

UMR 5108 - CNRS / USMB

Faculty: UFR Sciences and Mountain

PhD school: Grenoble Physics Doctoral School (EDPHY)

FIELD OF TRANSVERSAL SKILLS

Fundamental Science, Earth sciences and Environment

KEY WORDS

Theoretical physics • Particles and fields • Phenomenology in high energy physics • Astroparticles/cosmology • Strings • Integrable systems

SECTORS

Fundamental physics • Theoretical physics • Mathematical physics • Particles physics • Astroparticles and cosmology

PRESENTATION

LAPTh physicists study the structure of matter from a very small to a very large scale in the Universe. They develop mathematical tools applied to various fields of physics - some of them being more phenomenologically oriented - and work in relation with experimentalists to explain various results from high energy particles accelerator collisions (closely with the LHC accelerator at CERN) or astrophysical observations.

RESEARCH THEMES

Research at LAPTh is organized along three main lines:

• Mathematical physics

- Symmetries
- Integrable systems and applications
- Strings and quantum field theory

• Theoretical particle physics

- Interactions between fundamental constituents
- The Standard Model and its extensions
- Phenomenology of particle and astroparticle physics

• Cosmology and astroparticles

- The large scale structure of the Universe: formation, evolution and contents
- Astrophysical phenomena such as cosmic rays, gamma ray bursts...

KEY DATA*

- **28** researchers and professors
- **5** administrative and technical staff
- **8** PhD students

* Year 2016

PhD STUDENTS SKILLS

- Modelling of physical phenomena
- Symbolic and numerical computation methods

NETWORKS / PARTNERSHIPS

Academic cooperations

- University of Boston (USA)
- University of Sydney (Australia)
- KEK (Tsukuba, Japan)
- JINR (Dubna, Russia)
- University of Turin (Italia)
- Princeton (USA)

Institutional cooperations

- CERN (Geneva, Switzerland)
- CEA Saclay (France)
- DESY (Hamburg, Germany)

INTERNATIONAL RELATIONS

- LIA
- European networks
- Western Europe
- Eastern Europe (Bulgaria, Georgia, Serbia, Russia)
- USA
- Asia (South Korea, Japan, India, Vietnam)
- Middle-East (Lebanon)
- North Africa (Algeria, Morocco)