Modane Underground Laboratory

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Modane Underground Laboratory
Offices, workshop, outreach space and guest rooms

Permanent exhibition for general public
Depth: 4800 m.w.e.
Surface: 400 m²
Volume: 3500 m³
Muon flux: $4 \times 10^{-5} \mu \text{m}^{-2} \text{s}^{-1}$
Neutrons:
   Fast flux: $4 \times 10^{-2} \text{n} \text{m}^{-2} \text{s}^{-1}$
   Thermal flux: $1.6 \times 10^{-2} \text{n} \text{m}^{-2} \text{s}^{-1}$
Radon: 15 Bq/m³
Access: horizontal

Budget (full cost): 1 M€/yr
Staff: 2 Physicists
      3 Engineers
      7 Technicians

International associated laboratory agreement with JINR Dubna (Russia) and CTU Prague (Czech Republic)
From a particle physics experiment to a multi-science platform

1979 - 1981
1982- 1990
1990- 2000
2000 - ....

**Construction**

**Experiment**

**Prototypes**

**Experiments**

**Fundamental physics:**
- Neutrino: double beta decay (SuperNEMO, CUPID)
- Dark matter (EDELWEISS, NEWS-G SEDINE, MIMAC)
- Nuclear structure (TGV, SHIN)

**Multidisciplinary activities**
- Ultra low radioactivity measurements
  - Environmental sciences, applications, expertises
- Logical test failures in nano/micro-électronics
- Biology
Scientific activities at LSM

- Creation of the matter
- Search for Dark Matter
- Evolution of Universe
- Environment
- Nano-electronics
- Biology
- Datation Bordeaux wine

And also: climatology, oceanography, Human effects on the environment, effets de l’homme sur l’environnement, glaciology, archeology,....
17 HPGe from 8 different laboratories of CNRS, CEA, JINR DUBNA, CTU Prague, Comenius University are available at LSM.

See Guillaume Warot talk

- Material selection for astroparticle physics,
- Environnemental research (oceanography, climat, retro-observation,....)
- Environmental survey
- Applications (wine datation, salt origin,....)
- Developements of Ge detectors
Radon free air factory

Copy from system developed by SuperKamiokande

150 m³/h of air with an activity of 20 mBq/m³ (air in the lab 20 Bq/m³)
Clean room class 5 with radon level 15 mBq/m³
Provided by CTU Prague
Roman lead

200 kg used in DAMIC
- Collaboration with PNNL and SNOLab on NEWS-G experiment
- LSM can provide low background measurement  gamma and alpha spectroscopy
- Possibility to use the new clean room
- Final location to be discussed taking into account schedules from the other projects and DAMIC schedule
- Support from the technical staff to be also discuss in detail