

OECD OECD OECD OECD

# **Astroparticle Physics from the OECD Perspective**

Presentation by Stefan Michalowski, OECD

*ASPERA ad futurum*

Brussels, November 30, 2012

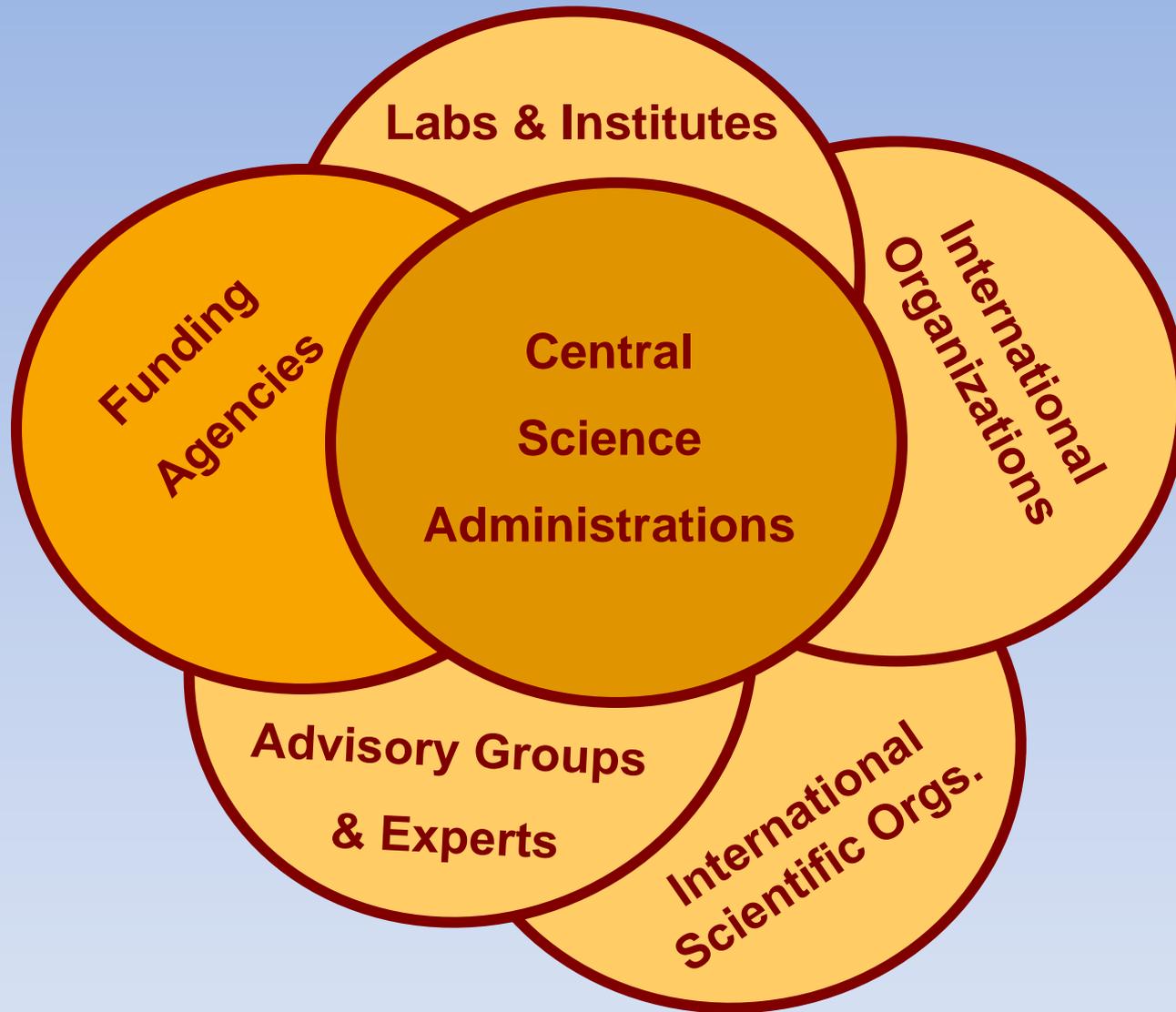
OECD OECD OECD OECD



Through the Global Science Forum, senior government officials develop findings and action recommendations on high-priority science policy issues.

GSF is a general-purpose committee, dealing with a wide range of subjects:

- Policy issues where international consultations are needed, *e.g., strategic planning of infrastructures*
- Issues at the intersection of science and society, *e.g., preventing misconduct in research*
- Specific scientific domains where something new, noteworthy is happening, *e.g., astroparticle physics*



Global Science Forum Stakeholders

## Strategic Visions/Roadmaps

- Neutron Sources
- High-Energy Neutrinos
- Radio Astronomy
- Proton Accelerators
- Nuclear Physics
- Structural Genomics
- Condensed Matter Facilities
- High-Intensity Lasers
- Astronomy and Astrophysics
- High-Energy Physics
- Grid Computing
- Astroparticle Physics

## Incubating Research Projects

- Bioinformatics (GBIF)
- Neuroinformatics (INCF)
- Earthquake Risk (GEM)
- Scientific Collections (SciColl)

GSF  
Activities

## Supporting International Cooperation

- Energy Research
- Mathematics & Industry
- Indicators and Models
- Research Misconduct
- International Years of Science
- Complexity Science & Public Policy
- Facilitating Clinical Research Trials
- Cooperation with Developing Countries
- Roadmapping and Establishing Large Research Infrastructures

## Science & Society

- Science Education
- Dialogues with Civil Society

## Strategic Visions/Roadmaps

- Neutron Sources
- **High-Energy Neutrinos**
- Radio Astronomy
- Proton Accelerators
- **Nuclear Physics**
- Structural Genomics
- Condensed Matter Facilities
- High-Intensity Lasers
- **Astronomy and Astrophysics**
- **High-Energy Physics**
- Grid Computing
- **Astroparticle Physics**

## Incubating Research Projects

- Bioinformatics (GBIF)
- Neuroinformatics (INCF)
- Earthquake Risk (GEM)
- Scientific Collections (SciColl)

GSF  
Activities

## Supporting International Cooperation

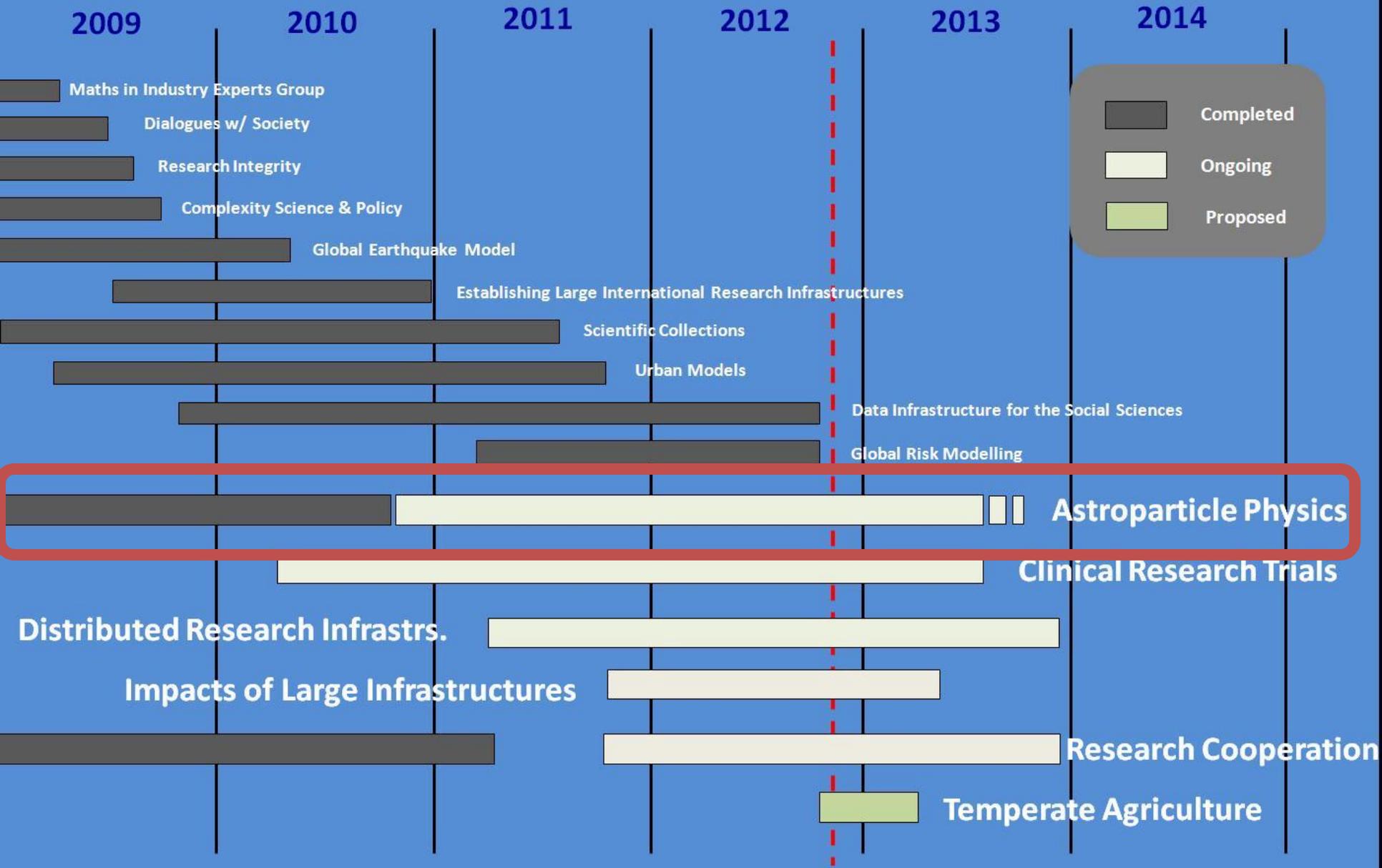
- Energy Research
- Mathematics & Industry
- Indicators and Models
- Research Misconduct
- International Years of Science
- Complexity Science & Public Policy
- Facilitating Clinical Research Trials
- Cooperation with Developing Countries
- **Roadmapping and Establishing Large Research Infrastructures**

## Science & Society

- Science Education
- Dialogues with Civil Society

# OECD Global Science Forum Activities

(as of November, 2012)





# Large Research Infrastructures

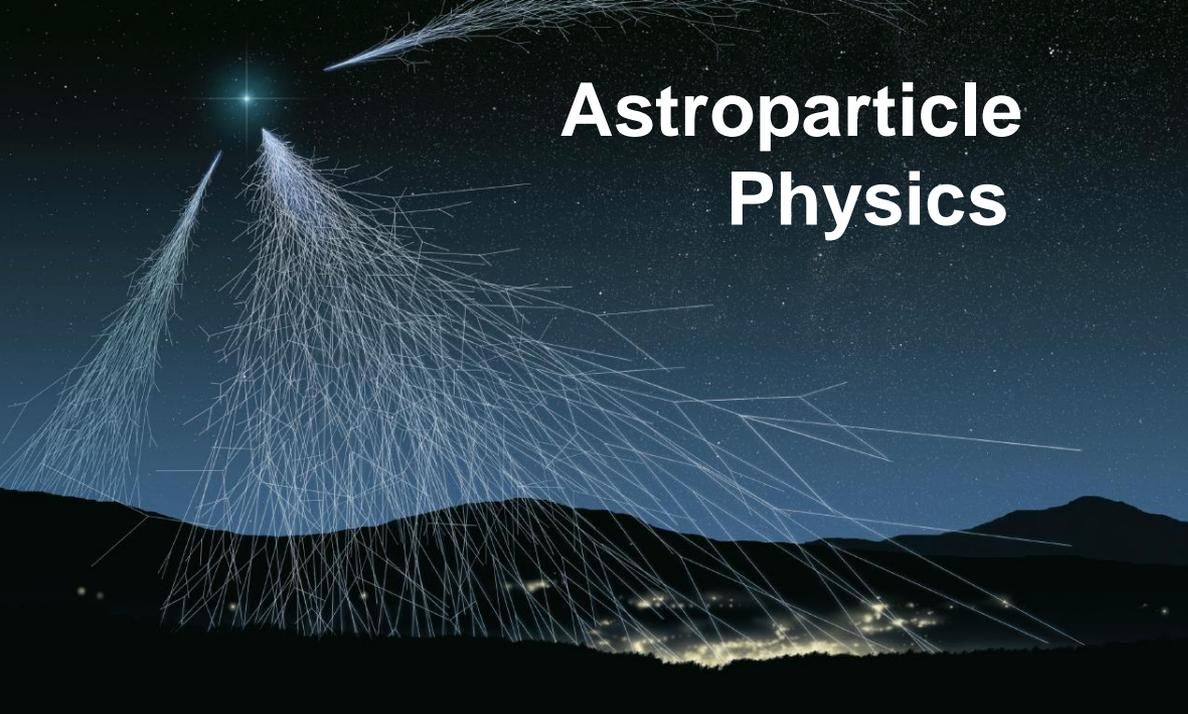
## Roadmapping

- Advantages
- Disadvantages
- Authority, scientific and non-scientific considerations
- Rules for submission, evaluation and selection
- Science cases
- Costs
- International dimensions

## Establishing (facilities)

- Legal issues
- Managerial and governance structures
- Conducting negotiations
- Host and site selection
- Access
- Funding and contributions
- Operating costs
- Personnel
- Equipment

- In preparation:
- Establishing distributed research infrastructures
  - Assessing the impacts of large infrastructures



# Astroparticle Physics

**Working Group on  
Astroparticle Physics  
(2009-2010)**

*scientists and officials*

**Astroparticle Physics  
International Forum (APIF)  
(2011- present)**

*funding agency officials only*

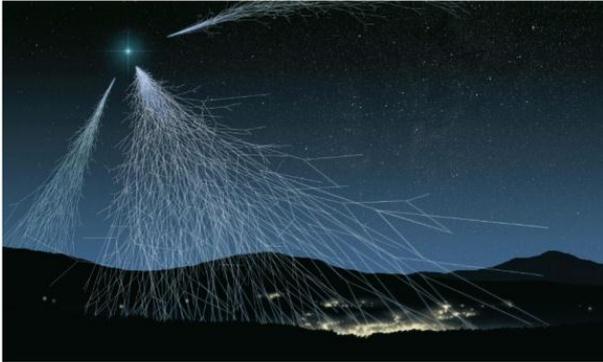
Scope:

- ❖ Cosmic rays (charged, gammas and neutrinos)
- ❖ Neutrino mass
- ❖ Proton decay and neutrino mixing
- ❖ Gravitational waves
- ❖ Dark matter
- ❖ Dark energy

OECD Global Science Forum

**Report of the Working Group  
on Astroparticle Physics**

MARCH 2011



## **Working Group on Astroparticle Physics (2009-2010)**

### **Participants:**

**Government-appointed  
representatives of 18 OECD  
countries**

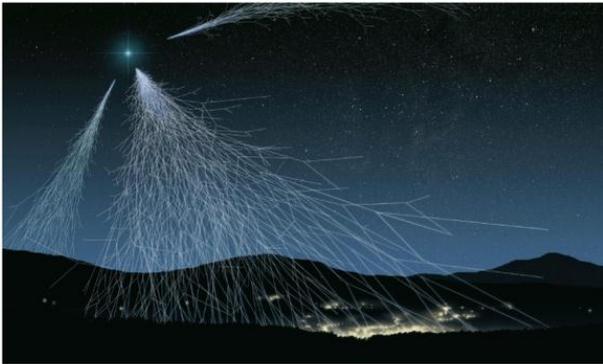
**(+ China, Argentina, Russian Fed.,  
PaNAGIC, CERN)**

**Chaired by Michel Spiro,  
IN2P3/CNRS, France**

OECD Global Science Forum

## Report of the Working Group on Astroparticle Physics

MARCH 2011



# Working Group on Astroparticle Physics (2009-2010)

## Report contains:

- A review of scientific imperatives
- An inventory of current and planned projects
- An assessment of the state of international cooperation/coordination
- An appreciation of the benefits to society
- Two action recommendations at the policy-level:
  - Establishment of a “venue for consultations among officials of funding agencies”
  - Adjust IUPAP mechanism for cooperation among scientists

# **Astroparticle Physics International Forum (APIF) (2011 - present)**

APIF brings together officials and representatives of funding agencies of countries that make significant investments in astroparticle physics research. It is a venue for information exchange, analysis, and coordination, with special emphasis on strengthening international cooperation, especially for large programmes and infrastructures. APIF members can address issues that are the special responsibility of funding agencies, for example, legal, administrative and managerial arrangements for international projects. They may also consider matters such as access to experimental facilities and data, procurement of essential materials, and optimal use of resources on a global scale. APIF is not a venue for discussing purely scientific matters, and it does not duplicate or replace established national and international processes for planning, prioritisation, funding, assessment or implementation of specific projects or programmes.

The members of APIF are representatives of agencies of the following countries: Argentina, Belgium, Canada, China, France, Germany, India, Israel, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom and the United States. APIF is chaired by Professor Michael Turner.

# **Astroparticle Physics International Forum (APIF) (2011 - present)**

APIF is chaired by Professor Michael Turner (University of Chicago)

The members of APIF are representatives of agencies of the following countries: Argentina, Belgium, Canada, China, France, Germany, India, Israel, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom and the United States.  
*Some APIF members are present at this meeting.*

APIF has met four times at 6-month intervals.

Information exchange is an important APIF function. All members report on national plans, processes and projects. International activities (e.g., ASPERA) are followed closely. The question of a link with the new ApPEC will be considered.

At each meeting, 1-2 scientific sub-domains are the subject of focussed discussion. Invited experts participate as needed, but format is chiefly “agencies only”.

Generic policy issues have been chosen for continuing study: implementation and operation of international projects, access to scientific data.

IUPAP is responding to the second policy recommendation of the OECD Working Group on Astroparticle Physics.

PaNAGIC has been dissolved.

A new IUPAP Working Group has been established: Astroparticle Physics International Committee (APPIC). The membership and terms of reference are under discussion. Depending on the outcome of these discussions, APPIC is a potential important interlocutor for APIF (ICFA/FALC may be a model, also GWIC).

*To close, some personal, unofficial observations:*

The visibility/reputation of APP is rising. The field encompasses many hot research topics. The diversity and ingenuity of experiments is extraordinary. Potential for breakthrough discoveries is high. But there are significant process/policy challenges, for example:

- Making the transition from small/medium-scale experiments to large-scale.
- Developing an integrated approach to planning/roadmapping that includes neighbouring fields, notably HEP and astronomy.
- Harmonising European and global planning.
- Optimising the tasks/responsibilities of agencies vs. the community.
- Linking ground- and space-based approaches (especially internationally).

# Thank you

