



African Strategy for Fundamental and Applied Physics



Web site: <https://africanphysicsstrategy.org/>, Twitter: [@StrategyAsfap](https://twitter.com/StrategyAsfap) LinkedIn: #ASFAP

Pan-African Physics Roadmap — Community Discussion — 19 October 2021

Dr. Fairouz Malek
CNRS and Grenoble University, France



Strategy processes – by examples



ESPP

The European Strategy for Particle Physics is the **cornerstone of Europe’s decision-making** process for the long-term future of the field. **Mandated** by the CERN Council, it is **formed through a broad consultation of the grass-roots** particle physics community, it actively solicits the **opinions of physicists from around the world**, and it is developed in close coordination with similar processes in the US and Japan in order to ensure coordination between regions and optimal use of resources globally.

Publications: [The deliberate document in 2020](#), [Physics Briefing book 2013](#), [Europe Looks forward 2006](#) .



SNOWMASS

The Particle Physics Community Planning Exercise (a.k.a. “Snowmass”) is organized by the Division of Particles and Fields (DPF) of the **American Physical Society**. Snowmass is a scientific study. It provides an opportunity for the entire particle physics community to come together to identify and document a **scientific vision for the future of particle physics in the U.S.** and its international partners. Snowmass will define the most important questions for the field of particle physics and identify promising opportunities to address them. The Particle Physics Project Prioritization Panel, will take the scientific input from Snowmass and develop a **strategic plan** for U.S. particle physics that **can be executed over a 10 year timescale**, in the context of a **20-year global vision for the field**.



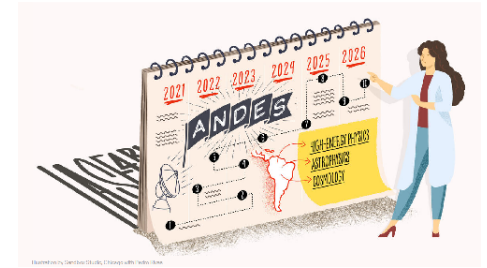
Strategy processes – by examples



LASF4I

Latin American physicists **began brainstorming** what might go into a formal regional strategy—**inspired** by the longer-term plans developed for Europe and the United States—at professional conferences going **back to 2016**. And in early 2019, [LASF4RI held its first workshops to create such a plan](#). Through extensive consultation and meetings, the team worked with physicists across disciplines to come up with the final recommendations. The preparatory group reached out to scientific societies, gathered [white papers](#), and then submitted a draft report to a high-level review by scientists outside the preparatory group. The LASF4RI group [finalized their report](#) in **November 2020**.

The final report contains 10 recommendations, beginning with a **push for continued** support of current and future projects in cosmology and astrophysics, ranging from those already in those **planned** for the near-term to those planned for **start-up more than a decade from now**—such as the South American Gravitational-Wave Observatory.



The authors presented **their recommendations to government** officials and leaders of funding agencies in Latin America on October 27, **2020**. Afterward, the officials at the fourth Iberoamerican **Science and Technology Ministerial Meeting** [issued a declaration](#). **The declaration provides national and international validation for the work of local scientists, labs and universities.**



Strategy processes – The Stake holders



Space Agencies



Organisations, Institutions, Academies



Funding Agencies and Governments



Strategy processes – The scientific communities



Organisations, Institutions, Academies



Sub structures, collaborations, projects, individuals, learned societies, ...

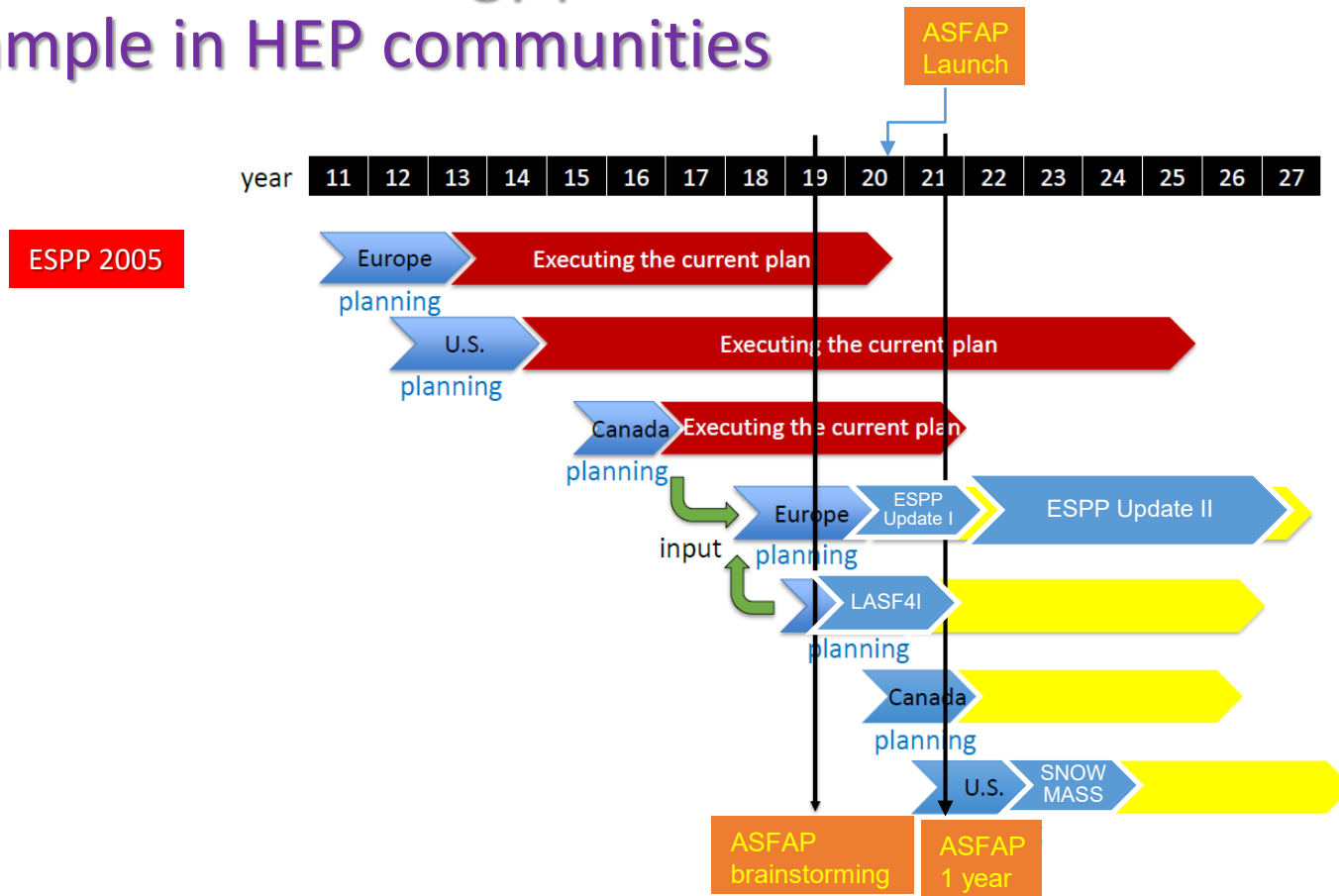


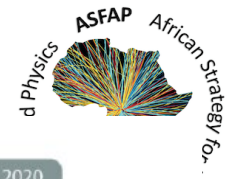
Universities, Labs, Institutions, individual scientists, students,



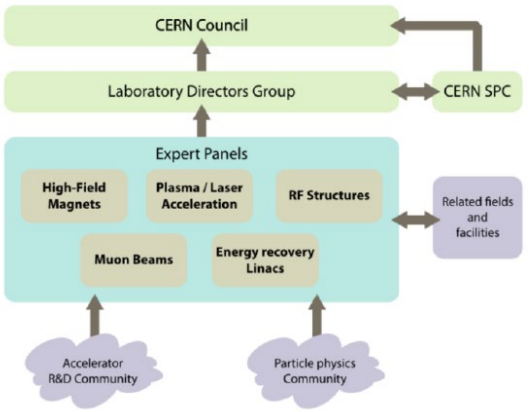
Lifetime of a strategy process

Example in HEP communities





See also [ECFA NewsLetter #7](#)



The plans will describe in detail a , **five-to-ten-year timeline**, and will explicitly seek to address the following questions over the course of the next two **ESPP** updates:

- What R&D needs to be done towards future facilities? What are the priorities?
- How long might it take? What is the fastest technically limited schedule?
- How much will it cost?
- What different options and trade-offs exist?
- What are the linkages between activities?
- What science can be done using demonstrators, or intermediate-scale facilities?

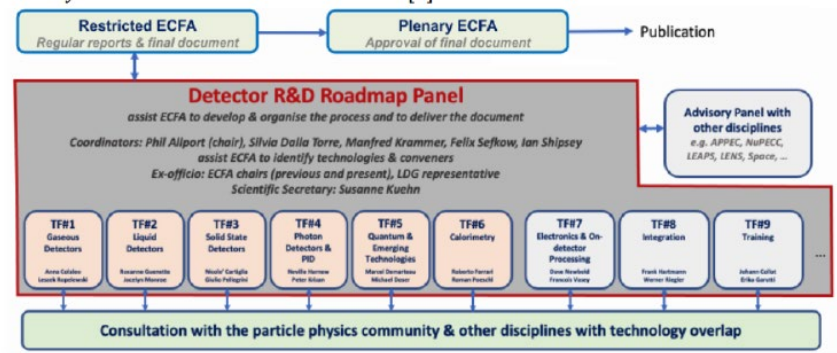


Figure 1: Organisation of the ECFA Detector Roadmap Process Group

Any planning in Africa ?

African Union 



African Space Strategy

For Social, Political and Economic Integration

STISA-2024



SCIENCE, TECHNOLOGY AND INNOVATION STRATEGY FOR AFRICA 2024



CONTINENTAL EDUCATION STRATEGY FOR AFRICA

2016 – 2025



AUDA-NEPAD

AFRICAN UNION DEVELOPMENT AGENCY



The African Academy of Sciences

African Union 



<https://au.int/en>

Pan-African Physics Roadmap—Community Discussion 19
October 2021

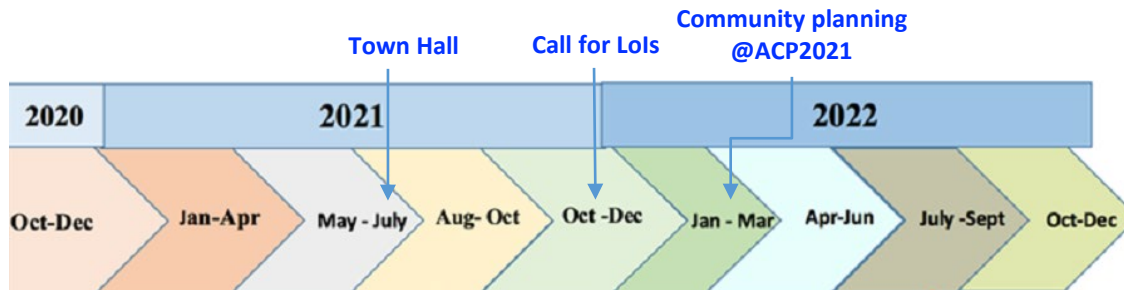
The ASFAP project



The ASFAP Project and the Timeline

- Will develop a Strategy to increase African education and research capabilities
- Engage African scientists and the international community in the Strategy development;
- African Strategy aims to set the foundation and framework to draw the participation of African physicists —with inputs from the international communities—in defining education and physics priorities most impactful for Africa;
- The process will take few years, to end with the release of the **strategy report** which will suggest the **direction, with actionable items for the next decade**. To be repeated periodically, every 7-10 years for the following decades with a review of the impact of previous Strategies.

- Co-founding and launch of the Steering Committee, June 2020
- Official Launch of ASFAP Nov. 18th, 2020.
- Town-Hall, July 2021
- Call for Lols, September 2021



Support and Endorsement



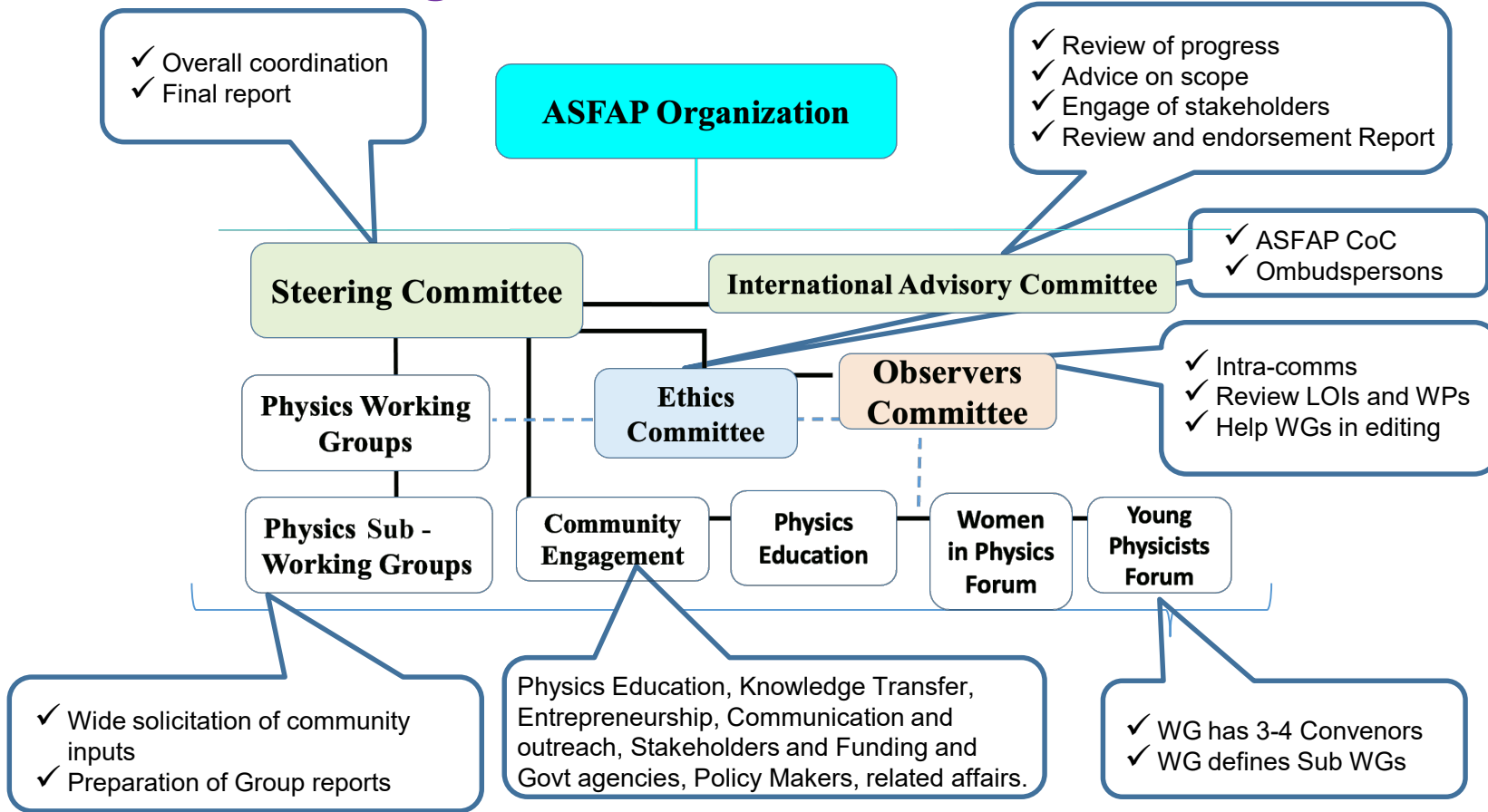
science
& technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA



IOP Institute of Physics



Structure and Organization



ASFAP Working Groups



Physics Groups

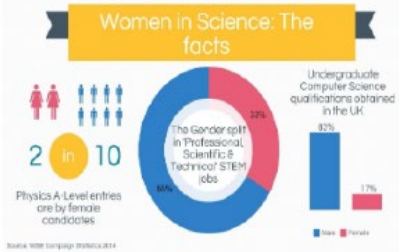
- [Accelerators](#)
- [Astrophysics & Cosmology](#)
- [Atomic & Molecular Physics](#)
- [Biophysics](#)
- [Computing & 4IR](#)
- [Earth Science](#)
- [Energy](#)
- [Fluid and Plasma](#)
- [Instrumentation & Detectors](#)
- [Light Sources](#)
- [Condensed Matter & Materials Physics](#)
- [Medical Physics](#)
- [Nuclear Physics](#)
- [Particle Physics](#)
- [Optics and Photonics](#)
- [Complex Systems](#)

ENGAGEMENT

- [Community Engagement](#)
- [Observers](#)
- [Ethics](#)
- [Physics Education](#)
- [Women in Physics Forum](#)
- [Young Physicists Forum](#)



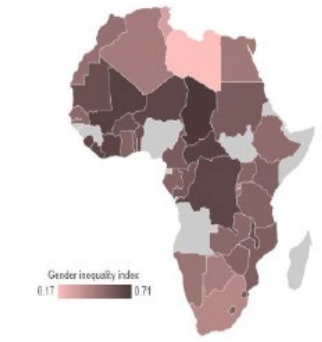
July 2021 Town-Hall



THE UNDERREPRESENTATION OF WOMEN THROUGHOUT THE SCIENTIFIC CAREER



Large scale emigration with technical skill and knowledge



Source: UNDP, Human Development Reports 2017.

Publications included in the collage:

- Science and Technology in Africa
- Science and Technology in Africa
- African Science Education: Gendering Indigenous Knowledge in Nigeria
- Scientific African Magazine
- Science and Society in Southern Africa
- African Earth Sciences
- Brain Drain Hurts Africa
- Good friends look out for each other
- East African Contributions to Science and Technology
- Scientific African
- Diaspora for Development in Africa
- Science Africa and Europe
- Science Communication in South Africa
- Gender, Science and Technology: Perspectives from Africa
- Advancing Research Methodology in the African Context
- Encyclopedia of the African Diaspora
- Brain Drain
- Unemployment up 5.4% in Q3
- Immigrants

Gini Godbole, Gihan Kamel, Amol Dighe, Ahmadou Wague, Jamal Mimouni
 Fairouz Malec, Shamila Nair-Bedouelle, Farida Fassi, Peter Jerri, Ketevi Adike Assamagan
 SARAH ANYANG AGBOR, Rob Adam, Raissa, Paul Gueye (He/Him/His), Tjaart Krüger
 Norbert Houankponou, Daniel Ayuk Mbi Egbe, Marie Clémentine Nibamure..., Azwindini Muronga, Khalid Berrada
 Stéphane Kenmo, Milohum Mikosoko Dzani, Simon Goniwe, Shaaban Khalil, Lerothodi Leeuw

Pan-African Physics Roadmap - Community Discussion

19 October 2021

Call for Lols: Who and How?



- ✓ **Who can ?**: Everyone interested in the strategy process, regardless their nationality and the place where they live; ASFAP community
- ✓ **Who are invited?** Science Communities (Learned Societies, Science academies), Organisms (IUPAP, ICTP, UNESCO, ...), Universities, Labs, Institutions, Foundations, Collaborations, Clubs, Stake Holders, Industries etc.

What to submit ?

- ✓ **Anything which is related to Africa science and technology**
- ✓ Ideas
- ✓ Intentions
- ✓ Official programmes, new or actual initiatives, ...
- ✓ Collaborations, MoUs, ...
- ✓ Activities within the continent or with collaborators in the continent, professionals or amateurs

Which Format ?

- ✓ Title and Abstract → completed further
- ✓ 1 or 2 pages narrative text/images

ASFAP Web site: <https://africanphysicsstrategy.org/> → Calls for community inputs

Or directly here: **<https://indico.cern.ch/event/1061921/>**



ASFAP Lols collection Web site

21 July 2021 to 1 December 2021
Europe/Zurich timezone

- Overview
- Call for Letters of Interest
- Contribution List
- Book of Letters of Interest
- Steering Committee
- ✉ asfap-steeringcommitte...






Please follow the Call for Letters of Interest to submit your LOI. The letters of Interest should be 2 pages or less, including author list with affiliations, and references. The format is free style; however, a pdf file should be prepared and uploaded as attachment; in the "Content" field, simply mention that your LOI is in the attached file. Alternatively, you may type your LOI in the "Content" field and skip the attachment (least preferred option). Please take a look at the samples of LOIs on this page.

You will need to login to submit your Letter of Interest. If you don't have a CERN account, there are 2 options:


1. Scroll down the login page for the option to login with your Facebook, google, etc., credentials;
2. **Register your email by filling in this form**
<https://account.cern.ch/account/Externals/RegisterAccount.aspx>
3. **Submit your Letter of Interest by clicking on "Submit new abstract"**

 **Starts** 21 Jul 2021, 02:00
Ends 1 Dec 2021, 00:59
Europe/Zurich

 Fairouz Malek
Farida Fassi
Ketevi Adikle Assamagan
Shaaban Khalil Ibrahim
Simon Connell

-  **Samples of Letters of Interest** 
-  LOI-fromCondensedMatter-MaterialsPhy...
 -  LOI-fromEnergyWG-ASFAP
 -  SNOWMASS21-CommF3_CommF0-TF0...

Few samples as examples on how to edit an LOI.

 **The call for abstracts is open**
You can submit an abstract for reviewing.

Submit new abstract

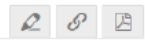
Submit an LOI

Submitted Lols



Unique Research Facilities at the SSC Laboratory in South Africa

Not scheduled
20m



or Fundamental and Applied Physics
:otron (SSC) Laboratory as well as its
:ong Range Plan which plays a promine
ontinent. We believe, that this Letter of
Nuclear Physics, Medical Physics,

all as radiation biophysics take place
disciplinary accelerator facility in the
: research infrastructure has been
tion mandates in close collaboration
rs and collaborators and is the
uth African Isotope Facility (SAIF) is a
cyclotron which will become
a to the 70 MeV cyclotron. This will

Some examples of Lols?

4. African Graphene Flagship Letter of Intent

Abstract
Graphene, discovered in 2004, is considered as the wonder nanomaterial with astonishing properties marked the condensed matter and Materials Physics. This layer of one atom thick has revolutionized

15. Astro-particle and cosmology potential in the Underground of Africa

There are signals from the Universe that one can detect by performing experiments which are not the and not even located in space or at large observatories on Earth. Some of these signals can address

The Importance of the financial and technical support for the improvement of Cosmology in Cameroon and in Africa

Not scheduled
20m

Description

the details of my letter is in the attachment.

Primary Category Astrophysics & Cosmology

Primary author

Ragil NDONGMO (University of Yaounde...)

16. My vision for Physics in Africa

My contribution will be on several points:
1. Physics education

14. Observational astronomy in North Africa

In this letter of Interest, we would like to address the opportunity for North African countries to build and lead a series of local observatories and/or one large facility. In doing so, they can address the needs of science and society such as building trades, ecology, technology and industry.

18. Physics Energy Improvement and Application for New Africa

Letter of Interest Diouma KOBOR

My vision for Physics in Africa

Not scheduled
20m

Description

My contribution will be on several points:

1. Physics education
There are several challenges surrounding the teaching of Physics, the first being the lack of infrastructure - needed to put students and staff in good working conditions. Governments need to invest massively in education.

In order to draw a good vision, there is need to establish a discussion/collaboration with all ministries involved: Higher, Secondary and Tertiary Education.

African Graphene Flagship Letter of Intent

Not scheduled
20m

Description

Abstract
Graphene, discovered in 2004, is considered as the wonder nanomaterial with astonishing properties which deeply marked the condensed matter and Materials Physics. This layer of one atom thick has revolutionized the nanotechnology and stimulated a race in the global market to dominate the emerging high-tech applications based on this material and its derivatives. In the context of this race, the European Union research council mounted a large action named EU Graphene Flagship, with budget of €1 billion, to take graphene from the realm of the academic research to industry. We propose to build an African Graphene Flagship gathering academic laboratories, industrial, and NGO. We also suggest that South Africa coordinates this flagship regarding its large expertise in graphene like materials.

Primary Category Condensed Matter & Materials Physics



What's next?



- **Sep-Dec 2021** : [Call for Lols](#).
- **March 2022**: gather the community @ACP2021; Progress on White paper studies, Outline of the Strategy report.
- **April - June 2022** : Consultation with IAC & Stakeholders / IAC & Stakeholders feedback.
- **July - September 2022** : White paper study groups finalized , Report matured , Community feedback.
- **October - December 2022**: ASFAP symposium, Community feedback.
-
- **2023**: Final report endorsed by IAC, Report submitted to the AfPS, to the African Academy of Sciences and other Stakeholders in Africa, and distributed widely.



Welcome to ASFAP

WGs guidelines and Code-of conduct



How to contribute ?

- ✓ Submit LOIs
- ✓ Participate in White Paper study groups
- ✓ Participate in (sub)group meetings
- ✓ Encourage your research groups to get involved
- ✓ Encourage institutional credits for those working on this Strategy
 - For people in leadership roles as (sub)conveners and liaisons
 - White papers aim to be published
 - White paper finding reviewed and referenced in the Strategy report

Contact and inquiries: ASFAP-SteeringCommittee@cern.ch



Back up slides



The ASFAP Strategy process



1-Letters-of-Interest(LOIs)

Letters of Interest (Lols) are informal documents intended to be useful in the first stages of the ASFAP study. They will help ASFAP conveners to prepare the ASFAP Community Planning Meeting that will take place on March 2022. Lols could include opinions, interests and proposals that could further be studied. They should contain a maximum of 2 pages of text, plus relevant bibliography. Lols are submitted to ASFAP by any physicist or group of physicists.

2-White papers

White papers may include documents on specific scientific areas, technical articles presenting new results on relevant physics topics, and reasoned expressions of physics priorities, including those related to community involvement. White papers will remain part of the permanent record of ASFAP. The deadline for the white paper final study is expected fall 2022. Part of all of the white papers will be published.

3-Intermediate and final reports

Intermediate term report should summarize the working group activities.

An annual report on the working group activities as well as the outcome of the reflection on the Strategy should be delivered.

4- The final report is compulsory at the end of the process.



Strategy process -The JENAA activities(within ESPP II)



Initiated by the European Committees for Astroparticle (APPEC), Particle (ECFA) and Nuclear Physics (NuPECC), with common [Expressions of Interest](#) in the following areas:

- Dark Matter (iDMEu)
- Machine-learning Optimized Design of Experiments (MODE)
- Gravitational Waves for fundamental physics
- Nuclear Physics at the LHC
- Storage Rings for the Search of Charged-Particle Electric Dipole Moments

In addition, a new JENAS expression of interest is currently discussed, which would concern the new US-based project, the Electron-Ion Collider.

Work will be ongoing in all of these activities towards a second Joint ECFA-NuPECC-APPEC Seminar (JENAS) that will be held in Madrid from 6 – 8 May 2022.



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Consideration is also being given to **the organisation and governance** of future R&D, where structures must be developed to allow proper approval, scrutiny and monitoring of proposed new developments, whilst maintaining freedom for individual institutes and collaborations to retain, flexibility and undertake “blue-skies” exploration of new ideas.



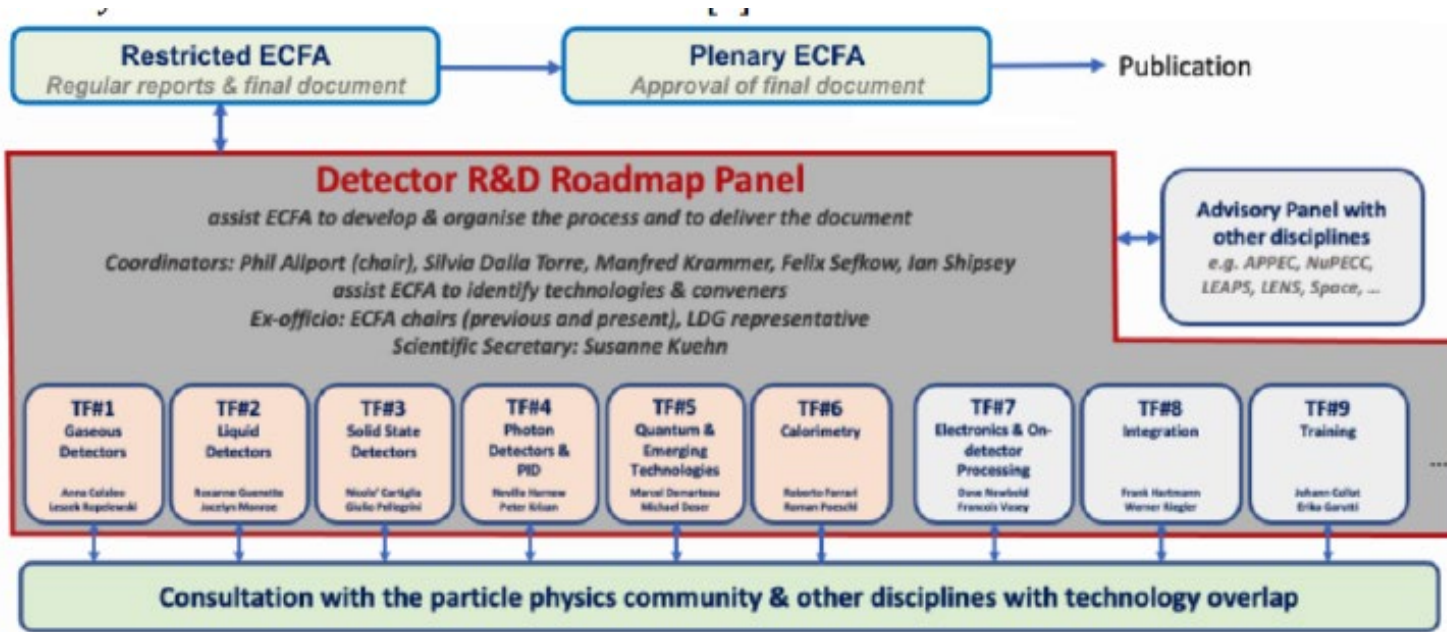


Figure 1: Organisation of the ECFA Detector Roadmap Process Group