The KM3NeT Project

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- Objectives
- Current membership and funding
- Preparatory Phase
- The EMSO connection
- Structural funds
KM3NeT Objectives

- **Observe high-energy cosmic neutrinos**
  - Opens new window to the most violent processes in the universe
  - Key objective of astroparticle physics
  - Convergence towards two major neutrino telescopes covering the full sky:
    - Mediterranean Sea:
      - ANTARES
      - NEMO
      - NESTOR
    - Lake Baikal:
      - Baikal experiment
    - Antarctica:
      - AMANDA
      - IceCube

- **Provide infrastructure for long-term deep-sea measurements**
  - Highly interesting for marine biologists, geologists and geophysicists, environmental scientists, oceanographers, ....
  - Strong links to the EMSO project.
How Neutrino Telescopes Work

- Earth: screening against other particles
  - Neutrino telescopes look downward
    (at high $\nu$ energies: also upward sensitivity!)
- Neutrinos interact weakly
  - $\sim 1$ km$^3$ (1 billion tons) target material
- Light signals are weak
  - need environment shielded against daylight
The KM3NeT Design Study


- **Participants:**
  30 Particle/Astroparticle institutes + 7 Sea science/technology institutes

  } from 9 EU countries:

- **Main Deliverables**
  - Conceptual Design Report (fall 2007)
  - Technical Design Report (early 2009)
Current National/Regional Funding

- **Pilot projects:**
  - **ANTARES (cap. investment only)** 20.1 M€
    - FR, GER, IT, NL, ES funding agencies 14.5 M€
    - France: Regional sources 1.9 M€
    - FEDER/France 3.7 M€
  - **NEMO ( IT, cap. investment only)** 17.0 M€
    - IT funding agencies 10.9 M€
    - FEDER/Italy 6.1 M€
  - **NESTOR (GR, cap. investment only)** 8.0 M€
    - Greek government 6.5 M€
    - FEDER/Peloponnese 1.5 M€
  
  __________
  
  45.1 M€

- **KM3NeT (cap. + pers.)** ca. 11.0 M€
  
  CY, FR, GER, GR, IRL, IT, NL, ES, UK funding agencies and other sources
The KM3NeT Preparatory Phase Proposal

- Application in preparation
  (time very tight due to overlap with 1st-year Design Study report)

- Major objectives to be addressed:
  - Path to convergence on funding decisions
    (KM3NeT cost estimate: roughly 250 M€)
  - Legal and governance aspects
  - Site decision (including assessment of multi-site options)
  - Production preparation
  - Data dissemination, data formats, computing
  - Coordination with marine sciences

- Major goal:
  - Go ahead with construction in 2010/11!
The EMSO Connection

- Large overlap in participating institutes
  - IFREMER, INGV, HCMR, Oceanlab/Aberdeen, …
  - Marine sciences represented in all KM3NeT management and steering bodies
  - Regular informal exchanges

- Funding agencies are aware
  - INFN requests cross-coordination of KM3NeT and EMSO PP proposals
  - …

- KM3NeT site(s) likely to become part of EMSO
Structural Funds

- ERDF funds may be a major source of KM3NeT construction money
  - ERDF and FP7 run concurrently (2007-2013)
  - KM3NeT candidate sites are target-1/target-2 regions

- Political coordination needed
  - Cross-coordination between ESFRI, EU DG Research (FP7), EU DG Regio (ERDF) and national authorities to promote research infrastructures
  - Avoid conflicting boundary conditions in both programs
  - Support for the concept of spending regional funds locally, but in the framework of pan-European projects

- The situation must be clarified very soon!