

From the Geosphere to the Cosmos: ASPERA Workshop

Abstract&CV

ApP and associated sciences at LSM: Laboratoire Souterrain de Modane

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Curriculum Vitae :

Researcher at CNRS on neutrino physics at Centre d'Etude Nucléaire de Bordeaux-Gradignan and Laboratoire Souterrain de Modane. I work in the NEMO3 and SuperNEMO project to look for neutrinoless doublebeta decay using tracko-calorimetry technique. As Director of Modane Underground Laboratory, I am involved in the project of extension of the laboratory and on the development of its scientific program, in particular interdisciplinary activities requiring low radioactivity techniques or deep underground infrastructure.

Education: 1994: PhD in Particle Physics (University of Strasbourg, France)

Research:

1994 – 2002 : NEMO2 et NEMO3 experiments.
2002 – 2003 : Invited professor at Tohoku University (Sendai, Japan), KamLAND experiment. l'expérience KamLAND de mesure des oscillations de neutrino venant des réacteurs
2004 – 2010 : NEMO 3 experiment
Spokesperson of SuperNEMO project
2007 – 2010 : Director of LSM.

Abstract:

The Laboratoire Souterrain de Modane (Modane Underground Laboratory, LSM) is the deepest in Europe and the second deepest in the world. With the cosmic radiation flux being reduced by a factor of 2 000 000, this platform provides exceptional conditions for the research of very rare physics phenomena and the measurement of very weak levels of radioactivity.

For many years the LSM has been a multidisciplinary infrastructure using the gamma-ray spectrometer developed to select ultra low radioactive materials for the fundamental physics experiments. A multitude of uses were found (still under investigation), including environmental research (oceanography, glaciology, climatology, paleoenvironment, hydrology, sedimentary transfer, etc.) and environmental observation (environmental monitoring, origin of pollution). Expertises were also developed by using natural or artificial radioactivity as a tracer.

The LSM also serves as a laboratory of reference for the international norm JEDEC (determines the reliability of electronics when exposed to radiation) and hosts laboratory or industrial microelectronic bench tests in order to characterize the effects of natural radioactivity on electrical circuits.
