



Astroparticle Physics European Coordination

ApPEC priorities for Astroparticle Physics

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AppEC Chairman

- What is ApPEC?
- European priorities
- Supporting actions



Astroparticle Physics European Coordination

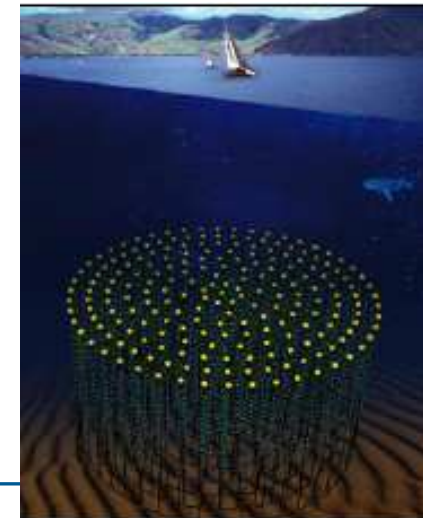
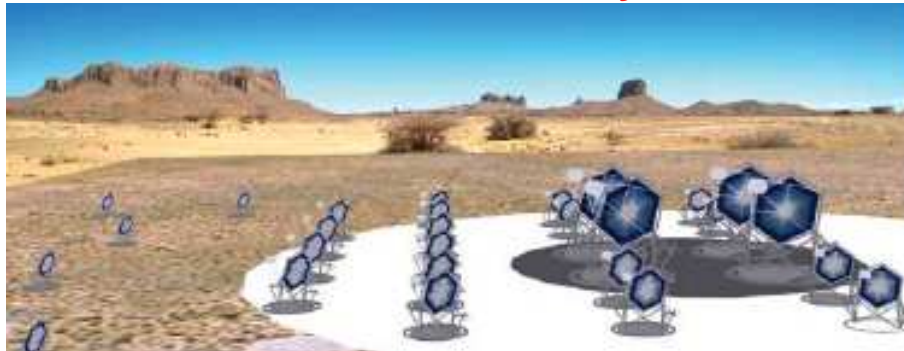
What is ApPEC?

- **ApPEC created in 2001 by the national funding agencies of France, Germany, Italy, the Netherlands and UK.**
 - **Since then Spain, Belgium, Portugal, Greece, Switzerland and Poland have joined**
- **ApPEC aims to**
 - **Promote and facilitate co-operation within the European Particle Astrophysics (PA) community**
 - **Develop and promulgate long term strategies for European PA, offering advice to national funding agencies and EU**
 - **Assist in improving links and co-ordination between European PA and the scientific programmes of organisations such as CERN, ESA, and ESO**
 - **Express their collective views on PA in appropriate international forums, such as OECD, UNESCO etc.**

- **ApPEC operates**
 - Strategically through its Steering Committee,
 - Operationally through its Peer Review Committee
- **Steering Committee (SC):**
 - **France:** *M.Spiro*, P.Chomaz, S.Katsanevas **Germany:** T. Berghöfer, R.Köpke, H. Bluemer, **Netherlands:** F. Linde, **UK:** D. Miller, J. Womersley, **Italy:** R. Petronzio B. Dettore, **Spain:** J. Fuster, A.Ferrer, **Switzerland:** M. Bourquin, **Belgium:** D. Bertrand, C. DeClerq, **Portugal** K. Gaspar **Greece:** D. Nanopoulos **Poland** S. Pokorski, **CERN:** D. Schlatter
- **Peer Review Committee (PRC)**
 - Elena Aprile, Laura Baudis, Jose Bernabeu, Pierre Binetruy, *Christian Spiering*, Franz v. Feilitzsch, Enrique Fernandez, Andrea Giuliani, Werner Hofmann, Uli Katz, Paul Kooijman, Paolo Lipari, Manel Martinez, Antonio Masiero, Benoit Mours, Francesco Ronga, Sheila Rowan, Andre Rubbia, Subir Sarkar, Guenther Sigl, Gerard Smadja, Nigel Smith, Lucia Votano

- **Since 2001 ApPEC has been able to raise the profile of Astroparticle Physics in Europe as witnessed by the increasing numbers of national funding agencies which have joined**
 - **Since 2003 the PRC reviewed and issued recommendations on all major fields of PA creating a climate of convergence among competing projects.**
 - **Since 2004 obtained EU funds for networking and joint activities in the context of ILIAS (Integrating Large Infrastructures for Astroparticle Physics)**
 - **In 2005 The succesful KM3net Design Study funded by EU came out of this process**
 - **In 2005, the PRC was charged to draft a roadmap proposition to the community and the agencies**
 - **Links to the CERN European Strategy document**
 - **In 2006 initiated the submission of the ERANET program ASPERA: EU funds for further inter-agency coordination**
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- ❑ **Neutrino telescopes: KM3NeT in the Mediterranean**
 - ❑ From 0,1km² to 1-3 km².
 - ❑ ESFRI Roadmap
 - ❑ FP6 Design Study towards a CDR by 2009. FP7 Preparatory Phase ending by 2012
- ❑ **Gamma Astronomy: CTA**
 - ❑ From 0,1 km² to 10 km². Double the energy coverage, increase by 2-3 resolution.
 - ❑ ESFRI Roadmap.
- ❑ **Projects in the scale of 150-250 M€**
- ❑ **For both construction could start by 2012**



Possible designs

- ❑ **Support and coordinate the rich network of underground laboratories home of a series of large underground observatories**

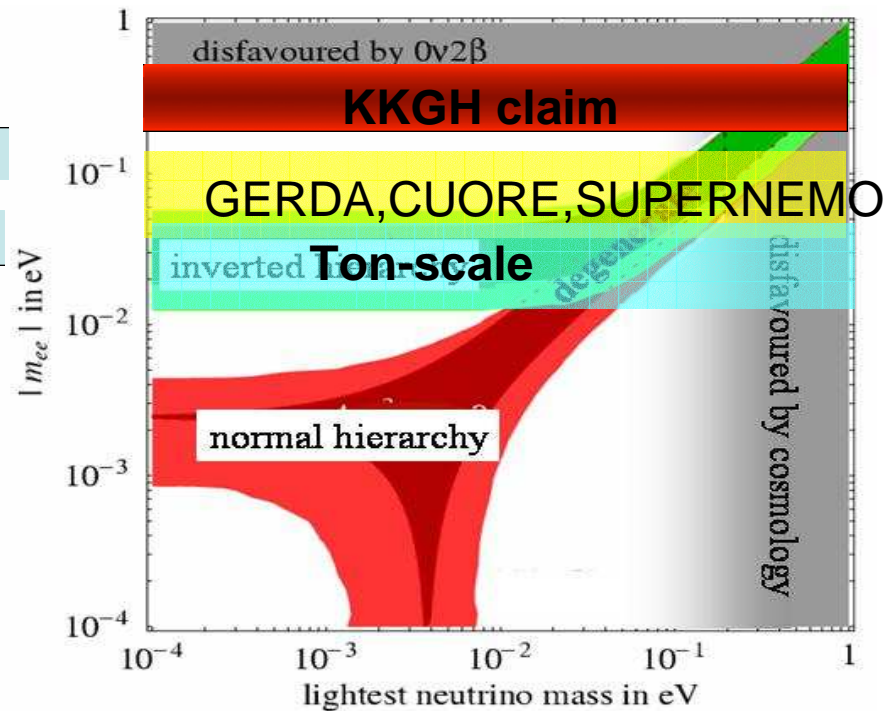
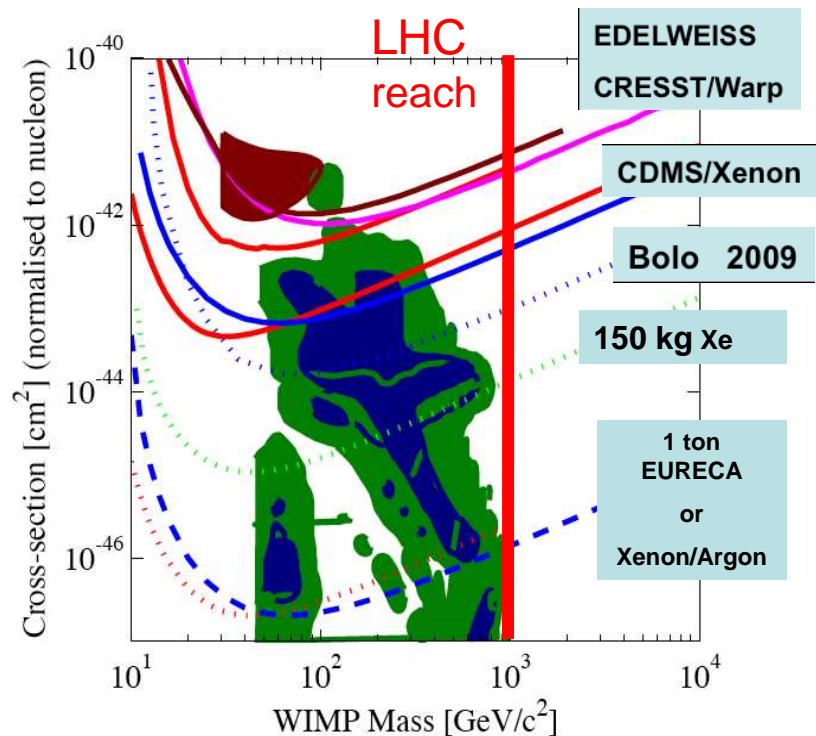


In two years time (2010-2011) decide on the technology that can project to the ton scale and beyond on the dark matter and neutrino mass searches

e.g. bolometers vs noble liquids for dark matter

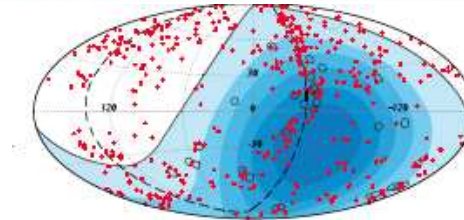
Modular structures. Share with other continents?

2010-2011 . We will have input from LHC/PLANC/neutrino



❑ Charged Cosmic Rays : Auger-North

- ❑ From 3.000 km² to 20.000 km² .
- ❑ Depends from international agreements

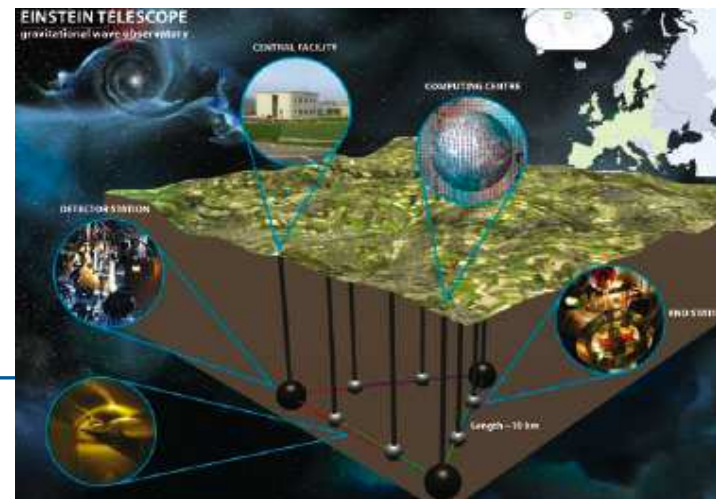
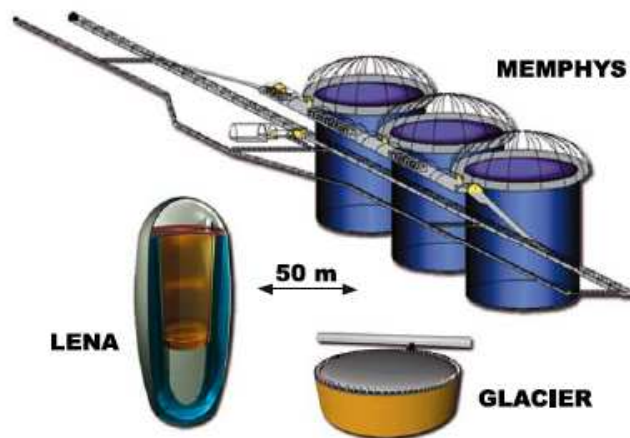


❑ Megaton Scale detectors for proton decay, neutrino astrophysics and neutrino properties

- ❑ FP7 Design study LAGUNA prospecting sites ready by 2011, start by mid-decade

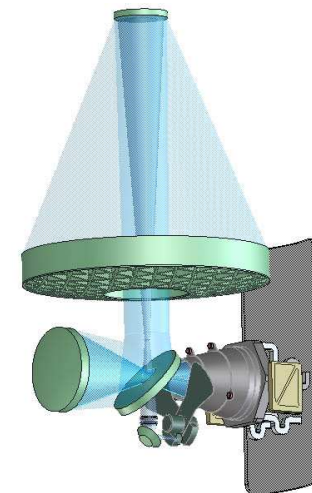
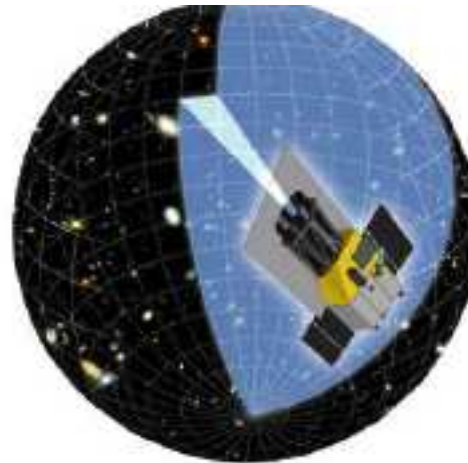
❑ Underground Gravitational wave antenna Einstein telescope

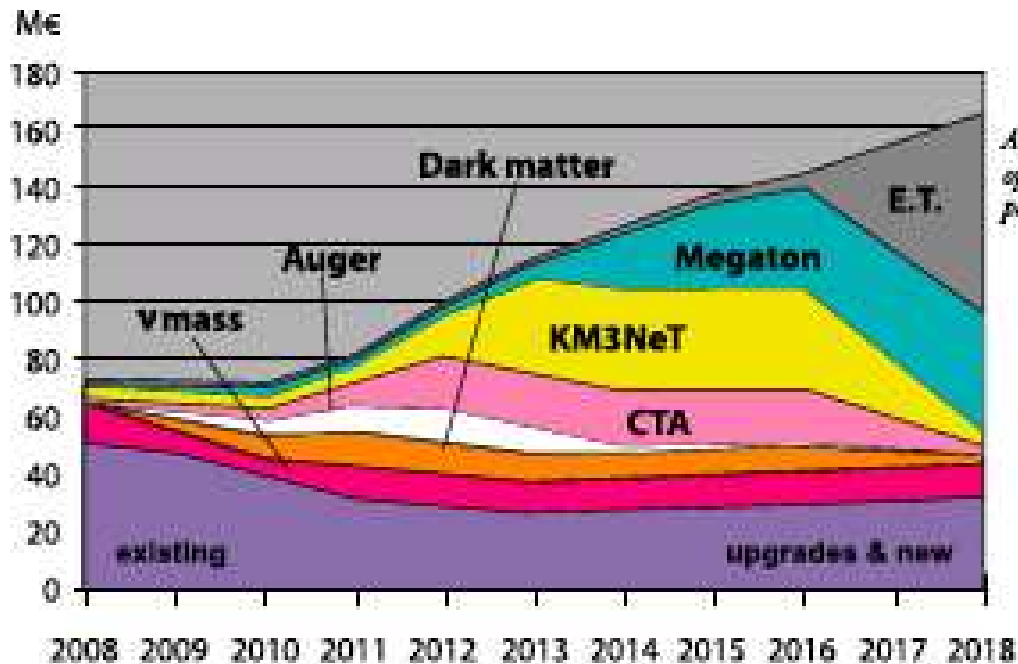
- ❑ FP7 Design study E.T ready by 2011, start after first detections of advIRIGO/advLIGO/GEO network



❑ What about dark energy ?

- ❑ Strong support from the community
- ❑ Depends also strongly on other agencies: astrophysics, space
- ❑ Overall support for participation on existing programs:
 - ❑ DES, JDEM, EUCLIDE, LSST





A scenario for investment and operation cost of astroparticle physics in the ASPERA countries.

The full program demands a 50% increase in the next 10 years (integrated)

- Support a common call through ASPERA concerning targeted R&D by early 2009
 - the funding of projects through a virtual, rather than actual, common pot;
- Establish centralised peer review process including the use of common evaluation criteria and scoring, common application forms etc;
- Examine further relations with CERN
- Internationalize the process of coordination, following the model of OECD and FALC

- A representative of the ApPEC Steering Committee is invited to attend the European Strategy Sessions of Council with the right to take the floor;
- The Chairman of the ApPEC Peer Review Committee may be invited to participate to the Secretariat's preparation of the European Strategy Sessions, where this is considered desirable to prepare topics and issues that are of mutual interest to ApPEC and the European Strategy Sessions of Council;
- This arrangement shall be in place until the next Strategy Update, on the understanding that a first assessment will be made after the September 2009 European Session of Council

- **Would be completed in approximately one year (the fall of 2009), with (tentatively) two meetings of the Working Group required.**
 - **The definition of the field of astroparticle physics, and a description of its links to neighbouring scientific domains: high-energy physics, astronomy and astrophysics, and nuclear physics.**
 - **The major scientific challenges in the field, and the types of equipment and facilities that are appropriate for addressing the challenges.**
 - **Existing and proposed experimental projects world-wide, with brief explanations of their roles, and focussing primarily on the larger projects that could benefit from international coordination or collaboration.**
 - **The processes through which plans and priorities are made at national, regional and global levels, and through which projects are funded, managed and assessed.**
 - **International cooperation in the field, including potential benefits, opportunities and obstacles. The issue of cooperation would include that which takes place among scientists and research organisations, as well as funding agencies.**
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- At the conclusion of the first phase, the results would be reviewed by the Global Science Forum, and a decision made whether to proceed to Phase 2.
- If authorised, would last approximately one year (ending in the fall of 2010), with (tentatively) two further meetings of the Working Group.
 - **The principal activity would be the elaboration of a consensus global roadmap for astroparticle physics for the next 10-15 years and a setting up the FALC like body (global participation of major funding agencies).**

- **ASTROPARTICLE PHYSICS IS STILL GROWING IN EUROPE**
 - **WE HAVE NOW A WELL FOCUSSED EUROPEAN ROADMAP**
 - **WE HAVE LINKS WITH PARTICLE PHYSICS IN EUROPE (CERN COUNCIL)**
 - **WE ARE PROMOTING A GLOBAL COOPERATION THROUGH OECD GSF**
 - **WE STILL HAVE TO ESTABLISH BETTER LINKS WITH ASTRO/SPACE AND NUCLEAR PHYSICS**
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