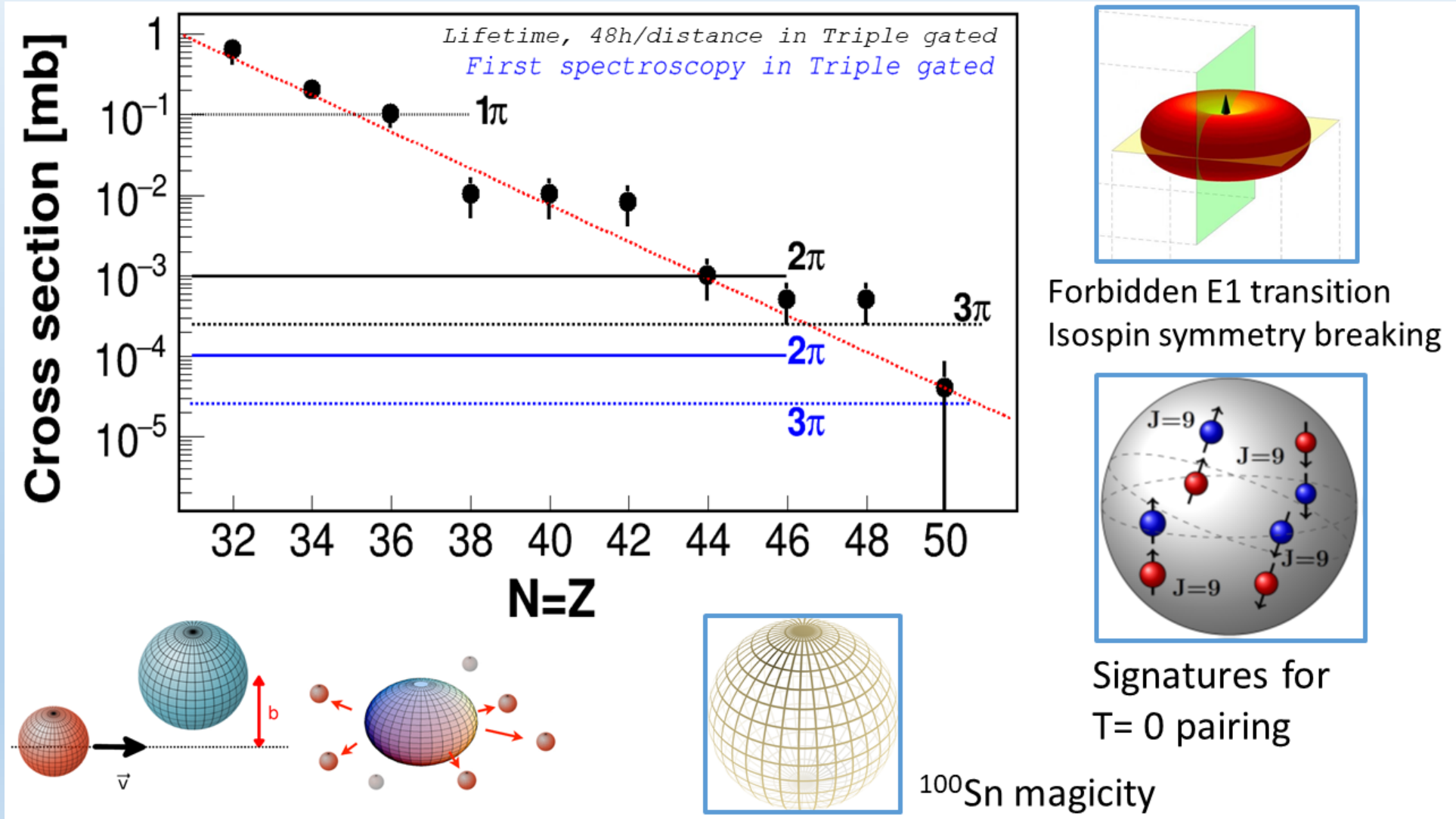






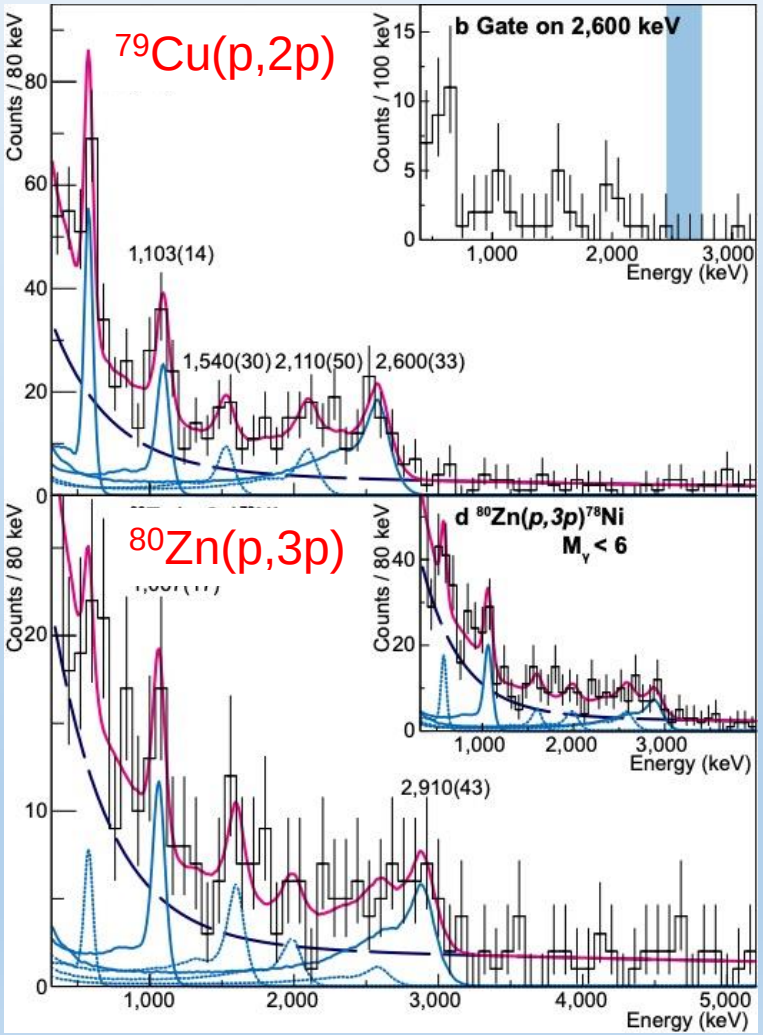
Spectroscopy of N=Z nuclei towards ^{100}Sn

AGATA coupled to zero-degree spectrometer (MARA@JYFL) or n-wall/Si-ball



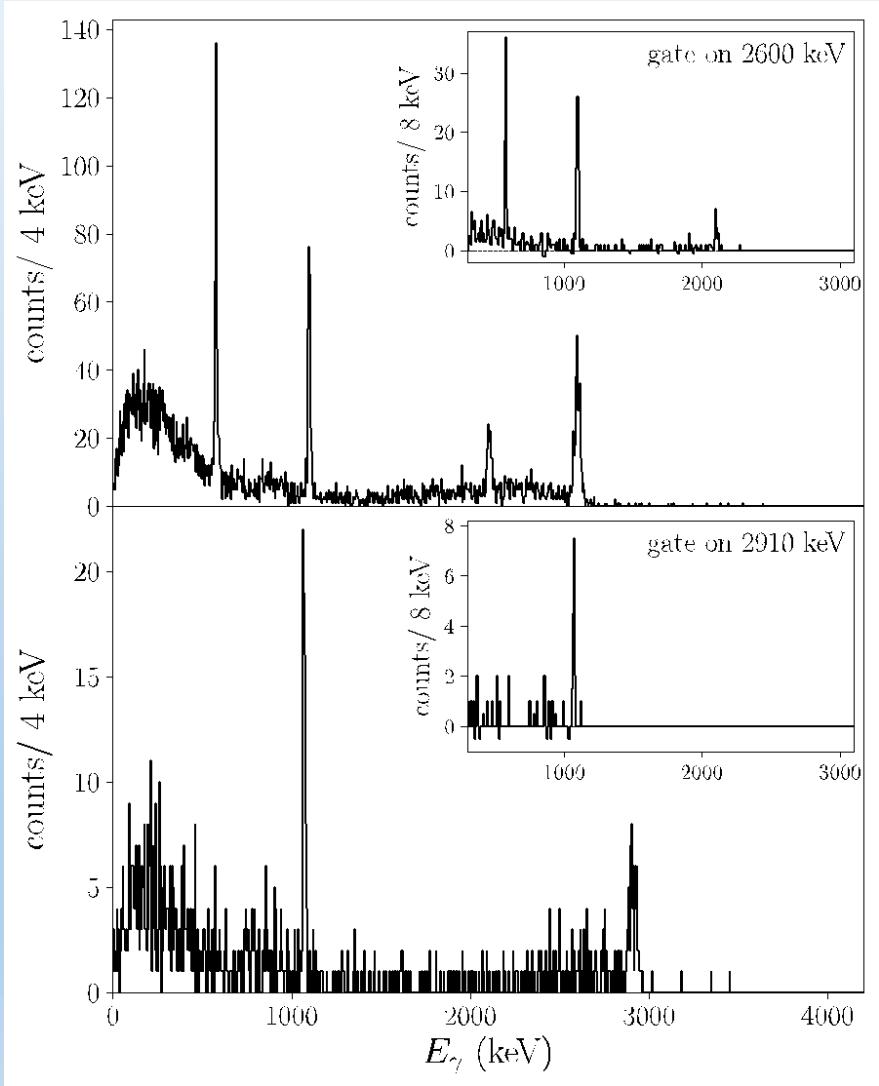
Spectroscopy of doubly-magic ^{78}Ni

DALI2 at RIKEN RIBF



R. Taniuchi *et al.*- Nature 569 (2019)

4π AGATA at FAIR/Super-FRS



79Cu(p,2p)

80Zn(p,3p)

Simulation: K. Wimmer – CSIC Madrid and GSI Darmstadt

AGATA Collaboration Membership

Chairperson of AGATA Collaboration Council (AGATA Spokesperson): Silvia Leoni (2021-2025)

Bulgaria: Univ. Sofia, INRNE Sofia
Finland: Univ. Jyväskylä
France: GANIL Caen, IP2I Lyon, IJCLab Orsay, IPHC Strasbourg, DRF/IRFU Saclay
Germany: GSI Darmstadt, TU Darmstadt, Univ. zu Köln
Hungary: ATOMKI Debrecen
Italy: INFN Firenze, Legnaro, Milano, Padova
Poland: IFJ PAN Kraków, University of Warsaw (HIL)
Spain: CSIC-Universidad de Valencia, Instituto de Fisica Corpuscular
Universidad de Valencia, Escuela Tecnica Superior de Ingenieria
CSIC, Instituto de Estructura de la Materia, Madrid
Universidad de Salamanca, Laboratorio de Radiaciones Ionizantes
Sweden: Lund Univ., KTH Royal Institute of Technology Stockholm, Uppsala Univ, Stockholm Univ.
Turkey: Univs Ankara, Istanbul, Kocaelli, Bitlis Eren
UK: Univs Brighton, Birmingham, Liverpool, Manchester, West of Scotland,
Surrey, York, UKRI-STFC Daresbury

Romania: IFIN-HH Bucharest
Slovenia: Jožef Stefan Institute Ljubljana

13 Countries
40 Institutions

AGATA Collaboration Meetings (1-1.5 days)

- 15-16 September 2025, GSI, Germany – Before AGATA week 2025 (17-19 September)
- 12-13 September 2024, Milano, Italy – After AGATA week 2024 (9-12 September)
- 19-20 October 2023, LNL, Legnaro, Italy – After AGATA week 2023 (16-19 October)
- 10 June 2022, LNL, Legnaro, Italy – After AGATA week 2022 and AGATA 10(+2) Years Celebration (9.6.22)
- 10-12 November 2021, LNL, Legnaro, Italy: after 1. LNL Pre-PAC
- The collaboration meeting 2020, planned to be held at GANIL during the AGATA week in September 2020, was cancelled due to the COVID-19 pandemic.
- 24-28 June 2019, Orsay, Paris, France
- 25-29 June 2018, IFIC, Valencia, Spain
- 26-29 June 2017, GSI, Darmstadt, Germany
- 30 June - 1 July 2016, San Servolo, Venice, Italy
- 6-7 July 2015, IPN-Orsay, Paris, France
- 26 June 2014, GSI, Germany
- 27 June 2013, Liverpool, UK
- 27 June 2012, Orsay, France
- 30 June 2011, Padova, Italy
- 25 November 2010, IPN Lyon, France

Meeting organized by ACC Chair

- Reports on the status of unpublished AGATA data

- Open Discussion on Opportunities for Future Campaigns

- Closed Session (ACC Members only)

ACC Meeting usually held as satellite of AGATA week or workshops on nuclear structure physics

AGATA inauguration al LNL (2009), EGAN (2011-2014), NUSPIN (2016-2019)

ACC meeting 12-13th September 2024, Milan

Reports from 17 experiments from the LNL campaign (2022-2024)

29 experiments + extended commissioning performed up to September 2024 (83% beam time)

Open discussion - Public (16:40, 20 minutes)

After the LNL and GANIL presentation, on open discussion in hybrid format followed. Several remarks were made about the need of optimizing the scientific program of AGATA in the two laboratories, considering that 6 months have to be used for both changing configuration at LNL and moving AGATA from LNL to GANIL, before starting a new campaign.
It was remarked that important parameters to be taken into account are:

i) the beam time granted per year by each laboratory (which is in favor of LNL),
ii) the type of beams (with radioactive SPIRAL1 beams already available at GANIL),
iii) the effort made by different collaborations in preparatory phases for campaigns in given laboratories (e.g., the PARIS collaboration has already started the preparation of the zero-degree campaign at LNL) and
iv) the time spent by the AGATA array in each hosting laboratory.

It was also reminded that the AGATA collaboration has strong interest in both SPES and FAIR beams, which both need to be demonstrated in their performances.

The discussion continued in the **CLOSED SESSION**

OUTCOME of AGATA Collaboration Discussion 12.9.24

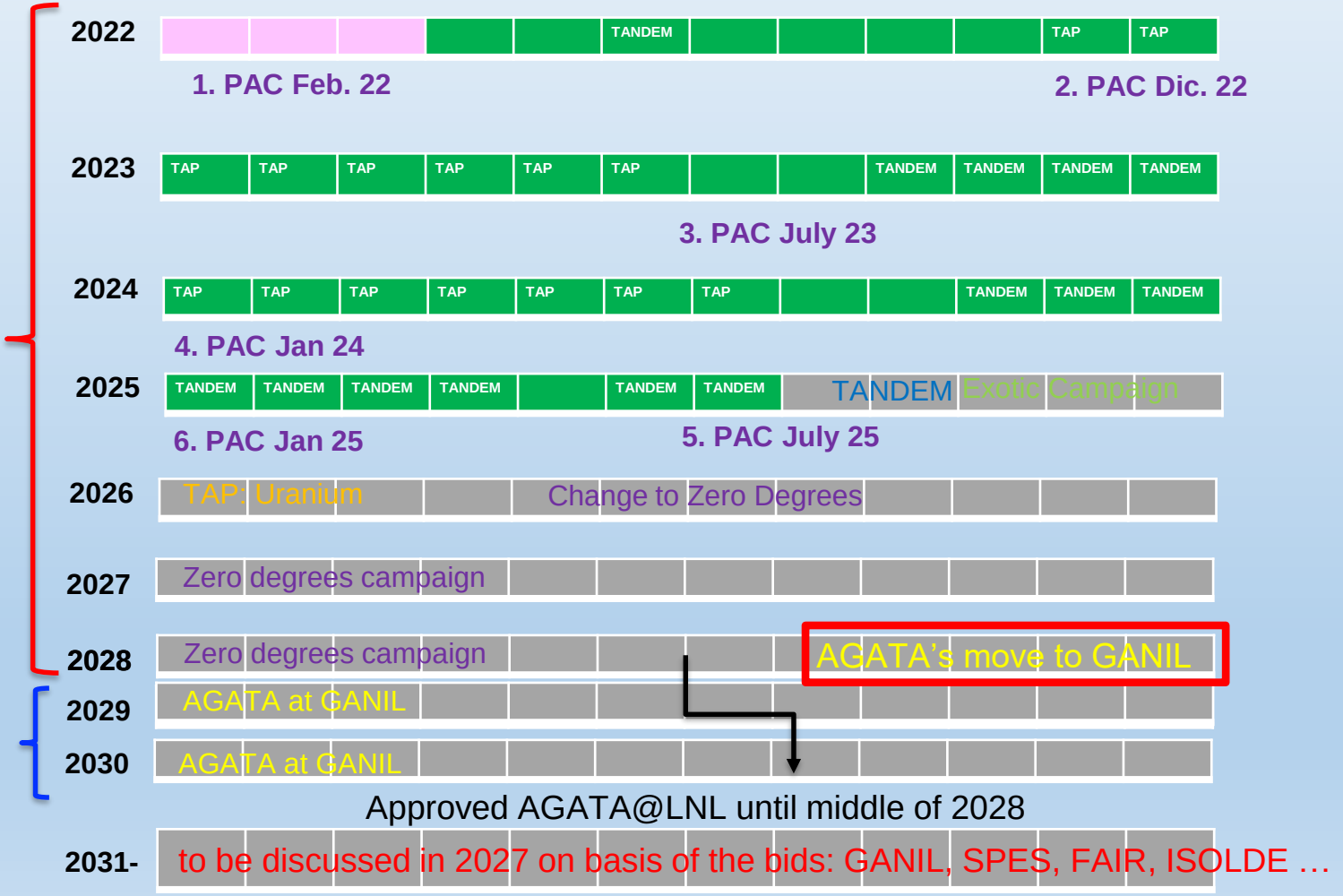
To summarize, during the ACC discussion it clearly emerged a certain pressure to make the zero-degree campaign at LNL, which would require an extension of about 1.5 year of AGATA at LNL. After this period, a GANIL campaign mainly focused on SPIRAL1 beams can be considered, leaving open the scheduling after 2030, which depends on the availability of validated beams at SPES and FAIR, and/or other options from host laboratories.

Approved by AGATA Steering Committee 1st October 2024

Timeline of approved AGATAcampaigns (up to end 2030)

AGATA
Approved at LNL

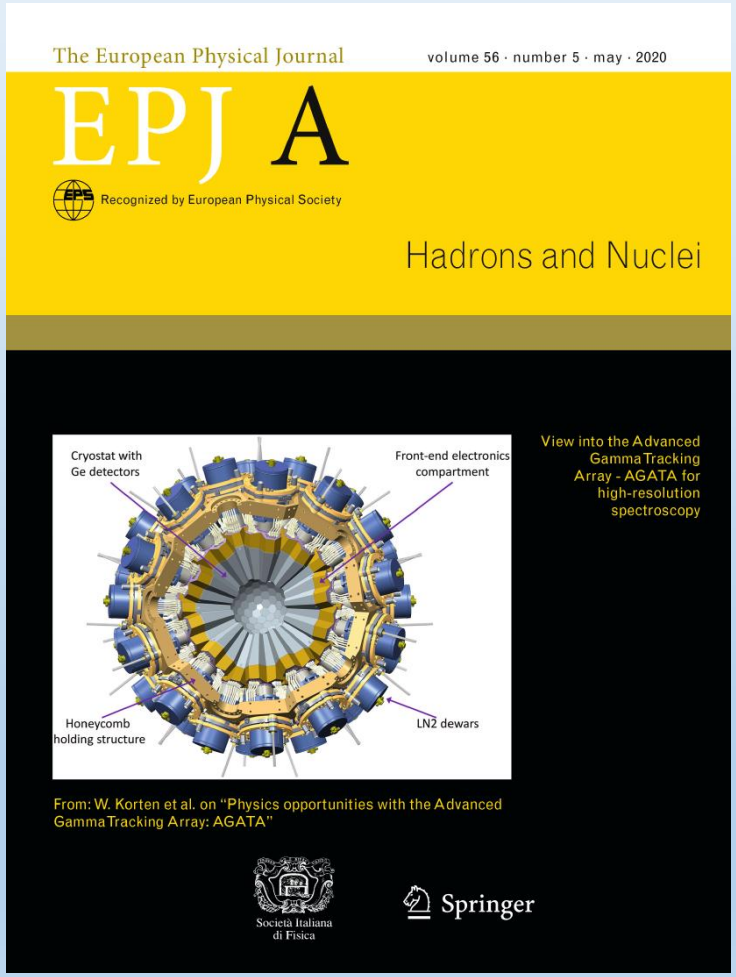
AGATA
Approved at GANIL



Achievements 2020-2024

AGATA Science Review Papers

AGATA Science WHITE Book
Physics Opportunity (EPJA, 2020)



W. Korten et al., EPJA56, 137(2020)

Eur. Phys. J. A (2020) 56:137
https://doi.org/10.1140/epja/s10050-020-00132-w
THE EUROPEAN PHYSICAL JOURNAL A
Review

Physics opportunities with the Advanced Gamma Tracking Array: AGATA

W. Korten[9,a], A. Atac[30,35], D. Beaumel[23], P. Bednarczyk[14], M. A. Bentley[34], G. Benzoni[21], A. Boston[17], A. Bracco[20,21], J. Cederkäll[18], B. Cederwall[30], M. Ciemała[14], E. Clément[1], F. C. L. Crespi[20,21], D. Curien[31], G. de Angelis[15], F. Didierjean[31], D. T. Doherty[10], Zs. Dombradi[6], G. Duchêne[31], J. Dudek[31], B. Fernandez-Dominguez[27], B. Fornal[14], A. Gadea[33], L. P. Gaffney[17], J. Gerl[4], K. Gladnishki[28], A. Goasduff[25], M. Górska[4], P. T. Greenlees[12], H. Hess[13], D. G. Jenkins[34], P. R. John[5], A. Jungclaus[19], M. Kmiecik[14], A. Korichi[22], M. Labiche[3], S. Leoni[20,21], J. Ljungvall[22], A. Lopez-Martens[22], A. Maj[14], D. Mengoni[24,25], B. Million[21], A. Nannini[8], D. Napoli[15], P. J. Nolan[17], J. Nyberg[32], A. Obertelli[5], J. Pakarinen[11,12], N. Pietralla[5], Zs. Podolyák[10], B. Quintana[26], R. Raabe[16], G. Rainovski[28], F. Recchia[24,25], P. Reiter[13], D. Rudolph[18], J. Simpson[3], Ch. Theisen[9], D. Tonev[29], A. Tumino[2,7], J. J. Valiente-Dobón[15], O. Wieland[21], K. Wimmer[19], M. Zielińska[9], the AGATA Collaboration

Progress in Particle and Nuclear Physics 121 (2021) 103887
Contents lists available at ScienceDirect
Progress in Particle and Nuclear Physics
journal homepage: www.elsevier.com/locate/ppnp
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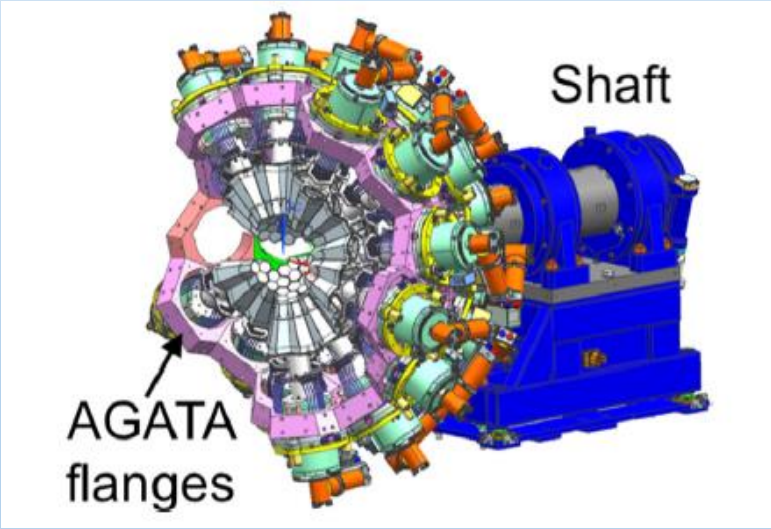
Review

Gamma spectroscopy with AGATA in its first phases: New insights in nuclear excitations along the nuclear chart

A. Bracco[a,b,*], G. Duchêne[c], Zs. Podolyák[d], P. Reiter[e]

[a] Dipartimento di Fisica dell'Università degli Studi di Milano, Italy
[b] INFN, Sezione di Milano, Italy
[c] Université de Strasbourg, CNRS, IPHC UMR 7178, F-67000 Strasbourg, France
[d] Department of Physics, University of Surrey, Guildford, GU2 7XH, United Kingdom
[e] Institute of Nuclear Physics, University of Cologne, 50937 Cologne, Germany

NIM A 1049 (2023) 168040



Nuclear Inst. and Methods in Physics Research, A 1049 (2023) 168040

Contents lists available at ScienceDirect

Nuclear Inst. and Methods in Physics Research, A

journal homepage: www.elsevier.com/locate/nima

Full Length Article

Conceptual design of the AGATA 2π array at LNL

J.J. Valiente-Dobón [a,*], R. Menegazzo [b], A. Goasduff [a], D. Agguiaro [b], P. Aguilera [b], F. Angelini [a,c], M. Balogh [a], D. Bazzacco [b], J. Benito [b,c], G. Benzoni [d], N. Bez [b], M. Bolognesi [c], S. Bottoni [e], D. Brugnara [a], S. Carollo [b,c], P. Cocconi [a], A. Cogo [a], J. Collado [a,f], F.C.L. Crespi [e], A. Ertoprak [a], R. Escudeiro [b,c], F. Galtarossa [a,c], E.R. Gamba [e], A. Gambalonga [a], B. Góngora Servín [a,g], A. Gottardo [a], A. Gozzelino [a], M. Gulmini [a], Z. Huang [b,c], T. Marchi [a], D. Mengoni [b,c], P. Modanese [a], D.R. Napoli [a], J. Pellumaj [a,g], R.M. Pérez-Vidal [a,h], S. Pigliapoco [b,c], E. Pilotto [a,c], L. Ramina [b], M. Rampazzo [b], W. Raniero [a], M. Rebeschini [b], K. Rezynkina [b], D. Rosso [a], M. Scarcioffolo [c], D. Scarpa [a], M. Sedlák [a], R. Smith [i], N. Toniolo [a], F. Veronese [b], V. Volpe [a], L. Zago [a,c], I. Zanon [a], G. Zhang [b,c], R. Abels [j], M.L. Allegrini [a], C. Aufranc [k], G. Baulieu [k], C. Belkhiria [l], M. Benettoni [b], D. Benini [a], M. Bentley [u], M. Biasotto [a], M. Blaizot [l], J. Blasco Miquel [h], C. Boiano [d], A. Boston [m], H. Boston [m], A. Boujrad [l], P. Bourgault [l], A. Bracco [d,e], S. Brambilla [d], I. Burrows [i], F. Camera [d,e], S. Capra [d,e], A. Capsoni [d], R. Cash [i], J.V. Civera [h], E. Clément [l], S. Coelli [d], M. Cordwell [i], L. Corradi [a], S. Coudert [l], G. De Angelis [a], L. De Ruvo [a], G. Debras [n], M. Del Fabbro [b,c], J. Diklić [o], N. Dosme [p], G. Duchene [q], B. Duclos [l], J. Dudouet [k], J. Eberth [j], S. Elloumi [p], C. Everett [m], S. Fantinel [a], M. Fillinger [q], E. Fioretto [a], C. Fransen [j], A. Gadea [h], L. Gibelin [p], V. González [f], J. Goupil [l], C. Görgen [j], A. Grant [i], K. Green [m], J. Ha [b,c], T. Hartnett [i], K. Henseler [j], H. Hess [j], R. Hirsch [j], C. Houarner [l], J. Jacob [p], T. Joannem [n], D.S. Judson [m], N. Karkour [p], M. Karolak [n], M. Kebbiri [n], J. Kieffer [n], M. Labiche [i], X. Lafay [p], P. Le Jeannic [p], A. Lefevre [l], E. Legay [p], F. Legruel [l], S. Lenzi [c,b], S. Leoni [e,d], D. Linget [p], M. Liptrot [i], A. López-Martens [p], A. Lotodé [n], L. Manara [d], L. Ménager [l], T. Mijatović [o], B. Million [d], A. Minarello [a], G. Montagnoli [c,b], P. Morrall [i], I. Mullacrane [i], J. Nyberg [t], G. Philippon [p], M. Polettini [e], F. Popieul [n], A. Pullia [e,d], F. Recchia [b,c], P. Reiter [j], G. Richardt [j], M. Rocchini [r], A. Roger [n], F. Saillant [l], E. Sanchis [f], Md.S.R. Laskar [d], G. Secci [e,d], M.-H. Sigward [q], J. Simpson [i], N. Solenne [n], F. Spee [j], A.M. Stefanini [a], O. Stézowski [k], S. Szilner [o], N. Templeton [i], Ch. Theisen [n], S. Thiel [j], F. Tomasi [d], S. Tzvetkov [n], D. Vigano [d], E. Viscione [d], O. Wieland [d], K. Wimmer [s], G. Wittwer [l], M. Zielińska [n]

[a] *Istituto Nazionale di Fisica Nucleare (INFN), Laboratori Nazionali di Legnaro, Legnaro, Italy*
[b] *Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Padova, Padova, Italy*
[c] *Dipartimento di Fisica, Università di Padova, Padova, Italy*
[d] *Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Milano, Milano, Italy*
[e] *Dipartimento di Fisica, Università degli Studi di Milano, Milano, Italy*
[f] *Departamento de Ingeniería Electrónica, Universitat de Valencia, Burjassot, Valencia, Spain*
[g] *Dipartimento di Fisica e Scienze della Terra, Università di Ferrara, Ferrara, Italy*
[h] *IFIC, CSIC - Universitat de València, Spain*
[i] *Science and Technology Facilities Council (STFC), Daresbury Laboratory, Keckwick Lane, Warrington, UK*
[j] *Institut für Kernphysik, Universität zu Köln, Köln, Germany*
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The European Physical Journal A

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Topical Collection on AGATA: Advancements in Science and Technology

Edited by
Nicolas Alamanos, Maria Jose Garcia Borge, Angela Bracco, Emmanuel Clement, Andres Gadea, Wolfram Korten, Silvia Leoni and John Simpson

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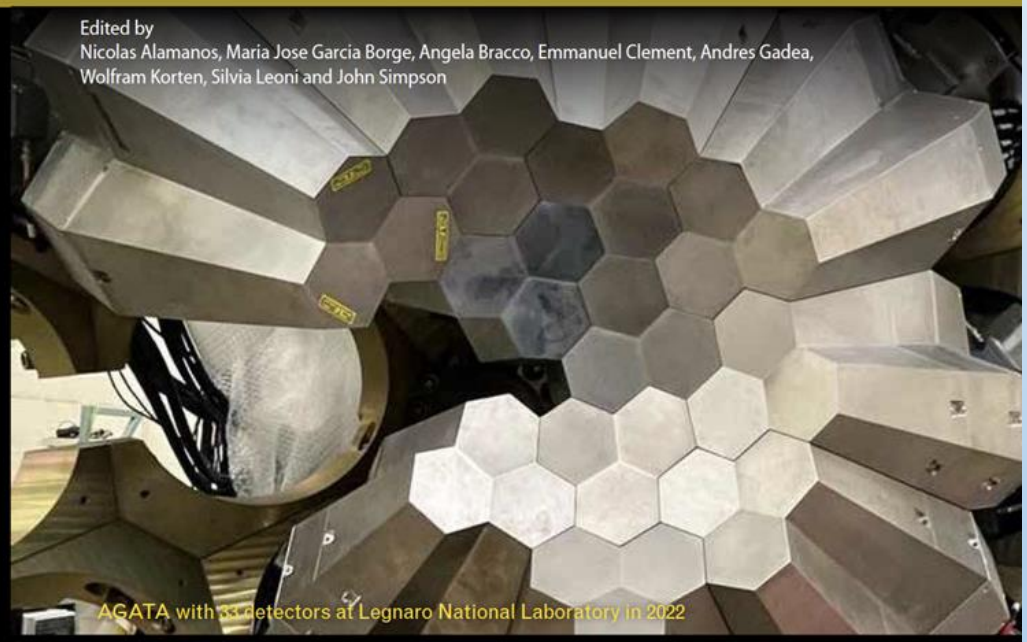
AGATA Focus Issue 2024

Hadrons and Nuclei

Topical Collection on AGATA: Advancements in Science and Technology

Edited by
Nicolas Alamanos, Maria Jose Garcia Borge, Angela Bracco, Emmanuel Clement, Andres Gadea, Wolfram Korten, Silvia Leoni and John Simpson



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AGATA is strongly supported

Final document

(corrected typos, etc…)

available at NuPECC web page

https://www.nupecc.org/lrp2024/Documents/nupecc_lrp2024.pdf

Recommendations for Nuclear Physics Infrastructures

EXECUTIVE SUMMARY

The NuPECC Long Range Plan 2024 resulted in the following main recommendations for infrastructures of importance for nuclear physics:

- The first phase of the international **FAIR** facility is expected to be operational by 2028, facilitating experiments with SIS100 using the High-Energy Branch of the Super-FRS, the CBM cave and the current GSI facilities. Completing the full facility including the **APPA, CBM, NUSTAR** and **PANDA** programmes will provide European science with world-class opportunities for decades and is highly recommended.

- At **GANIL/SPIRAL2** the Super-Separator Spectrometer S^3 is in an advanced stage of completion and the low-energy **DESIR** facility and heavy-ion injector **NEWGAIN** will be operational from 2027/28. The refurbishing of the cyclotrons will ensure their operation for the next decades. Timely completion and full exploitation of these GANIL/SPIRAL2 projects is recommended. The plan for the progression of the infrastructure towards a high-intensity reaccelerated RIB facility of up to 100 MeV/u should be actively pursued.

- Nuclear physics opportunities at **CERN** constitute a world-leading research programme. The construction of **ALICE 3** as part of the **HL-LHC** plans is strongly recommended. Continued support for exploitation and new developments is recommended to maximise the scientific output of **ISOLDE, n_TOF, SPS fixed-target programme** and **AD/ELENA**. As the roadmap for the post-LHC future of CERN is developed, a strategy should be prepared to secure future opportunities for continuing world-leading nuclear-physics programmes that are unique to CERN.

- At **ELI-NP** studies will focus on addressing key topics, such as laser-driven ion and electron acceleration. Implementing the gamma beam system to achieve the full completion of the facility and allow breakthrough results in the field of nuclear photonics is of high importance and is strongly recommended.

- Timely completion of the **SPES** facility and continuing coordinated efforts in developing the **ALTO, IGISOL, ISOLDE, SPES and SPIRAL ISOL facilities** in Europe will be key to maintaining their world-leading position in many areas of radioactive isotope science and are strongly recommended. Extending these efforts towards future facilities, such as **ISOL@MYRRHA, TATTOOS@PSI, and RIB@IFIN-HH**, together with the development of common instrumentation, will secure Europe's leading position for radioisotope production, separation and acceleration techniques, and create new avenues for the future. They should therefore be actively pursued.

- The exploitation of large-scale **stable beam** facilities such as **FAIR/GSI, GANIL/SPIRAL2, IFIN, JYFL-ACCLAB, LNL, LNS, NLC (SLCJ and IFJ-PAN)**, as well as smaller ones such as tandems, underground facilities and AMS systems, should be maximised. It is recommended that synergies between all these facilities, irrespective of size, be reinforced. Developments of novel and more intense beams and capabilities are also recommended to open new opportunities for basic science and applications.

- It is strongly recommended to complete the **AGATA** gamma-ray tracking array to its full configuration as a key instrument for studying atomic nuclei in both stable and radioactive ion beam facilities.

- Exploitation and optimisation of the European **lepton beam facilities**, including **ELSA, MAMI, and S-DALINAC**, are necessary in order to realise their full physics potential. The completion of the **MESA** facility and the **High-Intensity Muon Beams** project at **PSI** is recommended.

- Neutron facilities play a significant role in fundamental nuclear research and applications, producing unique and valuable experimental results. The new **NFS** facility, located at SPIRAL2, provides a highly intense neutron flux of fast neutrons, attracting a broad scientific community. It is crucial and strongly recommended to maintain the operation of exceptional neutron facilities like **ILL** and **n_TOF** at CERN. The **ESS** facility and the future infrastructure **IFMIF-DONES** will provide advanced tools for interdisciplinary research and their unique capabilities to serve advances in nuclear physics should be explored.

- Theory groups and centres should be strongly supported throughout Europe to ensure the fundamental contribution of theory to nuclear physics. An important role is played by the European Centre for Theoretical Studies (**ECT***, Trento, Italy), which is a unique centre dedicated to theoretical nuclear physics and related areas. Stronger pan-European support is needed to ensure that ECT* activities continue to play a strategic role in the development of nuclear physics in Europe.

- Collaboration with **non-European infrastructures** should be fostered in all areas of nuclear research to seize unique scientific opportunities and synergies complementing scientific programmes based in Europe. In particular, European participation in the construction of the **ePIC** experiment at the future international flagship facility **EIC** is recommended.

Paper copy being distributed to funding agencies

Extended recommendations in chapter *"Nuclear Structure and Reaction Dynamics"*

Nuclear Structure and Reaction Dynamics

The main challenges in Nuclear Structure and Reaction Dynamics in the next decade will be to answer the following questions: How do nuclei and nuclear matter emerge from the underlying fundamental interactions? What is the limit of nuclear existence and which phenomena arise from open quantum systems? How do nuclear shells evolve across the nuclear landscape; what kind of shapes can nuclei take, and what is the role of nuclear correlations? What are the mechanisms behind nuclear reactions and nuclear fission? How can we probe the equation of state with nuclear structure observables, such as resonances? How can nuclear structure and reaction dynamics contribute to astrophysics, hadron physics and fundamental symmetries?

Support for existing facilities and experiments

- To ensure complementarity in experimental programmes, it is essential to actively support large- and small-scale facilities guaranteeing access to the whole community, allowing detector testing and exploratory experiments in preparation for more complex future experiments, and playing a key role in the training of new generations of physicists.

- Coordinated effort amongst the **ISOL facilities** in Europe has been key to securing a world-leading position in many areas of radioactive beam science. Reinforcing this collaboration on radioisotope production, separation and acceleration techniques, together with the exploitation of common instrumentation and a stream of new ideas, will secure the leading position of Europe in the future.

- To push the frontiers of spectroscopy and lifetime measurements at the limits of energy and production, exceptional resolution and high efficiency for gamma-ray spectroscopy is essential. Therefore, the full completion of the European flagship gamma spectrometer **AGATA-4π** (with ancillaries) is essential. AGATA is and will remain the major workhorse for nuclear structure gamma-spectroscopy and nuclear astrophysics precision physics, at both radioactive and stable ion-beam facilities.

Future flagship facilities and experiments

- Unique insights into Nuclear Structure and Reaction Dynamics can only be obtained via the urgent completion of the **FAIR** facility (including the **NUSTAR** Low-Energy-Branch), **SPIRAL2, SPES, ELI-NP, ISOL@MYRRHA, and ISOLDE upgrades**, as unique laboratories for studying reactions of very exotic nuclei, and for the exploration of the nuclear chart towards the driplines.

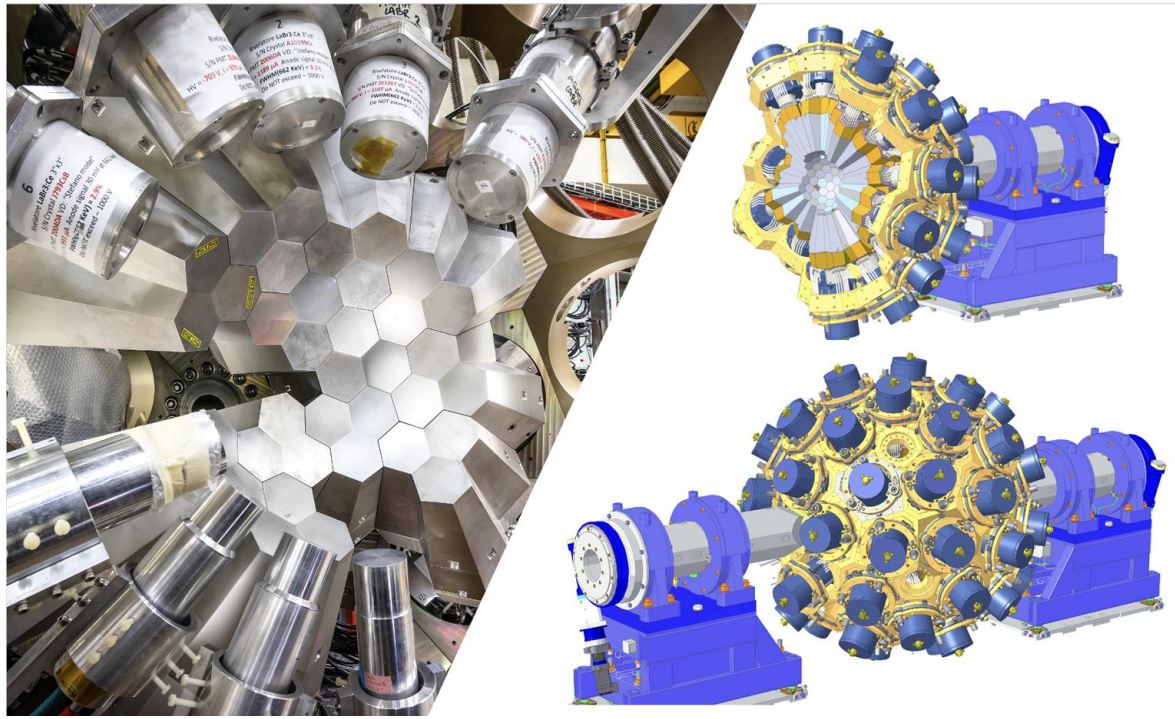
- Europe's world leadership in t
as key precision instruments fo
radii, nuclear resonances, isom
be maintained by the constructio
ISOLDE.

Theory developments

- It is mandatory to establish e
based on different degrees of fre
tical uncertainties, to improve the
a good description of spectrosco
pendent methods and reaction ca
like Bayesian inference in combi
niques (e.g. Artificial Intelligence,

- Nuclear theory is crucial for ir
guiding future research. Excellen
keep talent within the field shoul
be strongly supported throughou
emerging virtual access facilitie
experimentalists (e.g. the Theo4
project).

in chapter *"Detectors and experimental techniques"*



AGATA © AGATA Collaboration
Rendering view (right) of the 2π and 4π AGATA spectrometer showing the cryostat dewars (blue) of the HPGe detectors (grey). On the left a current view of the AGATA HPGe detectors from the target position

Science achievements 2020-2024:

- 4 experiments completed at GANIL (out of 29 experiments 2015-2021)
- 34 experiments completed at LNL
- 22 AGATA-related PhD theses defended, 16 currently ongoing
- 28 physics publications
- 19 technical publications

AGATA Scientific Impact 2020-2024

GANIL campaign - highlights

> 2020-2021: 4 experiments

Wide range of physics questions:

- from nuclear structure to reaction dynamics;
- from properties of light nuclei (*ab initio* interpretation) to hard-to-reach heavy species close to ^{208}Pb;
- novel ways to populate neutron-rich actinide nuclei;

2 experiments (MUGAST, VAMOS++, SPIRAL1 beams) already published

- **Impact of 3 body forces on light systems:** I. Zanon et al., Phys. Rev. Lett. 131, 262501 (2023)
  High-Precision Spectroscopy of ^{20}O Benchmarking Ab Initio Calculations in Light Nuclei
- **High precision test of Shell Model at N=28:** C.J. Paxman et al, Phys. Rev. Lett (in print)
  Probing exotic cross-shell interactions at N=28 with single-neutron transfer on ^{47}K

More highlights from AGATA@GANIL, papers published in 2020-2024:

- **Direct lifetime measurements of low-lying states in proton rich ^{106,108}Sn and ^{102,104,106,108}Cd nuclei:**
  Strong benchmark of Shell Model and Beyond Mean-Field approaches (AGATA+VAMOS)
  M. Siciliano et al, Phys. Lett. B 806, 135474 (2020)
  M. Siciliano et al, Phys. Rev. C 104, 034320 (2021)
  Marco Siciliano, GANIL Thesis Award in 2019

- **Lifetimes in g.s. bands in N=50 ^{94}Ru, ^{92}Mo and ^{90}Zr** (AGATA+VAMOS)
  Validity of short-range pairing interaction, far-reaching implications for nuclear structure in BCS theory
  R.M. Perez-Vidal et al, Phys. Rev. Lett. 129, 112501 (2022)

- **Spectroscopy of very neutron-deficient nuclei at the N=Z line, ^{88}Ru, ^{87}Tc** (AGATA+NEDA+DIAMANT)
  Importance of isoscalar np pairing components
  B. Cederwall et al, Phys. Rev. Lett. 124, 062501 (2020)
  X. Liu et al, Phys. Rev. C 104, L021302 (2021)

- **Lifetime of key astrophysical state in ^{23}Mg - impact on ^{22}Na production in novae** (AGATA+VAMOS)
  Key information to assess observation limit of space telescopes under construction
  Ch. Fougères et al., Nature Commun. 14, 4536 (2023)
  Ch. Fougères GANIL Thesis Award in 2023
  Ch. Fougères, 2021-2023 PhD Prize of Nuclear Physics Division - European Physical Society

LNL campaign

Two main phases:

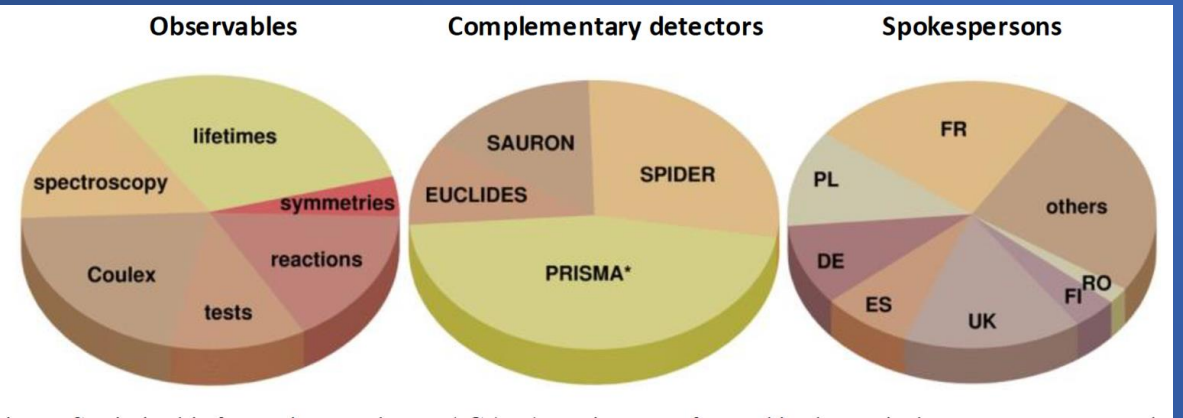
2022-mid 2026: AGATA + PRISMA (+ other ancillaries)
2027-mid 2028: AGATA at zero degrees (+ NEDA, PARIS, cryogenic targets, other ancillaries)

J.J. Valiente Dobon et al., Nucl. Instrum. Methods Phys. Res. A 1049, 168040 (2023)

Wide range of physics questions:

from nuclear structure to reaction dynamics, astrophysical applications – entire nuclear chart covered
Variety of techniques: Coulomb excitation, lifetime measurements with pair and multinucleon transfer (new approaches), superallowed beta-decay studies, ...

in 2025: campaign with light radioactive beams from the EXOTIC facility (exotic nuclei with Z<=6)
in 2026: ^{238}U beams available, possibilities for long dedicated experiments.



34(+3) AGATA projects performed
in the period May 2022 - December 2024
Statistics of

- *Observables,*
- *Complementary detectors*
- *Spokespersons*

Future campaigns

Approved AGATA campaigns:

LNL up to mid 2028 (to exploit the zero degrees configuration)
GANIL in 2029 and 2030 (GRIT, VAMOS and SPIRAL1 exotic beams)

in 2027: re-evaluation of AGATA campaign bids after 2030
depending on the status of the host laboratories: GANIL, SPES, FAIR, ISOLDE, JYFL
Physics opportunities described in AGATA White Book paper: *W. Korten et al., EPJA 56 (2020)137*
and endorsed by the international review panel in 2020

Achieved project items 2020-2024

- 24 Crystals bought (to the total of presently 74)
- 10 Cryostats bought (to the total of presently 25)
- 90 Electronics channels (planned for 2025)
- Mechanics and detector support system upgraded and extended to 2π

- 0.9 MEuro saved on crystal procurement
- 0.1 MEuro saved on cryostat procurement

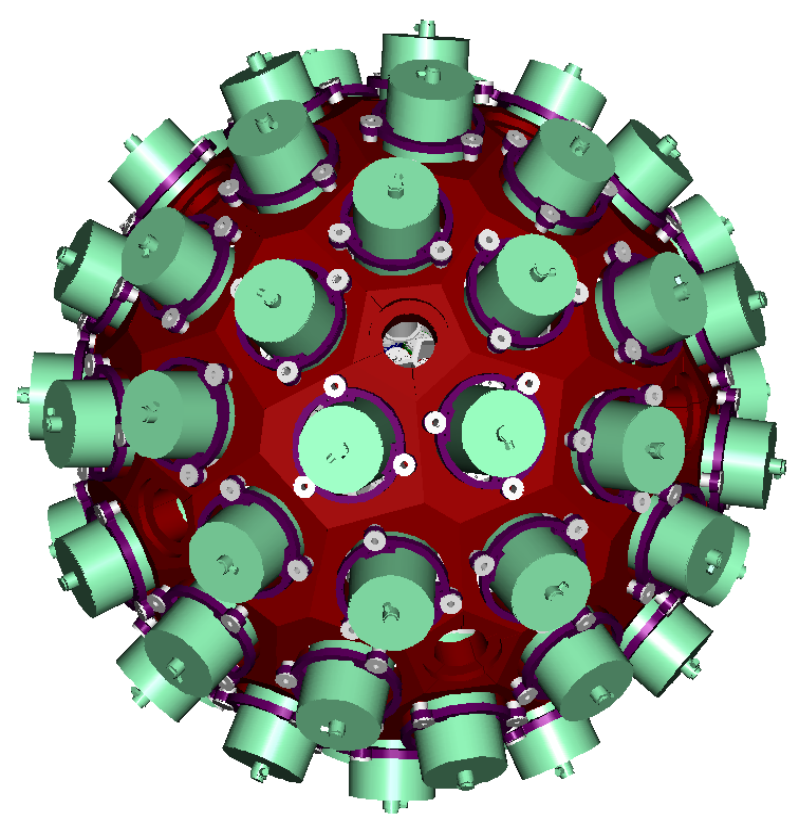
Summary

- Collaboration is efficient, strong and united
- Budget well under control in spite of difficulties in financing
- Scientific performance satisfactory, strong involvement of early-career researchers
- Technical developments well under way (with momentum increasing after COVID)

- Missing contributions from several European funding agencies

Back-up slides

AGATA project



- 180 segmented crystals (60 triple units)
- 362 kg of Ge
- 82% solid angle
- counting rate: 50 kHz per Ge crystal
- angular resolution: ~1º
- efficiency: 35% (M_γ=1), 20% (M_γ=30)
- Peak/Total: ~40-50%
- large inner radius to accommodate ancillary devices

http://www.agata.org

S. Akkoyun *et al.*, Nucl. Instrum. Methods Phys. Res. A 668, 26 (2012).

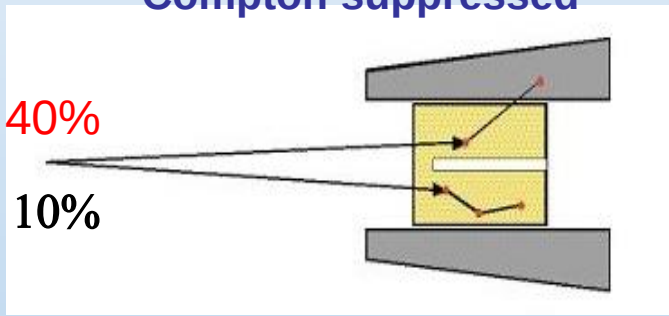
Tracking arrays

designed to maximize efficiency and peak-to-total ratio
of high-resolution γ-ray detector arrays

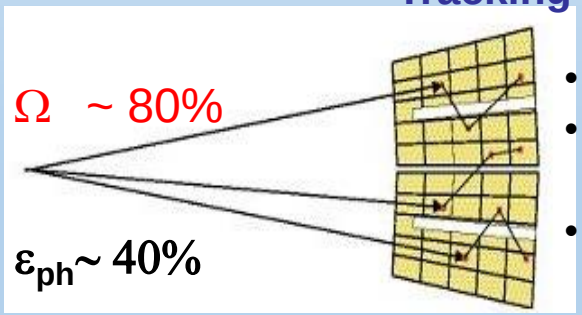
Aims:

- Maximizing the active solid angle without compromising peak-to-total ratio
- Improving the energy resolution in all experimental conditions, even at high emission velocities
- Maximizing the detector performance, even in conditions of heavy duty with radiation damage

Compton suppressed



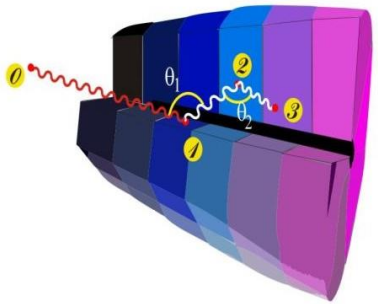
Tracking array



- Large solid angle
- Position sensitivity using PSA
- Large P/T using tracking for γ-ray reconstruction

Tracking ingredients

1



2

100 Mhz, 14 bit sampling of segment and central contact signals

3

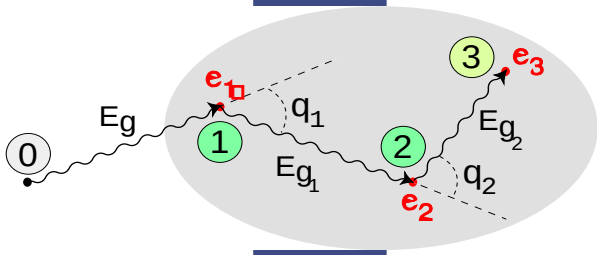
Pulse-Shape Analysis to decompose recorded waves

4

Identified interaction points

$(x,y,z,E,t)_i$

Reconstruction of photon trajectories by tracking algorithms



reconstructed □-ray energies, emission and scattering directions

A travelling detector

Combining unique capabilities of AGATA with strengths of specific laboratories:

- **GANIL**: stable beams up to Th, radioactive beams from SPIRAL1
- **LNL** : stable beams up to U, very high number of beam-on-target days, radioactive beams from SPES (from 2028)
- **FAIR, GSI**: exotic relativistic beams
- **HIE-ISOLDE, CERN**: largest variety of exotic ISOL beams
- **JYFL**: intense stable beams for VHN studies

Physics cases for AGATA Phase 2 presented in AGATA White Book:
W. Korten et al, Eur. Phys. J. A 56, 137 (2020).

Construction Phase 1 (2009 – 2020)

MoU signed in 2009 and renewed in 2015

15 detectors

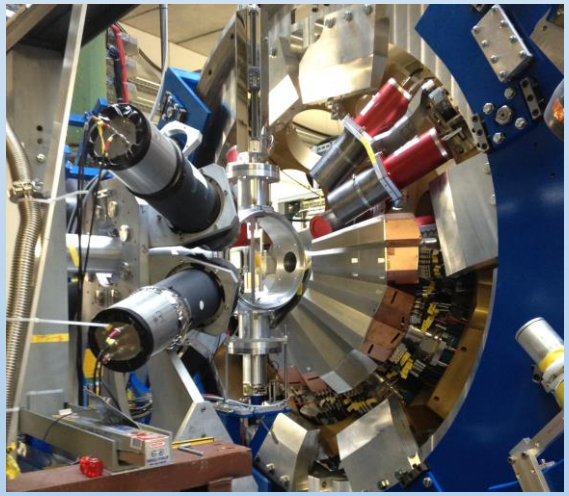
LNL

Coupled to the magnetic spectrometer PRISMA

22 detectors

GSI

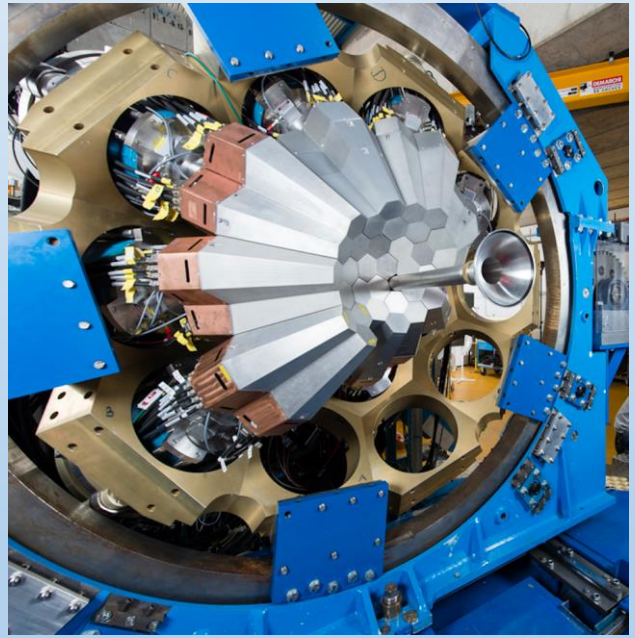
Fast radioactive beams coupled to LYCCA



41 detectors (2019)

GANIL

Coupled to VAMOS, NEDA/N-Wall, DIAMANT, FATIMA, PARIS, MUGAST



LNL 2010-2011 → **GSI 2012-2014** → **GANIL 2015-2021**

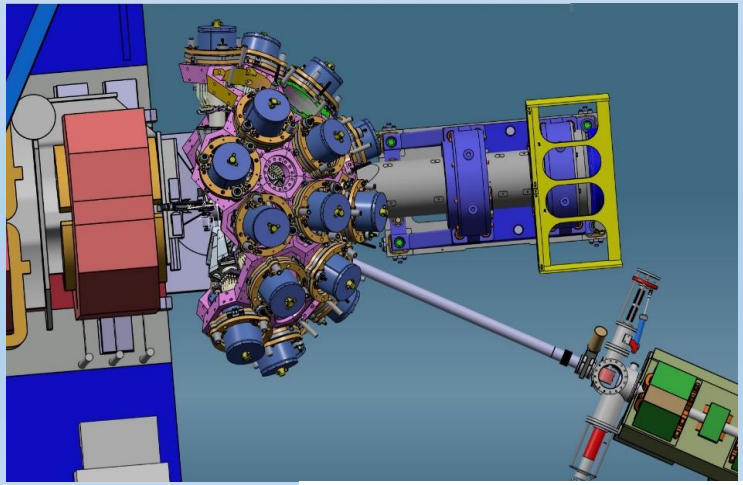
100 scientific and 57 technical publications since 2010

LNL campaign (2022 – 2028)

- May 2022 – December 2025: campaign with PRISMA and compatible ancillaries (SPIDER, SAURON, EUCLIDES)
  - April 2025: first EXOTIC beams (light radioactive ions produced in direct reactions)
- February 2026 – summer 2026: AGATA + PRISMA campaign with ^{238}U beams
- Late 2026-mid 2028: “zero degree” campaign with NEDA, PARIS, cryogenic targets.

Local Campaign Managers:
J.J Valiente Dobón (2021-2024), A. Goasduff (2025-)
Campaign spokesperson: M. Zielińska

Current configuration: commissioning 26/4/2022



Zero-degree configuration

Contents lists available at ScienceDirect

Nuclear Inst. and Methods in Physics Research, A

journal homepage: www.elsevier.com/locate/nima

ELSEVIER

Full Length Article

Conceptual design of the AGATA 2π array at LNL

NEW AMB structure

Project Manager / AMB Chairperson
Working Group Chairpersons, ASC Chairperson (M. Gorska), ACC Chairperson (S. Leoni).
LPM-LNL, LPM-GSI, LPM-GANIL I. Kuti (Dissemination),

AMB Chairperson
Project Manager
E. Clément

Resource Manager
B. Million

AGATA Working Groups		AGATA Teams			
Detector Module — H. Hess		Detector & Cryostat — M. Zielinska, M.H. Sigward	Detector CAT &Testing — H. Boston	R & D on gamma Detectors & Applications — D. Judson	
Front-end Electronics — A.Gadea		Pre-Amplifier Digitizer — A. Pullia	Pre-processing — I. Lazarus	Global Trigger & Synchronization — GANIL	Coupling To Ancillaries — A. Goasduff
Data Processing — O. Stézowski		DAQ Infrastructure — IJCLab-LNL	Online/offline Interoperability — G. Baulieu	DAQ Processing — E. Legay	Reprocessing & analysis, Data Manager — J. Dudouet
Infrastructure — B. Million		Detector array Infrastructure — R. Menegazzo	Mechanical Infrastructure — R. Smith	AGATA Array Database — C. Aufranc	
PSA & Tracking R&D — A. Boston		PSA Algorithm Development — F. Holloway	Detector Characterisation — A. Boston	Tracking Development — A. Lopez-Martens	
Performance and Simulation — M. Labiche		AGATA Performance — R. Perez Vidal	AGATA Commissioning — F. Crespi	AGATA Simulation — M. Labiche	

Local Project Managers (LPM)

INFN-LNL Legnaro	FAIR Darmstadt	GANIL-SPIRAL2 Caen
A. Goasduff	K. Wimmer	E. Clément

ACC meeting 12-13th September 2024, MILANO

Reports from 17 experiments from the LNL campaign (2022-2023)

Thursday 12th 14:40

ACC (12 Sept 2024, 14:40 - 15:30)

[77] Welcome from ACC Chair (14:40, 5 minutes)

Presenter: LEONI, Silvia (University of Milano and INFFN Milano)

[78] News from AGATA Steering committee (14:45, 15 minutes)

Presenter: GORSKA, Magdalena (GSI Darmstadt)

REPORTS EXP – 15.00-15.30

- 60Ni Coulex, HADYNSKA-KLEK (HIL, Warsaw)
- EXP 23.7 and 23.09: 56Ni, 60Zn, BALOGH (INFN)

COFEE BREAK

ACC (12 Sept 2024, 16:00 - 18:00) **AGATA from 2027**

[79] AGATA Location from 2027 : Possible campaign at LNL (16:00, 20 minutes)

[80] AGATA Location from 2027 : Possible campaign at GANIL (16:20, 20 minutes)

Presenter: FARGET, Fanny (GANIL)

[81] AGATA Location from 2027 : Open discussion - Public (16:40, 20 minutes)

Presenter: LEONI, Silvia (University of Milano and INFFN Milano)

[82] AGATA Collaboration Council Meeting (Closed Session) (17:00, 1 hour)

Friday 13th 9:00

- Lifetime measurement of 6.793 MeV state of 15O, PILOTTO (Padua Un.)
- Spectroscopy/lifetimes toward the Island of Inversion GENNA (Milano Un.)
- Lifetime measurements towards the island of inversion along N = 20 NICOLÁS DEL ÁLAMO (Padua Un.)
- Report on AGATA experiment 001 phase 2, ZAGO (Padua Un.)
- Report on the AGATA experiment number 011, ANDREETTA (Padua Un.)
- Report on the AGATA experiment number 22.18, ZIELINSKA (CEA Saclay)
- Two-Phonon Octupole excitation in 96Zr, STRAMACCIONI (Padua Un.)
- Lifetime/transition-probability measurements in 96Zr, AHMED (Guelph Un.)

COFFEE BREAK 11.00-11.30

- Shape coexistence in Z≈N A≈70 nuclei: Coulex of 74Se, KJUS (CEA Saclay)
- Shape Coexistence in ^{110}Cd, Coulomb Excitation, PIĘTKA (HIL, Warsaw Un.)
- Report on experiment EXP_009 (22.23), ANGELINI (Padua Un.)
- Report on the AGATA@Legnaro EXP 22.04, ABELS (University of Cologne)
- Report on EXP-017 and EXP-022: SULLIVAN (University of Liverpool)
- Decay-out of highly-deformed bands in ^{136,137}Nd, PETRACHE (IJClab, Orsay)
- Search for octupole correlations in ^{232,234}Pu isotopes, AYATOLLAHZADEH, (University of the West of Scotland)

AGATA Location from 2027: Possible campaign at LNL

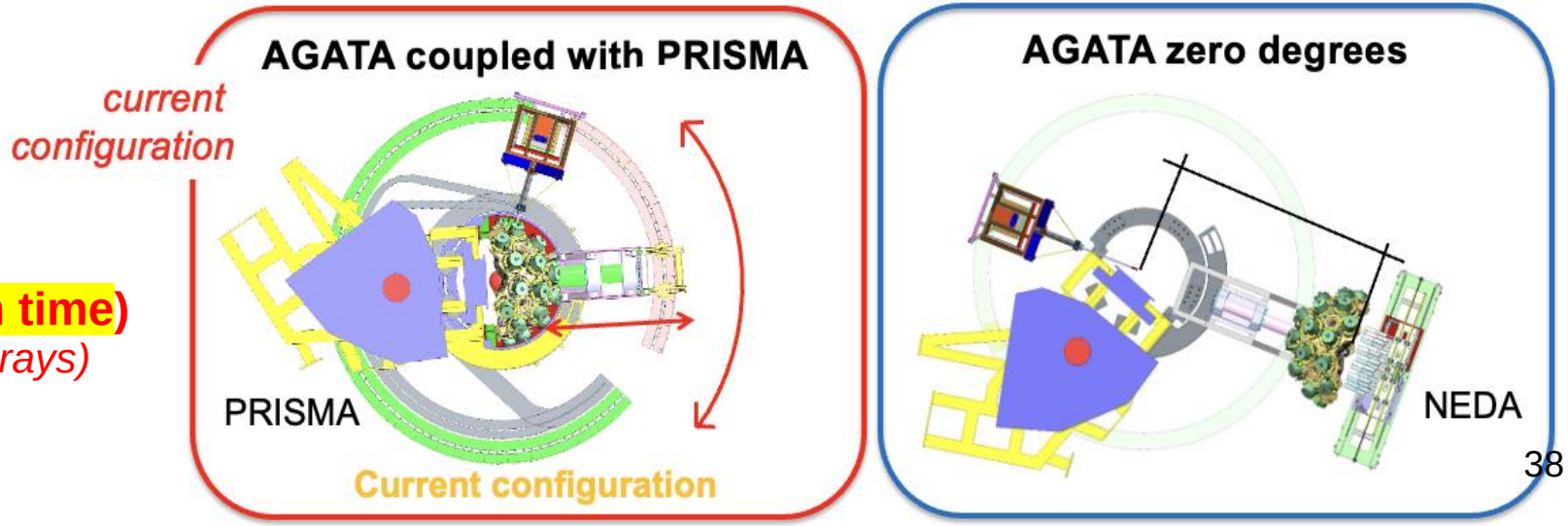
Jose Javier Valiente Dobón LNL (INFN) on behalf of Faïçal Azaiez (INFN LNL Director)

INFN LNL
Istituto Nazionale di Fisica Nucleare
Laboratori Nazionali di Legnaro

Two different configurations proposed at LNL

LNL: new data centre
new targets ^{9}Be, ^{232}Th, ^{238}U and new ^{238}U beam

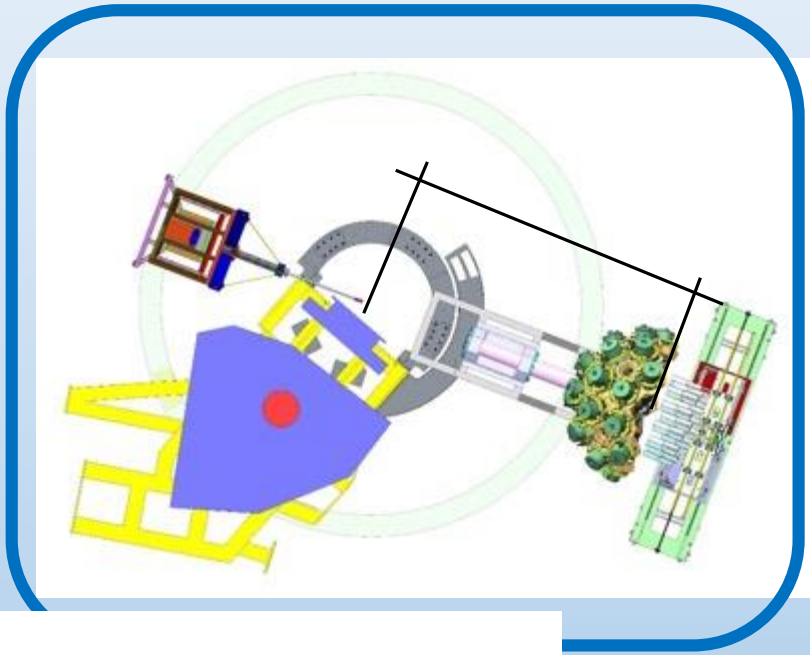
Nuclear Inst. and Methods in Physics Research, A 1049 (2023) 168040
Contents lists available at ScienceDirect
Nuclear Inst. and Methods in Physics Research, A
journal homepage: www.elsevier.com/locate/nima
Full Length Article
Conceptual design of the AGATA 2π array at LNL



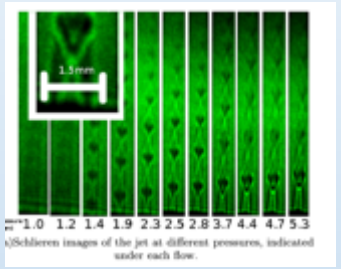
29 experiments performed
up to September 2024 (83% beam time)
(+ 3 comm. exp., 1 exp. high-energy γ rays)
Several highlights presented
preliminary results

Future campaign at 0 degrees: complementary detectors

AGATA zero degrees



Targets: CTADIR +



PARIS

SLICES
CHYMENE
TRACE

AGATA Campaign at LNL

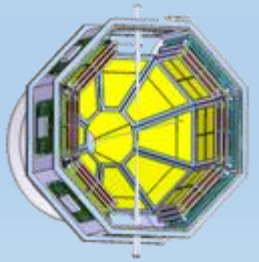
Third Pre-PAC Workshop and

Zero-Degree Campaign Workshop

LNL, April 19th-21st, 2023

Enough requests for AGATA operation at LNL (with STABLE beams) – up to mid 2028

NEDA



GRIT

LNL offer for AGATA (September 2024)

Istituto Nazionale di Fisica Nucleare
Laboratori Nazionali di Legnaro
Il Direttore

Legnaro, May 28, 2024

Dear Angela, dear ASC members,

the Legnaro National Laboratory devoted about 6150 hours of beam time for AGATA from April 2022 to May 2024, providing stable beams from 1H to 208Pb with the TANDEM-PIAVE-ALPI accelerator complex. The fraction of beam time devoted to AGATA was about 83%. The program is to deliver a similar amount of beam time to AGATA in the coming years. From autumn 2025, the 238U beam will also become available as the authorization from the safety authorities has been granted recently. First available beam energy will be 6.4 MeV/u.

The Legnaro National Laboratories hence expresses its interest in continuing to host the AGATA array from 2027 until 2031.

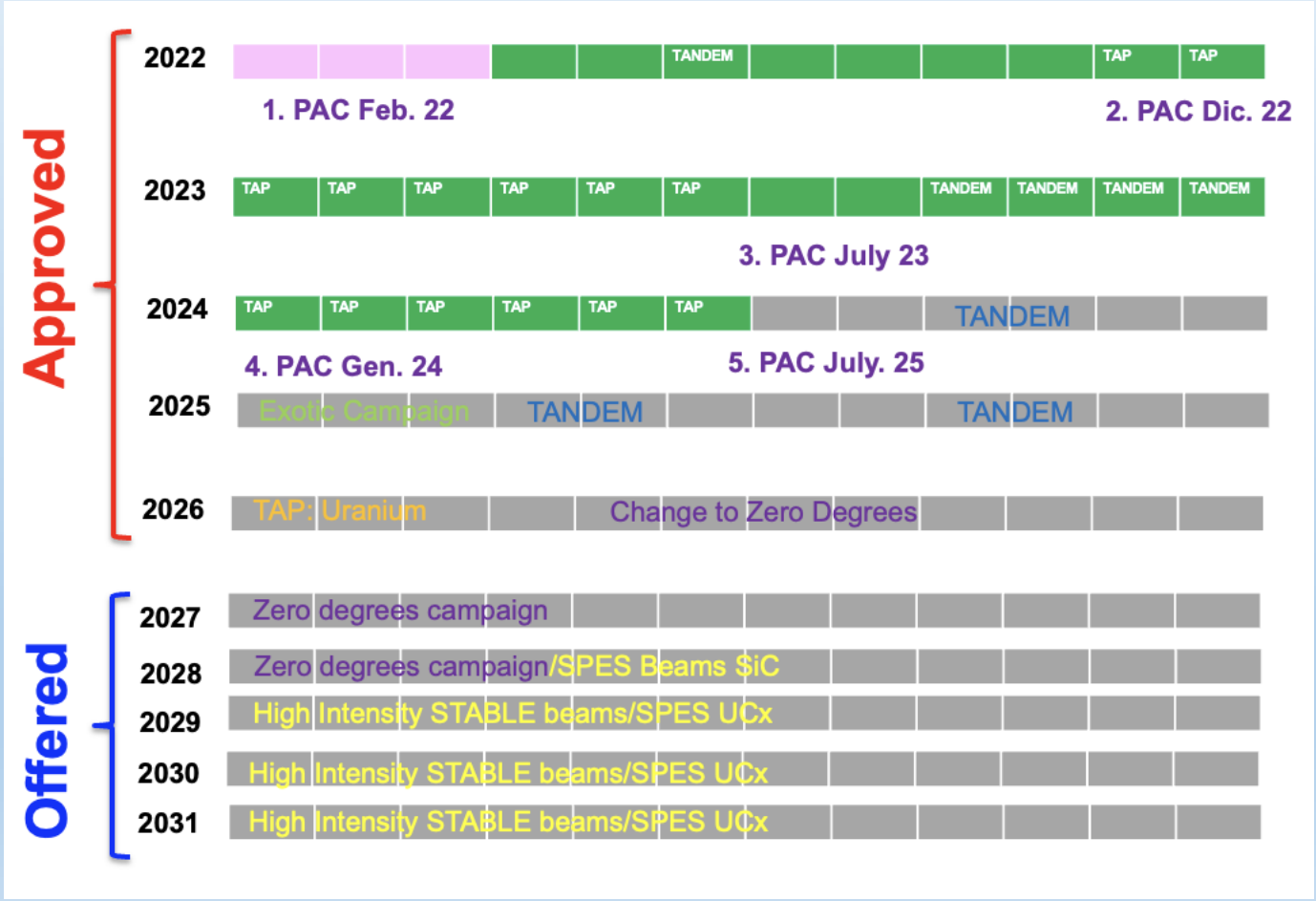
The Laboratory engages to provide stable beams from the Tandem-PIAVE-ALPI complex and move to the new ALPI injector ADIGE which will be available to provide intense stable beams. Accelerated ions range from 1H to 238U, with energies and intensities according to the table in:
https://www.lnl.infn.it/wp-content/uploads/Fasci_TAP.pdf

The LNL will guarantee at least 3000 hours of beam per year, with a minimum of 80% devoted to AGATA.

The new phased approach and organization of the SPES project planned a restart and commissioning of the SPES driver cyclotron which delivered this week its first beam for a first experiment of 67Cu radioisotopes cross-section measurement. The SPES phase of production of ISOL low energy radioactive beam and the operation of the new injector (ADIGE) is planned for the end of 2025. The LNL foresees the availability from 2028 of the SPES unstable beams post-accelerated by the ADIGE-ALPI complex up to 10 MeV/u.

LNL together with the Italian community of AGATA is fully committed to provide all means for the success of the AGATA experimental campaigns for the proposed period.

Firmato da
Faical Azaiez
IT
in data
28-05-2024



AGATA Location from 2027: Possible campaign at GANIL

from Fanny Farget presentation

AGATA@GANIL.1 were many sub-campaigns

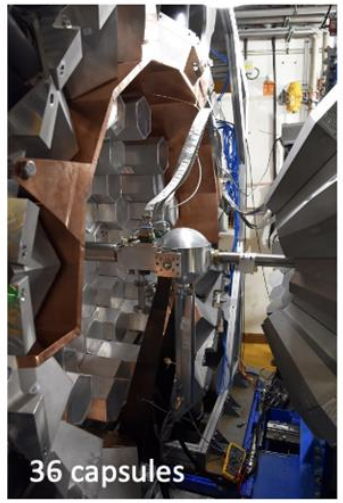
GANIL

2015-2017

AGATA coupled to VAMOS, FATIMA, PARIS

Exotic nuclei spectroscopy by MNT transfer and fission reaction

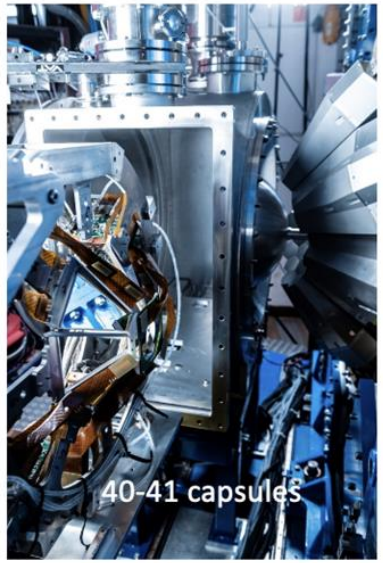
2018



AGATA coupled to NEDA- DIAMANT

N~Z nuclei spectroscopy by fusion evaporation

2019-2021



AGATA coupled to VAMOS MUGAST 40-41 capsules

Exotic nuclei spectroscopy by transfer reaction using RIB

2021

AGATA coupled to VAMOS, EXOGAM, 2nd Arm, LEPS

Exotic nuclei spectroscopy by MNT transfer

927 UT have been approved
821 UT have been performed
over 29 experiments (90 % done)

Several High Impact factor Publications from AGATA@GANIL.1

see later discussion on ARRB Report

GANIL offer for AGATA (September 2024)

AGATA opportunities @GANIL :
« Data taking » between : March 2028 – July 2030

SUMMARY

- Very successful previous campaign with high-impact publications
- GANIL is an important partner of AGATA collaboration :
  50% of French contribution to AGATA is from GANIL
- GANIL staff trained and operational on AGATA duties
  Most of the campaign#1 infrastructures are still available
- High-quality and new RIB from SPIRAL1
- High-intensity and high-quality stable heavy-ion beams
- State-of-the-art spectrometer and instrumentation
- Surrounding collaborations with active and cryogenic targets (ATRACT) or particle detectors (MUGAST/GRIT)
- *Commitment of the GANIL management to dedicate **at least 50% of the CYCLOTRON beam-time***
  *(when approved by PAC) : **~ 100 UT yearly** : 2500 hours of beam on target !*

→ ***about 33 days of beam time per year for experiments with AGATA** (upon PAC approval)*

AGATA Workshop, GANIL, May 2024

- **40 participants**
- **Rich physics cases:**
  - Resonance and near threshold spectroscopy including cluster
  - Charge exchange and pair transfer
  - Nuclear structure of light exotic nuclei and ab-initio calculations
  - Spectroscopy of exotic nuclei of interest for nuclear astrophysics
  - Hauser-Feshbach formalism in exotic nuclei using surrogate reactions
  - Nuclear deformation from low to high angular momentum using Coulomb excitation or fusion
  - Multi-Nucleon Transfer with heavy beams for Super Heavy Elements
  - Lifetimes of excited states using Doppler Shift Attenuation Methods in exotic nuclei produced in transfer reactions

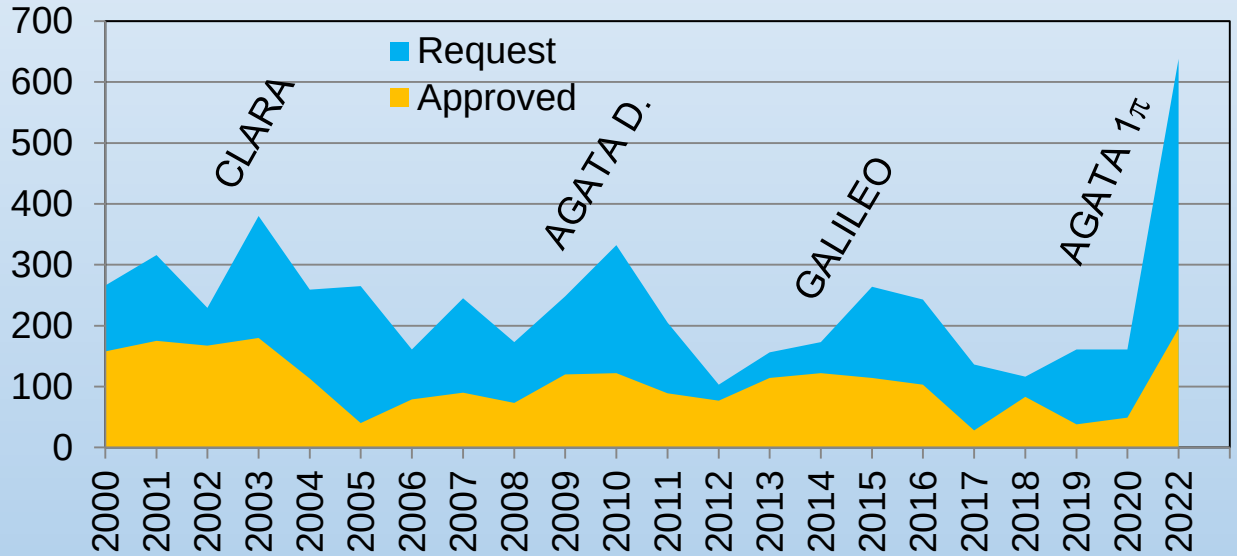
PAC meetings at LNL

February 21-23, 2022
TAP beams

28 proposals submitted
- **10** (+3 commissioning) priority A
- **5** priority B

December 5-6, 2022
TAP beams

24 proposals submitted
- **6** priority A
- **10** priority B



April 2022 – December 2024: 39 experiments with AGATA,
over 80% of the total beam time with TAP (without beam preparation)

July 10-12, 2023
TANDEM only beams

15 proposals submitted
- **8** priority A
- **3** priority B

January 22-24, 2024
TAP beams

18 proposals submitted
- **5** (+ 3 recovery) priority A
- **4** priority B

July 15-17, 2024
TANDEM only beams

11 proposals submitted
- **5.5** priority A
- **1.5** priority B

January 22-24, 2024
TANDEM only beams

14 proposals submitted
- **9.5** priority A
- **1** priority B

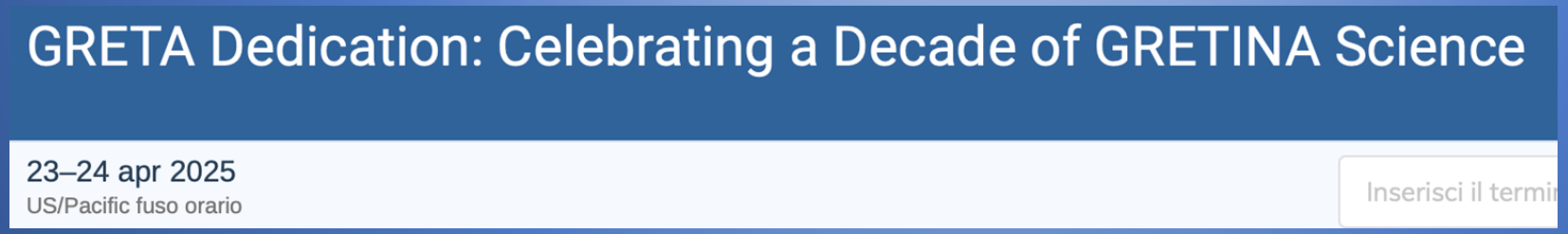
Achievements:

Many invited talks with the most recent Invitations to ACC Chair for presentations on AGATA

23-25 April 2025

https://iop.eventsair.com/np2025/

Silvia Leoni (Univ. Milano and INFN)



https://conferences.lbl.gov/event/1979/overview

Magda Zielinska (CEA Saclay)

Topical Issue on AGATA in EPJA (1 year preparation)

Advancements in science and technology

Managing Editors: M. Borge, N. Alamanos

Guest Editors: A. Bracco, E. Clement, A. Gadea, S. Leoni, W. Korten, J. Simpson

1) Preface
Editors: S. Leoni, W. Korten, E. Clement, A. Gadea, A. Bracco, J. Simpson

2) Science advancements with AGATA

2.1 Nuclear structure advancements with multi-nucleon transfer reactions
Lead Author: A. Gadea

2.2 Nuclear structure advancements with fission
Lead Author: A. Lemasson

2.3 Nuclear structure advancements with fusion reactions
Lead Authors: J. Nyberg, J.J. Valiente-Dobon

2.4 Nuclear structure advancements with direct reactions
Lead Authors: W. Catford, D. Beaumel, D. Mengoni

2.5 Nuclear structure advancements with relativistic beams
Lead Authors: M. Bentley, G. Benzoni, K. Wimmer

2.6 Nuclear structure advancements with high energy gamma rays
Lead Author: F. Camera

3) Technical advancements with AGATA

3.0 Advancements on detector technologies
Lead Authors: IKP Cologne, Padua University: P. Reiter, XXX

3.1 Mechanical implementations and infrastructures
Lead Authors: J. Simpson, B. Million

3.2 Electronics
Lead Authors: A. Gadea, E. Clement

3.3 Software developments
Lead Authors: O. Stezowski, J. Dudouet

4) Performances of AGATA

4.1 Review of the last decade Pulse Shape Analysis activities
Lead Authors: A. Boston, P. Reiter

4.2 Performances of tracking algorithms
Lead Authors: J. Ljungvall, F. Crespi

4.3 System performances under different conditions
Lead Authors: A. Korichi, A. Goasduff

4.4 Simulations of AGATA response and couplings with ancillaries
Lead Author: M. Labiche

4.5 Organization of the collaboration and physics campaigns
Lead Author: E. Clement

15 papers + preface

After internal review by Guest Editors

All 15 Paper Submitted by 25th March 2023

NOW FULLY PUBLISHED

Long Range Plan Perspectives in Nuclear Physics

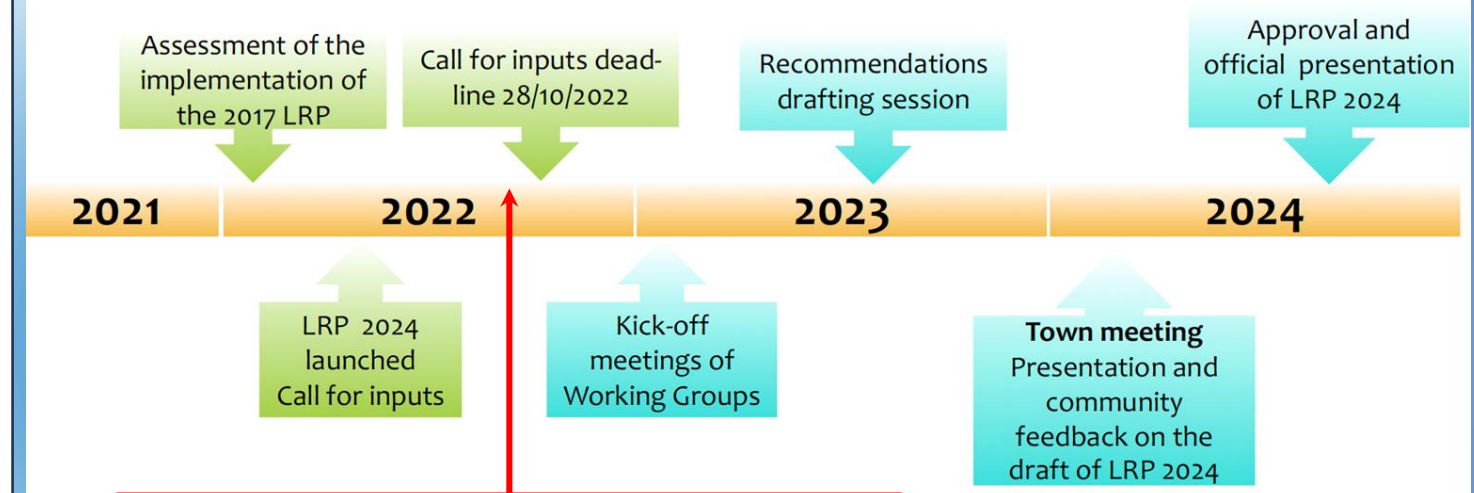
LAST LRP in 2017

A. Bracco
NuPECC Chair

AGATA is strongly supported

LRP2024 Timeline

M. Lewitowicz - NuPECC Chair



AGATA Abstract

Scientific and technological challenges of the AGATA tracking array in the next decade

Contact person:

Silvia Leoni (AGATA Spokesperson, on behalf of the collaboration)

prepared by A. Bracco, E. Clement, S. Leoni, B. Million, W. Korten
revised by AMB

Town Meeting
Bucharest
15-17 April 2024

19th November 2024 in Brussels:

Presentation Symposium of the NuPECC Long Range Plan 2024

NuPECC Long Range 2024

NuPECC Long Range Plan 2024

Thematical Working Groups

1. **Hadron Physics**
   - Coordinators:
     - Karin Schönning (Uppsala University)
     - Constantia Alexandrou (University of Cyprus)
   - NuPECC Liaisons:
     - Diego Bettoni (INFN Ferrara)
     - Dave Ireland (University of Glasgow)
   - Members
   - Indico Site
2. **Strongly Interacting Matter under Extreme Conditions**
   - Coordinators:
     - Laura Fabbietti (TU München)
     - Urs Wiedemann (CERN Geneva)
   - NuPECC Liaisons:
     - Gert Aarts (Swansea)
     - Raimond Snellings
   - Members
   - Indico Site
3. **Nuclear Structure and Reaction Dynamics**
   - Coordinators:
     - Silvia Leoni (Univ. Milano)
     - Tomas Rodriguez (UCM)
   - NuPECC Liaisons:
     - Adam Maj
     - Jelena Vesic
   - Members
   - Indico Site
4. **Nuclear Astrophysics**
   - Coordinators:
     - Anu Kankainen (JYFL)
     - Jordi Jose (Barcelona)
   - NuPECC Liaisons:
     - Daniel Bemmerer
     - Sandrine Courtin
   - Members
   - Indico Site
5. **Symmetries and Fundamental Interactions**
   - Coordinators:
     - Pierre Delahaye (GANIL)
     - Paolo Crivelli (ETH)
   - NuPECC Liaisons:
     - Eberhard Widmann
     - Klaus Kirch
   - Members
   - Indico Site
6. **Infrastructures**
   - Coordinator:
     - Wolfram Korten (CEA, Saclay)
   - NuPECC Liaisons:
     - Joaquin Gomez Camacho
     - Patricia Roussel-Chomaz
   - Members
   - Indico Site
7. **Applications and Societal Benefit**
   - Coordinators:
     - Thomas Cocolios (KU Leuven)
     - Charlot Vandevoorde (GSI)
   - NuPECC Liaisons:
     - Lucia Popescu
     - Vladimir Wagner
   - Members
   - Indico Site
8. **Nuclear Physics Tools**
   - Detectors and experimental techniques
   - Computing, Machine Learning and Artificial Intelligence
   - Coordinators:
     - Silvia Dalla Torre (INFN)
     - Thorsten Kollegger (GSI/FAIR)
     - Jana Guenther (U. Wuppertal)
   - NuPECC Liaisons:
     - Eugenio Nappi
     - Hervé Moutarde
   - Members
   - Indico Site
9. **Open Science and Data**
   - Coordinator:
     - Antoine Lemasson (GANIL)
   - NuPECC Liaison:
     - Marek Lewitowicz
   - Members
   - Indico Site
10. **Nuclear Science - People and Society**
    - Training, Careers & Diversity
    - Education and Outreach
    - Coordinators:
      - María García Borge (Madrid)
      - Christian Diget (York)
    - NuPECC Liaison:
      - Rolf-Dietmar Herzberg
      - Yvonne Leifels
    - Members
    - Indico Site

O. Stezowski
is group member
Discussions on AGATA
open data soon resumed

10 Thematical Working Groups

https://indico.ph.tum.de/category/61/

AGATA Collaboration Council meeting *10-12/11/2021 Legnaro*

Open science, open data Data Management Plan for AGATA Phase 2

O.Stézowski
On behalf of the Data Processing Group
Work from dedicated DMP meetings March 2021 ☞ June 2021

we need to define a DATA Management Plan

(it will be requested at various levels: European call, funding Agency, etc...)

- dedicated Data Processing Group
- few decisions to be taken in ACC and AMB

detailed documentation is being prepared by Data Processing Group

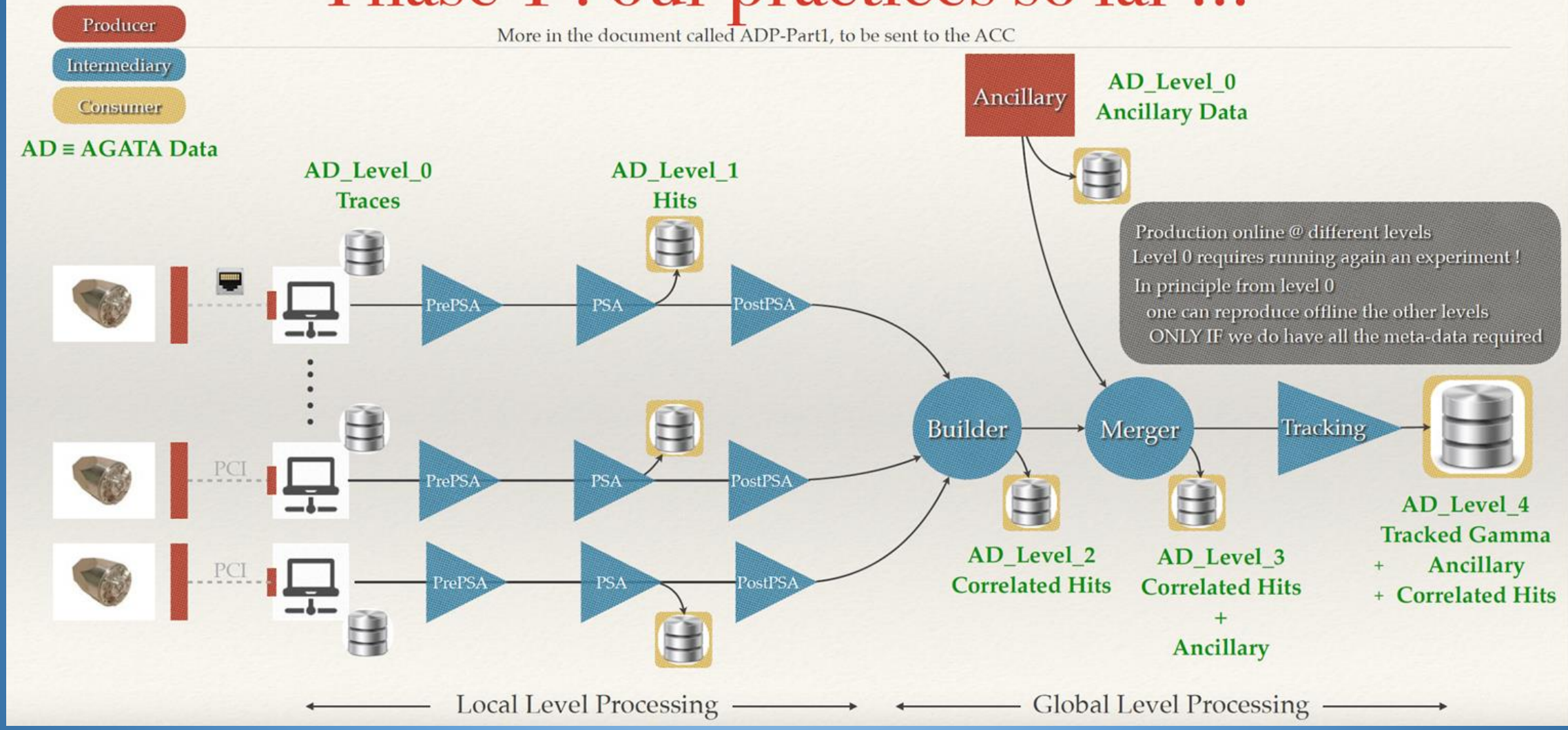
2 drafts already available:

- Critical Analysis of our way to manage data: **here**
- Our first Data Management Plan: **here**

Discussions will be soon resumed in connection with LRP TWG9 "Open Science and Data"
O. Stezowski group member

Phase 1 : our practices so far …

More in the document called ADP-Part1, to be sent to the ACC



we need now to be **FAIR**: **F**indability, **A**ccessibility, **I**nteroperability, **R**eusability

we need to come back to this issue in the nearest future

ARRB Report (according to the AGATA MoU definition)

- The role of the ARRB includes:
- receive reports from the ASC
- monitor the general financial and human resources in the AGATA project and its operation
- monitor contributions from Parties with respect to their required contribution
- evaluate the effect of new members joining or members withdrawing on the resource planning
- advice on the prosecution and continuation of the Memorandum of Understanding
- endorse the annual construction, maintenance and operation budgets of the AGATA project and its exploitation
- make all efforts to put in force an AGATA common account for construction investment, enabling funds to be co-ordinated, for mass purchases at reduced prices and efficient procurement
- provide oversight on the contingency policies in each partner
- The ASC informs the ARRB about funding plans and needs for further funding.
- Any modification in the construction and human resources commitment specified in this MoU has to be reported to the ARRB who validates the modification via the minutes of the meeting.

ARRB Report (according to the AGATA MoU definition)

4. Commencement, Duration and Withdrawal

4.1 This MoU will become effective on 01/07/21 and shall continue for five years. This MoU can be extended a for further five (5) year by an amendment signed by all the Parties as provided for in paragraph 6 following the completion of a Project review, organised by the ASC.

4.2 The ASC will organise a Project review with the Project's management bodies which will be undertaken no later than six months before the 5 (five) year review date. The Project review shall include the assessment of scientific results, a review of the technical achievements and Project implementation with respect to the AGATA Phase 2 Project Definition and make recommendations on the resources and planning for the next five (5) years. This review is to include a validation of the funding requested from the Parties for the upcoming five (5) years by the AGATA Resource Review Board. The Project review documents together with revised Annexes will be submitted to the Parties for their approval, within six (6) months of receipt.

Among the questions rised by ARRB on November 8th 2024
(also listed in the Annex of the Report)

- *"Financial difficulties have been encountered during the first 5 years by some countries. Past commitments of each country should be analyzed to figure out how things could be changed/improved for next MoU and next 5 years*
- *This analysis should be used to identify risks and uncertainties and to guide to understand how next financial effort should and could be shared*
- *The objective of constructing 50% of the phase 2 was not attained during the first 5 years. Next five years will represent, financially, more than half of the total cost. How this can be handled? RRB requests that possible scenarios to mitigate and/or handle over-costs are explored.*

In particular:

- *Exploring further options and scenarios for reducing costs such as optimizations, common purchasing, ...*
- *How the timeline should/could be modified (extended) if financial contributions are less than what would be required to fulfil the full objectives? Which would be the impact of an extended timeline on AGATA science? Several options (and associated timelines) should be described and compared*
- *In addition, options and scenarios for reducing the scope of the project should also be investigated, by minimizing the impact on the science that AGATA will be able to carry out. This should be accompanied by a choice of strategic and high-impact physics cases where AGATA, even with a reduced/modified/less-expensive final design, still remains a unique and excellent detector in the international context."*

6. Amendments and Modification of the MoU

This MoU may be amended or modified at any time if agreed by the ASC, as defined in Annex D, subject to a written amendment signed by the Parties.

Annex D: AGATA Management Structure

The Parties intend to manage the AGATA Project as follows.

The governance and management bodies under this MoU shall be:

- The AGATA Steering Committee (ASC), acting on behalf of the Parties, is responsible for the Project coordination and the science policy of the collaboration
- The AGATA Collaboration Council (ACC), representing all the institutions collaborating under the AGATA Project, advises the ASC on scientific matters
- The AGATA Project Manager (PM) and the AGATA Management Board (AMB) are responsible for the execution of the Project along the lines defined by the ASC and the AGATA Resource Review Board (ARRB)
- The AGATA Resource Review Board provides financial scrutiny of the project and the contributions of all Parties

The terms of reference of these bodies are given in more detail below.

AGATA web page

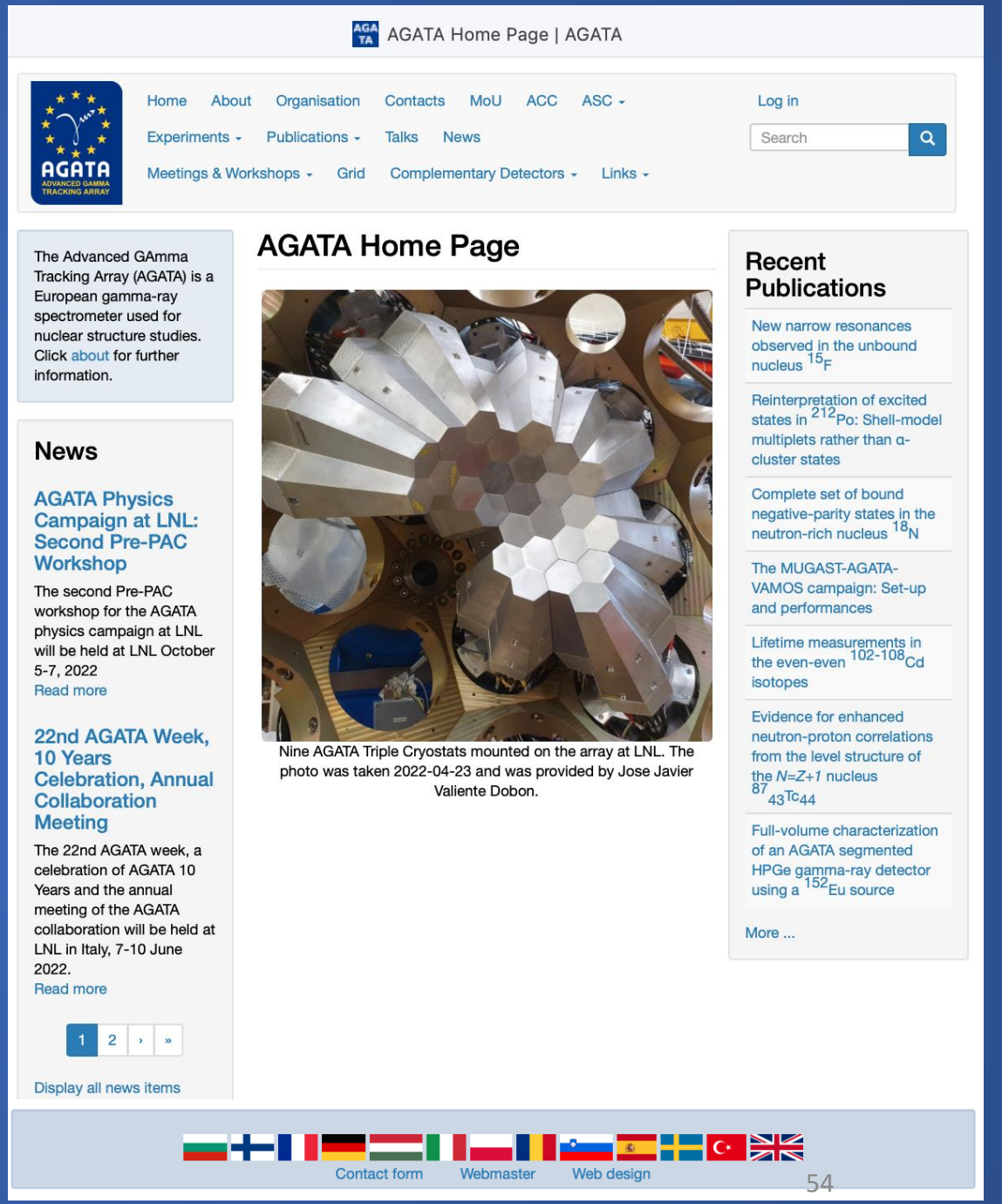
https://www.agata.org

Organigram,
Meetings,
Publications,
Theses,
Talks
Approved experiments,
...

maintained by Johan Nyberg (up to 2025)
fully updated

(2025 -) István Kuti
(ATOMKI, Debrecen, Hungary)

+ management of CORE LIST



Election for new ACC Chair
AGATA Spokesperson (2025-2029)

Mail Sent to ACC Members on 23rd March 2025

> Silvia Leoni term is ending in Spring 2025 (after 2+2 years)

> The procedure is fully in the hands of ACC:

- Candidates should be proposed in the next four weeks (deadline Friday April 18th)
- Election of the ACC Chair by end of April/beginning of May

Previous Chairs of the ACC:

Silvia Leoni (Italy) 2021 - 2025
Wolfram Korten (France) 2017 - 2021
Johan Nyberg (Sweden) 2014 - 2017
John Simpson (UK) 2010 - 2014