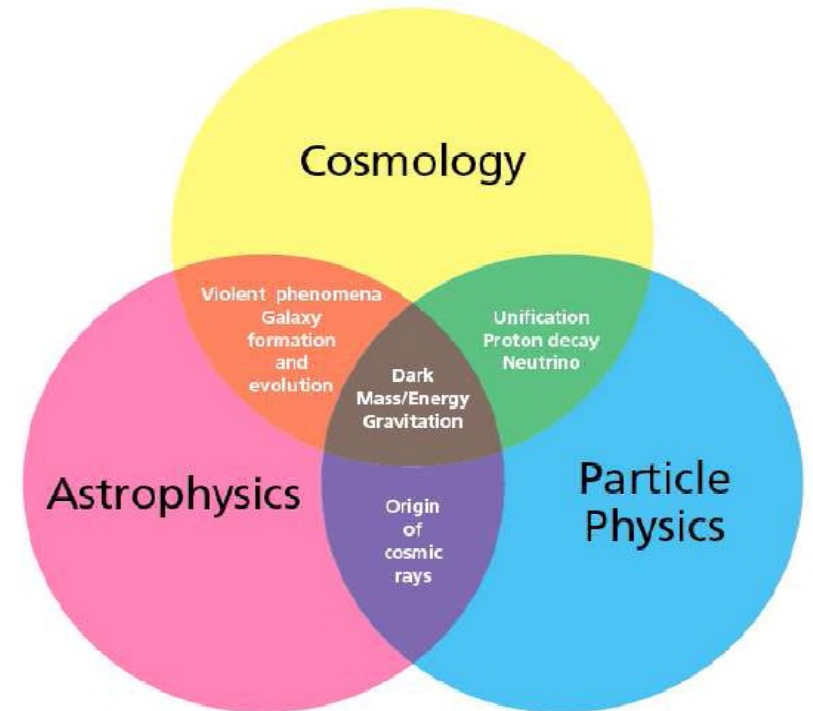


ApPEC (Astroparticle Physics European Consortium) report

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ApPEC committees:
General Assembly (GA, Swiss members T.Maillard & TM),
Scientific Advisory Committee (SAC, Swiss member L. Baudis) and
Joint Secretariat (JS).



Dark Matter	Dark Energy	Neutrino Properties	Neutrino Mass	Cosmic rays	High-Energy Photons	Ultra-High Energy neutrinos	Gravitational waves	Theory
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<http://www.appec.org/> (new portal recently finalized)

General Assembly Meeting Minutes and my notes in
http://www.chipp.ch/chipp_appec.html

ApPEC Consortium

- 13 countries, 17 funding agencies

CEA & CNRS – France

DESY & KIT – Germany

FRS-FNRS & FWO – Belgium

FOM – The Netherlands

IFIN-HH – Romania

INFN – Italy

LSC – Spain

DIAS/RIA – Ireland

SNSF – Switzerland

STFC – United Kingdom

VR - Sweden

Dealing with withdrawal of CSF - Croatia
and NCN – Poland.

- Not yet good news about new partners (Portugal, Finland, Austria, Czech Republic)
- Observers in GA: JINR, ESO, ECFA (and vice-versa), **CERN**

ApPEC promoted Relevant Meetings

- **GA Meetings:**
 - Paris Jan 9, 2015: new chair: **Franck Linde, Nikhef**; Thomas Bergoefter (DESY) confirmed Jun. 22, 2015 Amsterdam.
- **SAC Meetings (Chair A. Masiero, INFN):**
 - May 2015 and proposed joint meeting with GA to discuss roadmap in **Nov. 2015**.
- **6 x Joint Secretariat Meetings/yr: next in Croatia on Oct.1, 2015?**
- **2nd Int. Meeting on Large Neutrino Infrastructures, Fermilab, 20-21 Apr. 2015**
- Technology forum: 22-23 Apr. 2015, Munich
(<https://indico.desy.de/conferenceDisplay.py?confId=11275>)
- **Technology vision meeting in Spring 2016**
- Cosmology Workshop: 31 Aug-1 Sep. 2015, Florence
- Interdisciplinary meeting ApP - geoscience, Paris Nov 2015
- **Town meeting to discuss the first proposal of Roadmap, Paris Jan 2016**

Press release on Neutrino Meeting

(<https://indico.cern.ch/event/356320/>)

- FA impressed by the rapidity, quality of convergence and momentum of the efforts of the community working on LAr TPCs, to develop a credible scientific program based on:
 - a) a long-baseline beam and detector project (LBNF/DUNE) hosted at Fermilab and SURF, ... proposed by an international collaboration, very rapidly setting up its governance structure...
Preparing for DOE CDR in Jul. and Nov. 2015;
 - b) a medium-scale program of short-baseline oscillation experiments at Fermilab (Near Detector, MicroBoone and ICARUS) to test sterile neutrino;
 - c) R&D at CERN North Area, related to the above program and Hyper-Kamiokande.
- LBNF/DUNE collaboration; agency oversight bodies: the Long-baseline Neutrino Committee (LBNC), the Resource Review Board (RRB) and an Int. Advisory Committee (IAC).
- Good progress by PINGU and ORCA and encouragement for their further coordination actions.
- Coordination on selection of technology for future NDBD (order of 100 M)

Further topics discussed at GA

- Some countries, such as Germany have only an ApP neutrino program. Their concern, expressed at GA Meeting, is that ApPEC should mostly focus on the 'ApP part' of neutrinos but not the accelerator one. In other countries, the involvement is on both sides. CH representative impression is that we need to be careful of making prominent also the ApP program of the Fermilab program.
- The Chair of the SAC received a letter by ESSvSB on this being a process of interest for ApPEC. The progress to understand the feasibility of a 5 MW proton beam power pulsed at 70 Hz onto a 4-target station for the production of neutrino super beams should be carefully followed up by ApPEC.
- It was remember the effort (eg of INFN and CH) in the SBL program, which is recognized as part of this large effort at FermiLab.
- Past support letters have been followed by many discussions. A procedure was then written down which foresees at least 2 weeks of discussion before approval.
- UK will take over outreach and communications for ApPEC.



- Presentation by M. Nordberg on ATTRACT (<http://www.attract-eu.org>)
- A proposal for a pan-EU initiative for funding of **R&D on Imaging and radiation sensors** involving EU research infrastructures, small and medium enterprises (SMEs) mainly.
- The target is to develop the next generation of scientific instruments (order of 100 proposals funded order of 100'000 Euro at first stage and 10 selected for second stage with the aim to make ATTRACT self-sustainable.
- Proposed research programs have to be as open access as possible.
- We can send proposals for members of :
 1. potential APPEC/SAC members;
 2. potential senior for the ATTRACT advisory/high-level board
 3. next: people for the evaluation board of ATTRACT proposals.

See M. Nessi's talk

First Common Call proposal

- Is CH interested in Common Calls? Past experience with 2/3 ASPERA calls very positive (Gerda (?), CTA 474 kCHF and 431 kCHF for DBND)
- LBNF/Dune (make it more general on topic - neutrino oscillations?)
- ground based measurements of CMB (not particularly appealing for CH?)

Strategy towards new Roadmap (2016-2020)

- The Roadmap is not a binding doc for FA but sets actions to facilitate convergence.
- The Roadmap will include an Executive Summary and a **Strategy Statement** including recommendations that will be produced only after hearing the **community at the town meeting (bottom-up approach)**.
- Aim to present it in **Spring 2016** (many criticized time is too short for FA feedback)
- Roadmap document will have 7 chapters:
 1. Introduction (SAC)
 2. Core Chapter (SAC)
 3. Theory, Computing and **Detectors R&D (TM & T.Berghoeffer)** (SAC)
 4. EU Astroparticle Community (APPEC-GA)
 5. Global Aspects (APPEC-GA + SAC))
 6. Society Impact (APPEC-GA)
 7. Inter-disciplinary Aspects (APPEC-GA)

Roadmap Schedule:

Oct. : SAC provides its chapters to GA.

Nov: GA provides Exec summary to SAC

mid-Dec: distribution

mid-Jan: town meeting after which Strategy is written.

First principles formulated by SAC in accordance with GA

Identified 3 major areas:

- A) Multi-messenger study of the High-Energy Universe,
- B) neutrino properties
- C) dark side of the universe and CMB.

In the next 3 years **the APPEC agencies will need to take decisions in coordination with its global partners**, as well as with nearby fields, e.g. particle physics national and international laboratories (CERN, FNAL, KEK and JPARC) on:

- a) the construction of the phase 1.5 of KM3Net;
- b) a **major investment as a contribution to a neutrino LBL program in US or Japan;**
- c) a **European-led multi-ton DM experiment**
- d) a ton-scale neutrino mass detector (double beta decay technique)
- e) a major contribution on ground and/or space to the cosmology program probing the parameters of inflation.

Three crucial ingredients are

- 1) intense theoretical activity with large integration with experimental activities (PACT...),
- 2) innovative R&D
- 3) modern computing

Roadmap (2015-2020) Goals

Resource-awareness of the roadmap: APPEC GA will produce a reasonable table including not only the construction, but also the exploitation and running of the research infrastructures. First exercise by SAC:

In ME	2015-2020	2021-2025	2020-2030 optional	Comment
Gravitational wave antennas	50	50	150	ET in case of detection
Underground labs operation	50	50	0	
CTA	120	30	0	
KM3NET	75	25	130	KM3Net phase-2
ICECUBE	10	15	0	
AUGER and UHECR	15	15	120	For global CR observatories (EUSO, GCRO)
LBL+SBL	50	150	100	2025-2030 continue LBNF construction
Double-beta	30	30	20	
Dark matter	30	30	20	
Dark energy	10	10		
CMB	10	10		
Total/year	75	83		

To improve it FA in GA **will be requested to fill in a survey** (draft in <http://www.nikhef.nl/tmpfiles/kees/appec-survey/> usrn = appec pwd = 2015appec)
Also numbers on Gender monitoring will be requested (not included in CHIPP tables), these will also be requested by GENERA H2020 program.

Other topics at last GA meeting

Each meeting will include presentation of hosting lab. This time:

Nikhef (new director Stan Bentvelsen) :

70-80% of the lab is in LHC but in the last years most of the engineer time was taken by ApP experiments. The situation will change soon.

About 100 PhD students and GRAPPA program to foster innovation.

KM3NeT DOM and Advanced Virgo labs visits.

After activities in Virgo the spin-off
INNOSEIS was created:

<http://www.innoseis.com/> (wireless
seismic sensor network, seismic
exploration, sensor calibration,...)



H2020 activities by ApPEC

- ApPEC has been very proactive in organizing and promoting H2020 activities. Nonetheless **ApP has not been very successful in H2020. New H2020 meeting in Nov 2015.**
- GENERA Gender Equality Network in the European Research Area: **3.3M granted**, UniGE and SNF (observer)
- Astronomy ESFRI and Research Infrastructure Cluster - **ASTERICS** (INFRADEV-4-2015): SKA, **CTA (32%)**, KM3NeT & E-ELT. **15MEuro granted**. Switzerland not included (submission before Sep. 15., 2015) **The absence of Switzerland indicates the need of an important initiative at country level for ASTRO BIG DATA.**
- **INFRADEV-3-2015**: CTA for site preparation, granted 4.3MEuro.
- **INFRADEV-1-2014** For ApP **DARWIN** and underground lab network not granted.
- EUropean THeoretical particle Astrophysics and Cosmology fellows Association - **EUTHACA Marie Curie Action - COFUND**: coordinator S. Katsanevas, **not granted, being resubmitted with P. Binétruy as coordinator**. 27 partners including UniGE (TM and A. Riotto).

- UniMes (MSCA-ITN-2015-ETN) **withdrawn, resubmission being prepared.** UniMes aims to structure the research and education in this interdisciplinary field at the European level and will train the new generation of young scientists to optimally exploit the current and future generation of observatories and large infrastructures. Coordinator: G. Sigl, Hamburg, 14 institutions including UniGE DPNC and ISDC and 3.8M.
- LSD Roadmap - A roadmap for the ultimate low Light-level Sensor Development Future and Emerging Technologies, FET Exchange, withdrawn with high rank to DESY, resubmitted (DESY-UNIGE)
- FET-OPEN 2015: **D-LIGHT** new hybrid photosensor of Philips, UniGE, KIT, CEA/in2p3, IdeaSquare (CERN) under works.