

# JENAA

Joint ECFA-NuPECC-APPEC Activities



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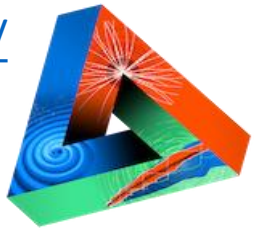
**A**

Karl Jakobs, Patricia Conde Muino | ECFA

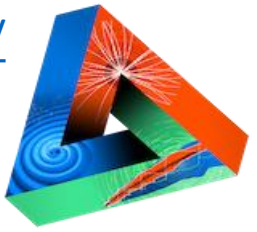
Marek Lewitowicz, Sissy Körner | NuPECC

**Andreas Haungs**, Katharina Henjes-Kunst | APPEC

September 1, 2023 | **iDMEu Town Hall at TAUP (Vienna) and online**



- Cooperation of nuclear, particle and astroparticle physics communities, represented by the three committees / consortia ECFA, NuPECC, APPEC
  - On purely volunteering basis
  - **Joint Seminars**
    - last: 3-6 May 2022 in Madrid <https://indico.cern.ch/event/1040535/>
    - next: early 2025
  - **Expression of Interest Topics**
    - To explore topical synergies between our disciplines,
    - Support and moderate financial support by the ENA committees
  - **Working Groups**
    - Diversity Charter
    - Recognition working group
    - Computing working group
  - **Mutual contribution to the roadmapping**
    - NuPECC long range plan <https://indico.ph.tum.de/category/61/>
    - ECFA Detector R&D Roadmap (discussion at this workshop)
    - APPEC midterm roadmap evaluation



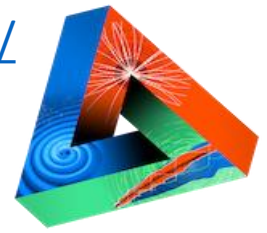
## Expression of Interests (EoI)

1. Dark Matter - iDMEu (<https://indico.cern.ch/event/869195/overview>)
2. Gravitational Waves for fundamental physics (<https://agenda.infn.it/event/22947/overview>)
3. Machine-Learning Optimized Design of Experiments - MODE (<https://mode-collaboration.github.io>)
4. Nuclear Physics at the LHC (<https://indico.ph.tum.de/event/4492/>)
5. EDM - Search of Charged-Particle Electric Dipole Moments (<https://indico.ph.tum.de/event/4482/>)
6. Synergies of EIC with LHC - EIC; kick-off happened in June 2022 <https://indico.ph.tum.de/event/7004/>
7. Request on new EoI (2023): Machine learning as analysis tool (Sascha Caron, NIKHEF)

- **Very good presentations at JENASymposium 2022**
- **Discussions on status, plans, requests and schedule for 2023 in mid January**
  - ➔ **all are validated as community overarching networks**

# JENA Computing Workshop

<http://nupecc.org/jenaa/>



- JENA Computing Workshop in Bologna: 12-14 June 2023
- <https://agenda.infn.it/event/34738/>
- Motivation: JENAS 2022 → There is a need for a European Workshop on (federated) Computing! → Preparation for JENAS 2025
- 60-70 participants plus up to 25 online
- Topics were all aspects of (federated) computing by talks, round table discussions, initiation of the JENA computing working group, ...
- Covering computing, HPC vs. HTC, software, data management, open data, sustainability

## JENA Computing Workshop

12 Jun 2023, 12:00 → 14 Jun 2023, 18:00 Europe/Rome

Auditorium Biagi (Biblioteca Salaborsa)


Andreas Haungs (Karlsruhe Institute of Technology), Claudio Grandi (Istituto Nazionale di Fisica Nucleare), Luca Dell'Agnello (Istituto Nazionale di Fisica Nucleare)

**Description**


ECFA European Committee for Future Accelerators

NuPECC

APPEC

 **JENAA**  
Joint ECFA-NuPECC-APPEC Activities

To be held as in-person meeting in Bologna, Italy.



**Motivation**

At the Joint ECFA-NuPECC-APPEC (JENA) Seminar in May 2022 in Madrid (<https://indico.cern.ch/event/1040535/>), both the plenary presentations and the closed session of funding agency representatives revealed that there is an increased need for discussions on the strategy and implementation of European federated computing at future large-scale research facilities.



# JENA Computing Workshop

<http://nupecc.org/jenaa/>

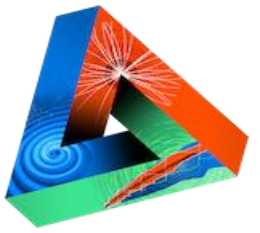


## • Results:

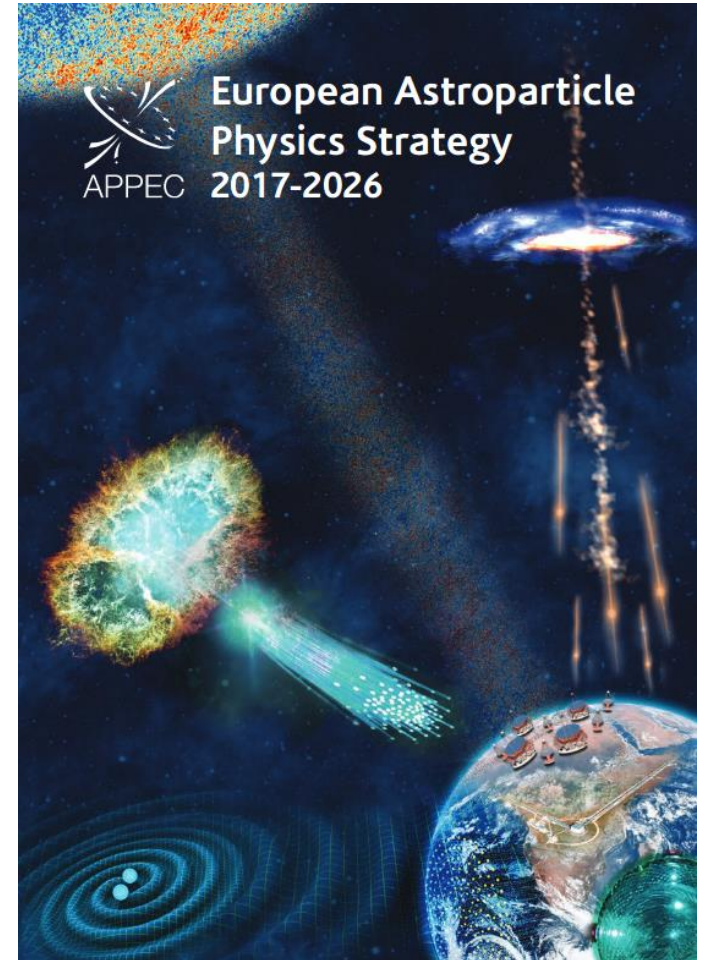
- Preparation of a white paper “JENA Computing” as input for the next JENA Symposium (in particular for discussion with funding agencies)
- Dedicated working groups (to look deeper) on five areas:
  - HPC integration in the HTC federated infrastructures
  - Software and Heterogeneous Architectures
  - Federate Data Management, Virtual Research Environments and FAIR/Open Data (with ESCAPE)
  - Machine Learning and Artificial Intelligence
  - Training, Dissemination, Education.
- Next:
  - Searching for participation in the working groups
  - Contact ESCAPE
  - Dedicated meetings



# Midterm Evaluation of the APPEC Roadmap



- A resource aware roadmap
- Preparation of the roadmap update through midterm evaluation process (2021-23)
  - Direct Dark Matter working group
  - Double Beta Decay APPEC Sub-Committee
  - Multi-Messenger Workshop Series
  - Underground-Lab Cooperation
  - Town Meeting in spring 2022 (Berlin)
- Identify developments and new topics
- Update the roadmap
- Publication of “European Astroparticle Physics Strategy 2017-2026 Mid-Term Update” in next weeks





# APPEC Flagship Research Infrastructures

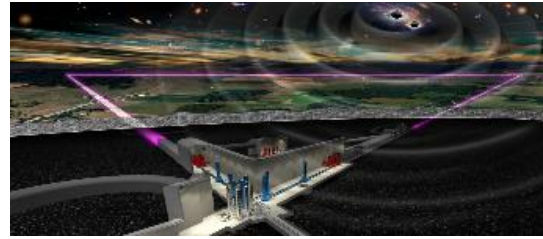
This is not a closed, but dynamic list...

[construction KM3NeT 2020-2026; IceCube-Gen2]



ESFRI

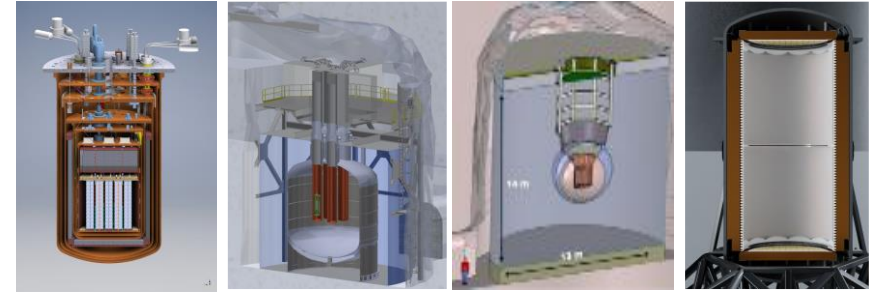
HE Neutrinos



ESFRI

[construction Einstein Telescope 2026- ]

Gravitational Waves



[construction LEGEND-1000 / nEXO 2023- ; ... ]

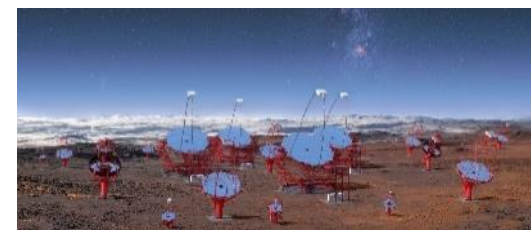
Neutrino Properties

[construction AugerPrime 2019-2023]



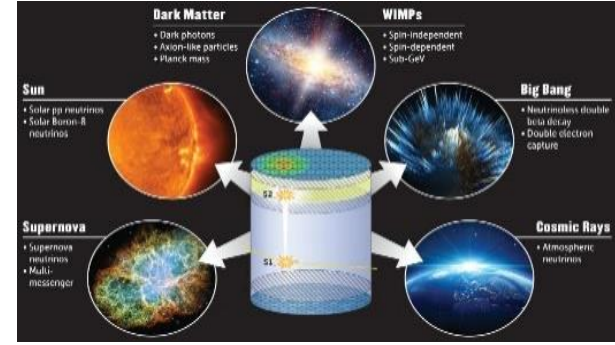
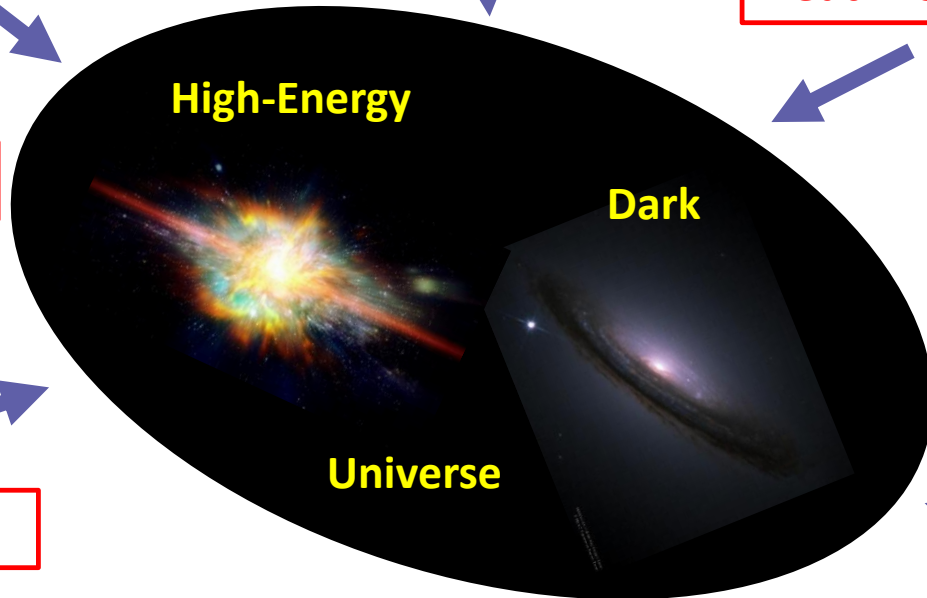
HE Cosmic Rays

[construction CTA 2021- ]



ESFRI

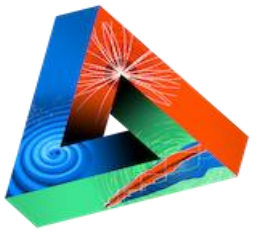
HE Gamma Rays



[construction DARWIN 2024- ; XLZD, ARGO, ... ]

Dark Matter

# Excerpts from Roadmap Updates



## WIMP DARK MATTER

### RECOMMENDATIONS:

*APPEC strongly supports the European leadership role in Dark Matter direct detection, underpinned by the pioneering LNGS programme, to realise at least one next-generation xenon (order 50 tons) and one argon (order 300 tons) detector, respectively, of which at least one should be situated in Europe. APPEC strongly encourages detector R&D to reach down to the neutrino floor on the shortest possible time scale for WIMP searches for the widest possible mass range.*

## AXIONS, ALPS AND OTHER NON-WIMP DARK MATTER

### RECOMMENDATIONS:

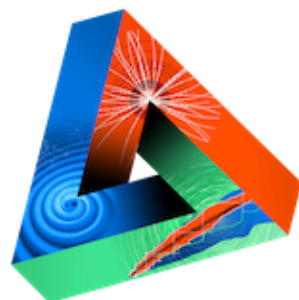
*APPEC supports the unique European-led efforts for axions and ALPs detection in mass ranges complementary to the established cavity approach. APPEC encourages R&D efforts to improve experimental sensitivity and extend the accessible mass range.*

## CENTRAL INFRASTRUCTURES

### RECOMMENDATIONS:

*APPEC strongly encourages the European Underground Laboratories to maintain, and expand when necessary, their ability to facilitate low background experiments. APPEC encourages the European Underground Laboratories involved in astroparticle physics to establish a Virtual Coordination Office that establishes robust cooperation in key services and support for experiments, coordinates future investments in deep underground infrastructures and establishes a trans-national access policy.*





# JENAA

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**We thank iDMEu for the EoI-initiative  
and wish good luck and success for the  
workshop and future activities!**

