



# **Report on ApPEC**

**Maurice Bourquin**

**2010 CHIPP Plenary Meeting**



## Members:

Belgium ([FNRS](#), [FWO](#))

Czech Republic ([MEYS](#)),

France ([IN2P3/CNRS](#), [DSM/CEA](#))

Germany ([BMBF](#))

Greece (Demokritos)

Italy ([INFN](#)),

Poland ([NCBiR](#))

Portugal ([FCT](#))

Romania ([IFIN HH](#))

Spain ([MICINN](#))

The Netherlands ([FOM](#))

Switzerland (CHIPP)

United Kingdom ([STFC](#))

CERN

And candidates (Sweden, Croatia, Slovenia...

**Chair: Maurice Bourquin**

## **AMBITION:**

- To coordinate the decisions and financing of large Astroparticle Physics (ApP) RI with European participation (in Europe and globally)
- To represent ApP and collaborate with international organizations (CERN, ESO, ESA) and other agencies outside Europe (OECD)
- To promote ApP through outreach activities...

- The merit of ApPEC is to have launched four years ago the **ERAnets ASPERA**, now **ASPERA-2** (July 2009-June 2012).
- Switzerland is represented in ASPERA by SNF through support by CHIPP
- **ASPERA** provides, thanks to EC FP7 resources, the possibility to take common concrete actions.

# **Actions accomplished through ASPERA experts:**

- Definition of the field and study of historical emergence
- Survey of community and activities (experiments, R&D)
- Strategic roadmap: “the Magnificent Seven”
- Common call for R&D activities: definition of procedures, funding of first call, evaluation, preparation of second call
- Outreach activities: web site, monthly newsletter, traveling exhibits, events.

**Close collaboration between European agencies**

# The Magnificent Seven

Particle Physics

Astrophysics

Double Beta

Dark Matter

LAGUNA

KM3NeT

Auger

CTA

E.T.

Majorana nature  
nu mass

Cosmology  
SUSY

Proton decay  
nu astronomy  
accelerator beam  
(oscillations)

nu astronomy  
nu oscillations  
indirect DM and  
other exotic particles

Astrophysics  
GZK physics

Astrophys.  
Indirect DM

Test Relativity  
Extreme objects

closer to CERN

closer to ESO

# Results of 1st ASPERA common call for R&D

(SNF: 2 postdoc positions during 3 years)

**The Cherenkov Telescope Array – an advanced facility for ground-based high-energy gamma-ray astronomy (CTA)**

Groups in France, Germany, Poland, Spain and Switzerland work on this project. Funding of €2.4M is provided.

**Design study of a next-generation noble liquid dark matter facility in Europe/ DARWIN (Dark matter Wimp search with Noble liquids)**

Groups in Italy, France, the Netherlands and Switzerland are funded to work on this project at a total cost of €633k.

**European Underground Rare Event Calorimeter Array (EURECA) --  
Preparation of Construction**

Groups in France and Spain work on this project. Funding of €325k is provided.

# Status of second common call

- Topics:
  - *R&D concerning innovative detection methods for high energy cosmic rays*
    - *R&D and design studies for next generation experiments measuring neutrino mass*
- 11 agencies, 3.0 MEuro in common pot
- Swiss contribution: up to 4 PhD positions for 3 years each (Thanks to SNF)
- Deadline for the receipt of proposals: 19th November 2010.
- Contact for Switzerland: [Bernard.Revaz@unige.ch](mailto:Bernard.Revaz@unige.ch)



# Activities in Progress

- Preparation of **ApPEC-CERN work plan** (European Strategy Sessions of CERN Council) :
  - ApPEC's role in Strategy Update (and CERN's role in ApPEC Roadmap update)
  - Common CERN-ApPEC Theory Program
  - CERN/ApPEC common outreach activities
  - Common R&D calls
  - CERN participation in possible future projects in the area of APP (**AMS!**)
  - More formal links between CERN and ApPEC

# Activities in Progress

- Roadmap update through ApPEC Scientific Advisory Committee (SAC)
- ASPERA Technology Forum, dedicated to photosensors and auxiliary electronics (October 21/22 in Munich)
- Workshop on synergies between environmental sciences and ApP: understand the Cosmos, but also Earth environment
- Future of coordination: Objectives are defined  
Structure to be defined for **linking agencies** and provide common support to make the new Research Infrastructures happen.



**From the Geosphere to the Cosmos:**

**Workshop:**

**The Synergies Between Environmental  
Sciences and Astroparticle Physics**

Date: 1 – 2 December 2010

Location: Palais de la Découverte, Paris

**•Past and current interdisciplinary projects between ApP and environmental sciences** *Success stories & lessons learned*

**•Interdisciplinary programmes in the national agencies and national laboratories**

**•Collaborative research in the future ApP infrastructures**



**ASPERA**

**Linking of European Agencies**

**Funding Astroparticle Physics**

Work Package 5, Task 5.5

Deliverable D5.4

23 July 2010

# Conclusion

ApPEC to play a larger role at level of funding agencies, for the scientific community, in the domain of “astroparticle physics”

# OECD GSF – WG on Astroparticle Physics

- **Definition of Astroparticle Physics around 3 questions:** The first question, related to cosmology, concerns the **matter and energy content of the Universe**. The second question, related to astrophysics, concerns the **nature and role of high energy (“violent”) phenomena in the Universe**. The third question, related to particle physics, concerns **the nature of particles and interactions at very high energy scales (rare decays)**. Many interfaces to adjacent fields and synergies with environment and geosciences.
- **The purpose of the science vision** that will come out of the final report is not to prioritize projects, neither recommend specific infrastructures, but make a scientifically reasoned **census of the future science opportunities and needs**, centered on the large projects in the field, evaluate whether a coordination might be useful and the possible modes. Not in a prescriptive mode, but simply identifying opportunities and needs. The report contains a census of the field showing that there are currently 4000 researchers worldwide, with an annual budget of 400 M\$.

# OECD GSF – WG on Astroparticle Physics

- Finally, **the main policy recommendation** emerging by consensus from the group is that governmental funding agencies should consider **establishing a venue** where their senior managers would exchange information about national, regional and global developments, and where they would explore the prospects for joint actions, with special emphasis on large programs and projects.
- **The ApPEC SC supports the draft recommendations.**
- Thanks to SER for Swiss participation