

## **From the Geosphere to the Cosmos: ASPERA Workshop**

### **CV&Abstract**

#### **Laguna, a design study for a Large Apparatus for the search for Grand Unification and Neutrino Astronomy**

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**Curriculum Vitae** : Prof. em. at the Technische Universität München.

1977 PHD at the Technische Universität München

1978-1980 Institut Laue Langevin in Grenoble, search for neutrino oscillations, measurement of the reactor neutrino spectrum

1981-1987 Neutrino experiments at the nuclear power plant Gösgen (Switzerland) and Bugey (France).

1990- 2010 measurement of the solar neutrino spectrum with the experiments Gallex, GNO, and Borexino, performed in the Gran Sasso underground Laboratory (Italy)

1995-2010 experiments to search for Dark Matter with the experiment CRESST at the Gran Sasso underground laboratory in Italy.

2002 – 2010 Member of the collaboration DOUBLE CHOOZ to investigate neutrino oscillations at the reactor Chooz in France.

1994 – 2010 chair of the institute for experimental Physics and astroparticle physics at the TUM

1995-2006 spokesman of the special research centre for astroparticle physics in Munich.

2004-2008 chair of the Governing Board of the European “Integrated Large Infrastructure for Astro Particle Science” ILIAS.

1995 to 2009 member of the referee board of APpEC – Aspera and co-author of the European road map for Astroparticle Physics.

##### **Abstract:**

Laguna is an EU funded design study for the construction of a European Large Infrastructure for the search for grand unification in particle physics and a new observatory for neutrino astronomy. Seven sites in Europe have been investigated for the possibility to construct the large infrastructure in a deep underground location. For this three different suggested detectors based on water Cherenkov light, a liquid argon drift chamber and a liquid scintillator with total masses between 50-600 KT of detector material were considered.

In this contribution the status of the design study is reported and the scientific program discussed.

In this presentation special emphasis will be given to the proposal of LENA, a large (50KT) scintillator detector which is focusing to low energy neutrino spectroscopy. This will include neutrinos originating from the sun, supernova explosions, and the interior of the earth as well as from an accelerator produced neutrino beam. In addition the sensitivity of this detector to a possible decay of protons will be presented.