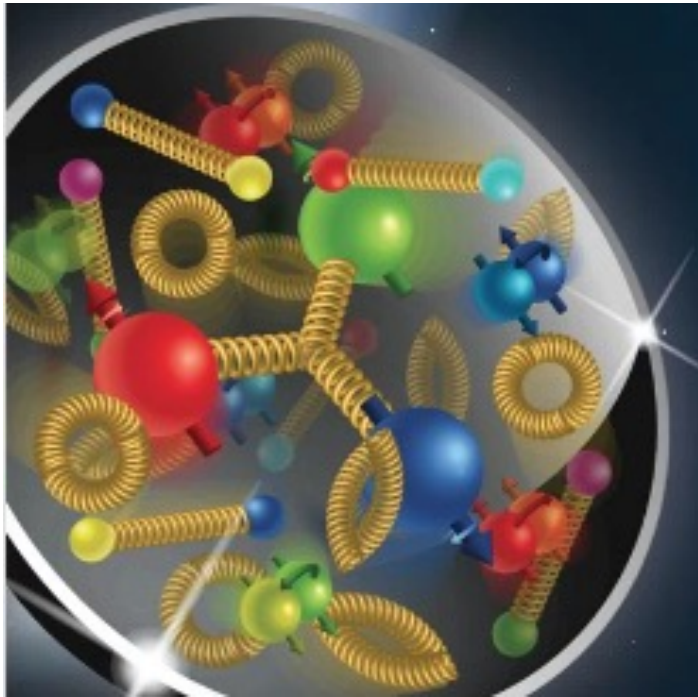


EIC\_NET

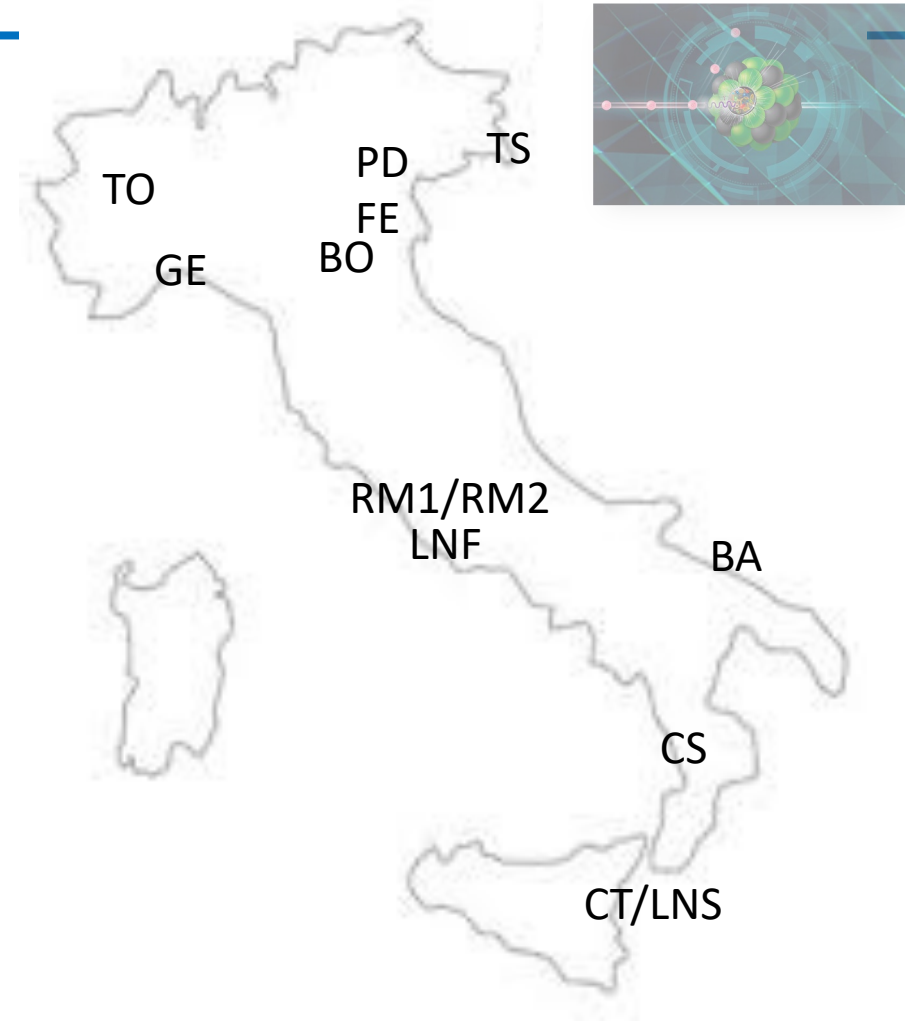
Riunione Nazionale 28 Marzo 2022



P. Antonioli  
INFN-Bologna

# Outline

- Agenda incontro
- EIC project
  - DPAP report & its fallout
  - next steps
  - miscellanea news
- Organizational matters
  - working groups (and ECCE/ATHENA w.g.)
  - giornate nazionali
  - conference opportunities
  - missions
- AOB



# Today's agenda

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<b>10:00</b>	→ 10:40	<b>Status EIC project and general news (+ open discussion)</b> <b>Speaker:</b> Pietro Antonioli (Istituto Nazionale di Fisica Nucleare)	🕒 40m
<b>10:40</b>	→ 11:00	<b>Simulation and Physis Performance WG update</b> <b>Speakers:</b> Annalisa Mastroserio (Istituto Nazionale di Fisica Nucleare) , Salvatore Fazio (Istituto Nazionale di Fisica Nucleare)	🕒 20m
<b>11:00</b>	→ 11:20	<b>dRICH WG update</b> ¶ <b>Speaker:</b> Marco Contalbrigo (Istituto Nazionale di Fisica Nucleare)	🕒 20m
<b>11:20</b>	→ 11:40	<b>Silicon Tracker update</b> <b>Speaker:</b> Giacomo Contin (Istituto Nazionale di Fisica Nucleare)	🕒 20m
<b>11:40</b>	→ 12:00	<b>Highlight: R&amp;D on SiPM - annealing and characterisation</b> <b>Speakers:</b> Luigi Pio Rignanese (Istituto Nazionale di Fisica Nucleare) , Nicola Rubini (Istituto Nazionale di Fisica Nucleare)	🕒 20m
<b>12:00</b>	→ 12:20	<b>Highlight: report of first LAPPD workshop</b> <b>Speaker:</b> Deb Sankar Bhattacharya (Istituto Nazionale di Fisica Nucleare)	🕒 20m
<b>12:20</b>	→ 12:30	<b>AOB</b>	🕒 10m

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"keep the community updated in a quickly evolving situation"

# Summary of "EIC process" since last meeting (31/Jan)

(for summary of previous steps see reports at January meeting)

Silvia: [https://agenda.infn.it/event/29957/contributions/161456/attachments/87788/117394/EIC\\_NET\\_20220131.pptx](https://agenda.infn.it/event/29957/contributions/161456/attachments/87788/117394/EIC_NET_20220131.pptx)

+ all December meeting: <https://agenda.infn.it/event/28762/>

February:

- work of ATHENA WGs (and all protocooperation) at "reduced pace" waiting for DPAP report
- some contacts developed toward "dRICH" consortium/collaboration (India, Stonybrook, Duke, JLAB, ...) → see Marco's talk
- UK secured a 990kGBP grant for R&D on silicon tracker (2021-2024) → see Giacomo's talk

March:

1. 8th: DPAP report presented orally in a open session
2. 9th: EIC\_NET EB
3. 10th first ATHENA plenary meeting (with INFN "first reaction" presented)
4. 11th first meeting between ATHENA management and EIC project (Jim/Rolf/Elke) + DoE (Tim Hallman) ("DPAP closeout followup meeting)
5. 14th meeting responsabili locali EIC\_NET
6. 15th briefing to GE/CSN3 chair (Diego/Rosario) // President Biden signs the budget for FY22
7. 17th ATHENA IB (with Rolf/Elke representing EIC project)
8. 22th + 24th: ECCE-ATHENA meetings
9. 24th ATHENA plenary meeting (again Elke attending)

+ all other meetings!  
(ATHENA EB/WG/ ...)

# Some miscellaneous comments about the report

Final report now available here: [https://www.bnl.gov/dpapanelmeeting/https://www.bnl.gov/dpapanelmeeting/files/pdf/dpap\\_report\\_3-21-2022\\_final.pdf](https://www.bnl.gov/dpapanelmeeting/https://www.bnl.gov/dpapanelmeeting/files/pdf/dpap_report_3-21-2022_final.pdf)

- references in the report: ATHENA: 37, ECCE 47, CORE 26
- a surprising unbalanced report towards one specific proposal, not helpful to coalesce the community and attract international support (UK, France, Italy)
- main substantive indication (preference for 1.5 T magnet) seems dominated by cost considerations and a weak case based on risk + (in the panel view) by absence of a convincing physics motivations. However, following a specific question, EIC project management said ECCE is now "reference design" but not "baseline design" (i.e. during coming months there is still space to discuss even the magnet option)
- INFN position is strong being the main driver (and expected in-kind contributor) for the dRICH effort and a key component in the Silicon Consortium (thanks to ALICE/ITS3 synergy + in-kind contribution)

## **Conclusions for Detector Concept and Feasibility**

Based on the careful study by the DAC and the information provided by the three proto-collaborations, the panel finds that ATHENA and ECCE satisfy the requirements to fulfil EIC's "mission need" statement based on the EIC community White Paper and the National Academies of Science (NAS) 2018 report. The more limited range of new technologies and the reuse of the BABAR Magnet and the sPHENIX HCAL make ECCE less expensive and more likely to be ready for data taking on time for Critical Decision 4A (CD-4A), the start of EIC accelerator operations, and therefore suitable as Detector 1. Core has provided a more conceptual, less fully developed design.

• • • •

R&D needs affecting us (for SIPM, silicon tracker and DAQ) are listed clearly and they should enforce

the fact ATHENA is more structured than ECCE was seen as a disadvantage instead than a parameter that was asked to be evaluated!

**“ The managements and collaborations of both ATHENA and ECCE are capable of becoming a solid basis for the full development and implementation of a successful Detector 1. On balance, the Panel finds that the more flexible organizational structure and outlook of ECCE puts it in a better position to become the organizational basis for Detector 1. As noted, the proto-collaborations are not yet at the strength necessary to prepare a detector for Day 1 of the EIC. Consequently, successful collaboration on Detector 1 by members of all three proto-collaborations will be critical for the EIC.”**

some truism about the fact that two experiments are better than one, but the second detector remains uncertain and quite shifted in the future (+ 3 years and half with respect to detector 1 in best case)

ATHENA's effort on offline software will likely stay on the long run



The offline software environment of ATHENA, demonstrated in the detailed simulations, is already quite mature, while ECCE has a well-developed offline computing model. For both ATHENA and ECCE, the development of the DAQ/Offline systems is supported by a substantial team.



# Moving forward: next steps

## ➤ ATHENA thoughts about the next steps

### ⦿ Main:

- ❖ the need of the foundation of a new collaboration to have also ATHENA filling at home
- ❖ The request that the correctness of the process in this direction is guaranteed by the Project and Lab Managements

(from Silvia Dalla Torre presentation at last ATHENA meeting)

## DPAP closeout follow-up meeting, cont.

2 major contributions to the discussion



- *Tim Hallman:*
  - He understands the ATHENA reactions
  - Athena can make a negative choice or, as it seems, a constructive one
  - “without ATHENA, EIC project will collapse”
  - terms and conditions suggested by ATHENA already mentioned in the discussion with ECCE
  - terms and conditions suggested by ATHENA are reasonable
  - DOE had posed no constrain to DPAP
  - His comments about the Report: the panel was struggling, the risk consideration resulted in the DPAP recommendations
  - After detector 1 is successfully on the way, the second detector can be included in the project (extending the project) 2 years later
    - In practice 18 months to CD2 + 2 years
- *Elke (also see Project management talk at this meeting):*
  - vital for the project to have everyone engaged
  - some time needed to bring the collaborations together, she estimates 3-6 months
  - For this end, during the formation period
    - combined leadership
    - combined WG conveners with small workshops
  - Global detector integration aspects will also be considered (support from DAC)
  - In parallel, structuring for the collaboration, then new elections
- March – June critical months to shape direction
- possibly EICUG meeting (27-31 July) is key to bring to conclusion
- [I lobbied Marco&Silvia to move meeting from Warsaw to US or elsewhere]

# EIC Project leadership perspective quite coincides...

## Next Steps

Jim Yeck@IB meeting 17 March

- ❑ Series of meetings between the EIC Project and the leadership of proto-collaborations
  - Discuss joint action items starting from the ECCE reference design for an optimization and consolidation phase
  - Facilitated by the EIC Project
- ❑ Objectives:
  - Integrate new institutions in a manner that enables them to make contributions that impact the capabilities and success of the experiment in significant ways, including new collaborating groups into positions of responsibility and leadership; and,
  - Integrate new experimental concepts and technologies if appropriate to best meet the goals and requirements of the Project Detector, without introducing undue risk.
- ❑ Once the path forward is established, we will reach out to the working groups, institutions and other members in ATHENA in support of a maximally optimal Project Detector that can advance to CD-2/3A in a timely way

Note: this will be probably helpful to us for critical R&D + better align with INFN planning

- ❑ EIC can move forward with design, critical R&D, some hiring and planning activities to prepare for CD-2/3A
- ❑ The plan for CD-2/3A approval will be revised, probably from April 2023 to October 2023 (need information of FY2023 budget request)
- ❑ Start EIC Detector R&D!





# Some other miscellaneous news

- very positive supporting attitude from INFN GE (Diego) and CSN3 chair (Rosario) [both surprised by DPAP report]
- something is moving discussing EIC long term governance (remember Elke's talk at Turni) → high level talks between DoE and main funding agencies in the near future
- something is moving discussing INFN contribution re: accelerator part (→ next week workshop in Milan)
- briefing INFN referees as next step + further info exchanges with GE
- US budget → EIC got 45 M\$ (less than 75 but better than 15) → hope to have soon news about EIC R&D funding

## RESEARCH FUNDING

### US Congress finalizes 2022 spending bill

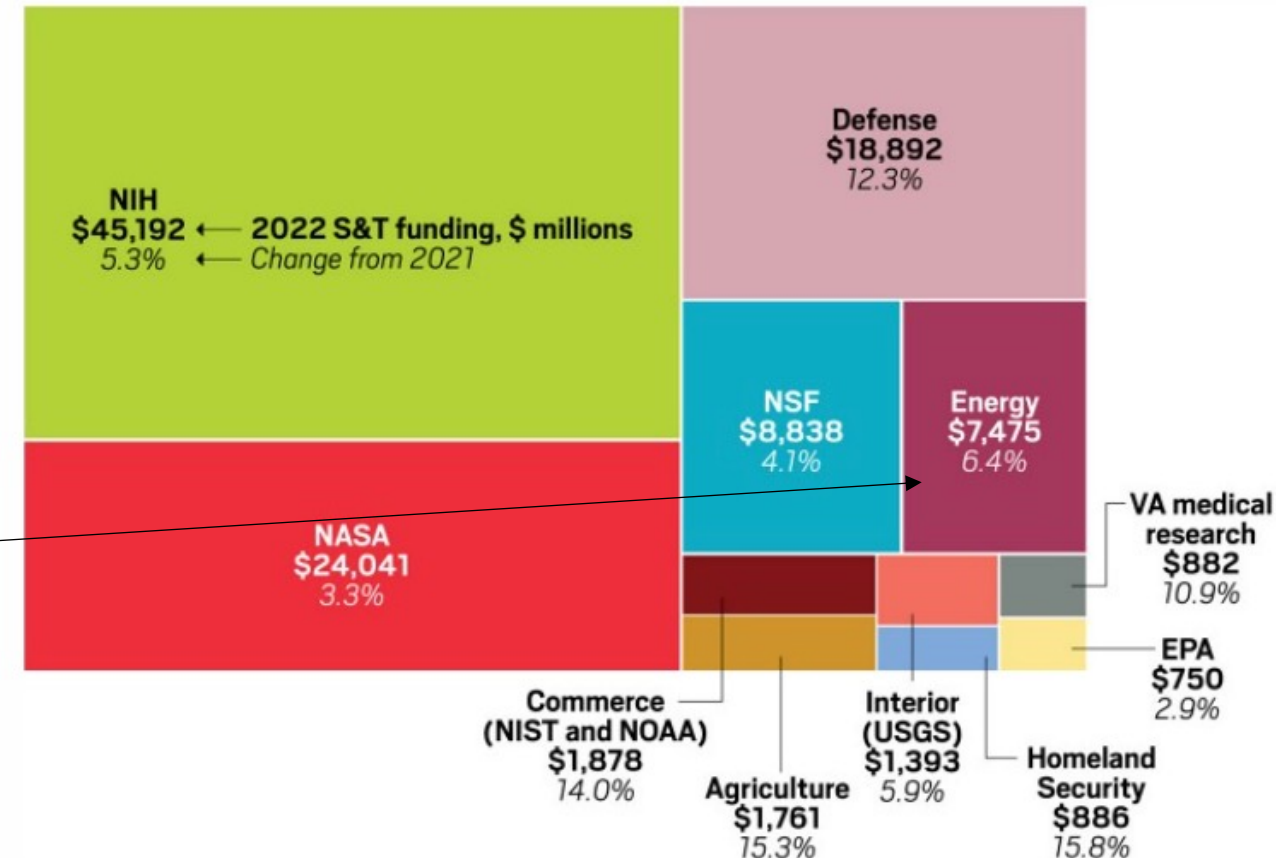
Most US federal agencies get notable increases in science funding

by [Britt E. Erickson](#), [Andrea Widener](#), [Cheryl Hogue](#)

March 16, 2022 | A version of this story appeared in [Volume 100, Issue 10](#)

**N**early 6 months late, Congress passed a **\$1.5 trillion spending bill** to fund the federal government for the remainder of fiscal 2022, which ends Oct. 1. Lawmakers sent the omnibus bill to President Joe Biden on March 11, and he signed it into law March 15.

DoE +6.4%



# Points for today's open discussion



- questions?
- general comments
- the 2nd detector option is real? Our view on that?
- organization next months [critical role of "our" conveners + "our" ATHENA spokesperson ;-)] and priorities ["critical months for long-term design choices"]
- ...

# Conference opportunities

**INFN2022:** CNS3 workshop (+ CSN4/5) with focus on nuclear physics and young scientists opportunity

<https://agenda.infn.it/event/22084/> (LNGS, 9-11 May)

4 abstracts in preparation (2 confirmed (SiPM, tracker), 2 other TBC (dRICH simulation, dRICH test beams) [deadline 31st March]

2 invited review talks in session "dinamica dei quark e degli adroni" will also cover EIC perspective

- Baryon structure and spectrum: the present and the future

- Hadron Spectroscopy and Exotics at Jlab, EIC and LHC

one abstract submitted at: <https://www.ndip.fr> (Troyes, 4-10 July)

**9<sup>TH</sup> CONFERENCE ON  
NEW DEVELOPMENTS  
IN PHOTODETECTION**

several ATHENA abstracts submitted at DIS2022: 2-6 May 2022

Santiago de Compostela, 2-6 May 2022

ICHEP in Italy! (first time in 72 years)

[deadline 31st March]

<https://www.ichep2022.it>

28/03/2023





# Giornate nazionali: Catania 30/6 – 1/7



## **SAVE THE DATE**

thanks to Cristina for availability!

good occasion to discuss "preventivi" INFN

possibly more "Covid-free" than in December

### note extended format:

- arrival by Wednesday 29/6 evening
- all-day long Thursday 30/6 (starting at 9:00 AM)
- morning Friday 1/7 until lunch
- departure on Friday afternoon

good

# Conclusions

- a lot of work ahead of us
- entering into much expected critical period
- DPAP report was disappointing but we remain positive on the future
- missions: we should be gradually to normal, contact your RL → RN for "networking missions" (EICUG meeting + ?)

Although the release of the Panel Report is a significant milestone, we must recognize that its implementation will require much effort and discussion involving the two Labs, the EIC Project, funding agencies, the EICUG and its leadership, and the leaders of the three Proto-collaborations. We are just at the beginning of this phase, and we very much look forward to working with all of you to realize an optimal set of experimental equipment for the EIC.



Haiyan Gao




Robert D. McKeown



# Backup

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Pietro Antonioli (Host, me)

MC

Marco Contalbrigo (Guest)

↑



Silvia Dalla Torre

AM


Annalisa Mastroserio (Guest)

CT

Cristina Tuvé (Guest)

d

daniele (Guest)



Daniele D'Ago

DL

Dario Lattuada (Guest)

Ask to Unmute

DS


Deb Sankar Bhattacharya (Guest)

d

disalvo (Guest)

DC



Domenico Colella (Guest)



Domenico Elia



EN

Eugenio Nappi (Guest)





EC

Evaristo Cisbani (Guest)





f

fantini (Guest)





FN

Francesco NNOTO (Guest)





LR

Luigi Rignanese (Guest)





MA

M. Alexeev (Guest)





MG


Marco Giacalone (Guest)





MR

Marta Ruspa (Guest)







Michela Chiosso





MO

Mikhail Osipenko (Guest)





NR


Nicola Rubini





RD


Raffaella De Vita (Guest)







roberto.preghenella@bo.infn.it







Rosario Turrisi





SF

Salvatore Fazio (Guest)





SM

Saverio Minutoli (Guest)





s

shyam (Guest)



U

Urciuoli (Guest)



+ Andrea Bressan (10-11)

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# Letter accompanying factual corrections to the DPAP report draft

SdT@IB meeting 17 March

We take the opportunity to convey, in this cover letter, concerns and disappointments about the overall report, which affects a major part of the community in a negative fashion.

In response to a specific element in the Call for Collaboration Proposals, namely "A collaboration roster and structure," ATHENA has formed an open collaboration and provided its roster and structure. Section 2.5 of the report appears to penalize a worked-out response to this element of the charge.

The DPAP draft report version 3.2 ignores specific criteria stated in the Call for Collaboration Proposals. We are particularly concerned that the collaboration strength and the potential upgrade paths are not addressed, since these were important design considerations in developing the ATHENA concept and collaboration.

The report recognizes in section "Common Risks and Challenges" that the highest risk is associated with the development of the MAPS and the ASICs for the AC-LGAD sensors, common to all three Proposals. This is not reflected in the section "Conclusions" and we are astonished to see the apparent strong focus on subdominant risk factors to favor one proposal over another.

The statements about the number of technologies and new ASICs are qualitative, where quantitative statements would prevent ambiguity and misinterpretation, in particular in assessing risk. ATHENA has three detector technologies not present in ECCE, namely imaging calorimetry by AstroPix, Micromegas, and GEMs. All MPGDs use the same ASIC. In short, ATHENA has one single ASIC more than ECCE, namely, the already developed monolithic sensor AstroPix.

Likewise, the statements comparing detector costs are qualitative where a quantitative statement in equal-year dollars combined with an assessment of uncertainty of the estimates would have been helpful to us in providing valuable insight into the Panel's criterium.

In view of the Panel's finding that "none of the three proto-collaborations is yet large enough or strong enough for successful development of a detector for Day 1 of the EIC," we kindly request to rephrase section 6, "Recommendations", to provide the community with a welcoming path forward towards realizing detector 1.



ATHENA IB meeting, March 17th, 2022

ore

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## Perspectives on Detector-2

- ❑ The EIC Project will work together with the EIC user group to realize a **2<sup>nd</sup> IR and 2<sup>nd</sup> Detector**
- ❑ The definition of the Project Detector will aid the design of a complementary 2<sup>nd</sup> Detector
  - 2<sup>nd</sup> IR design will be not too different to 1<sup>st</sup> IR
    - same luminosity
    - crossing angle < 35 mrad
    - include secondary focus → detect forward particles with close to zero  $p_t$
  - design of 2<sup>nd</sup> IR can provide access to new physics capabilities
- ❑ First priority is to define a generic R&D program addressing new technologies desired for a 2<sup>nd</sup> detector
- ❑ **Timeline is uncertain but support is strong**
  - Yellow Report
  - Detector Proposal Advisory Panel
  - DOE
- ❑ EIC Project will work to establish a path forward for a **2<sup>nd</sup> IR and 2<sup>nd</sup> Detector**

Jim Yeck@IB meeting 17 March