



LAFTH

UMR CNRS - USMB

Energetic sources

Gamma astro.
Cosmic rays
GRB

Integrable systems

Spin chains
Algebraic methods
Out-of-equilibrium systems

Dark Matter

Indirect searches
Identification
strategies

QFT

SYM N=4 gauge
theories
Topological QFT

Cosmology

Primordial universe
neutrinos

**Astroparticles
Cosmology**

**Mathematical
Physics**

Particle Physics

Standard Model

Precision calcul.
EW & QCD
New techniques

New Physics

Model building
Flavor physics
Dark Matter

Phenomenology

Link with exp.
Codes and tools

10 (+2+2) CNRS
6 (+1) USMB
5 admin. staff



Accueil

Présentation du Laboratoire d'Anney-le-Vieux de Physique Théorique (LAPTh)

Le LAPTh est une unité mixte de recherche (UMR 5106) CNRS-INP/Université de Savoie. Le laboratoire est situé à Anney-le-Vieux, 5km du centre d'Anney et à 40km du CERN et de Genève. Les activités du LAPTh sont centrées autour de trois grands thèmes de recherche:



- phénoménologie en physique des particules,
- astroparticules et cosmologie,
- physique mathématique: en particulier en théorie des champs, cordes et symétries.

Actualités

PhysTeV 2019 Les Houches


Les Houches Workshop Series
 == Physics at TeV Colliders ==
 2019 Session : 10 to 28 June

This series of workshops, started 20 years ago, aims to bring together theorists and experimentalists working on the phenomenology of TeV colliders with an emphasis on the physics at the LHC. The highlight of the 2019 Les Houches Edition is to take full advantage of the data that has been collected at the LHC so far and prepare for the future runs. In the light of the LHC results, a reflection on the strategy in HEP and prospects from future facilities (at high and low energy) should be conducted. The Workshop will address issues such as how to best exploit these data as well as how to prepare for future LHC data, and what is most desirable in LHC upgrades. These activities will be conducted in close connection with the development and improvements of related theory tools, in particular of Monte-Carlo event generators. The role of machine learning and artificial intelligence will be part of these new development. The Workshop runs over one year, including two meetings in Les Houches in the month of June, and exchanges and collaborations before and after the meetings. The meetings in Les Houches will consist of two sessions:

Session I: 10-19 June 2019 with emphasis on SM-related issues.

Direction de l'Institut Max Planck de Physique



Johannes Henn, ancien étudiant Erasmus en master de physique à l'université Savoie Mont Blanc et ancien doctorant au LAPTh sous la direction d'Emil Sokatchev, a été nommé nouveau directeur à l'Institut Max Planck de physique de Munich à l'âge de 37 ans. Johannes est l'un des principaux experts mondiaux dans le domaine de recherche des amplitudes de diffusion, qui sont utilisées pour la description précise des expériences avec accélérateur. Il s'agit d'un thème très innovant qui établit un lien étroit entre la physique des particules théorique et expérimentale. Il a dirigé auparavant un groupe de physique théorique et mathématiques à l'Université de Mayence.

Enigmass



CIPHEA


 Centre International de
Physique des Hautes Energies
et d'Astrophysique

Upcoming Seminars

- 13/12/2018 - TBA
- 08/11/2018 - TBA
- 18/10/2018 - Semi-local strings and the supersymmetric Gorsky-Shifman-Yung Soliton

Upcoming Workshops

Upcoming Lectures

Upcoming Journal Club

- 11/12/2018 - The effect of Galactic uncertainties in particle DM constraints
- 27/11/2018 - TBA
- 13/11/2018 - TBA
- 30/10/2018 - TBA
- 23/10/2018 - TBA

Latest Publications

- New symmetries of $g(N)$ -invariant Bethe vectors

Présentation

Recherche

Publications

Enseignement

Événements

Visiteurs

Grand Public

Offres de stages/thèses

Offres Post-doc

Annuaire

Outils Internes

Outils CNRS

French

recherche...

Réseaux sociaux

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Suivre @LAPTh

Google Plus

LAPTh on

M2 & M1 Stage : Phys-Math proposal

Title: Stationnary state in integrable out-of-equilibrium models

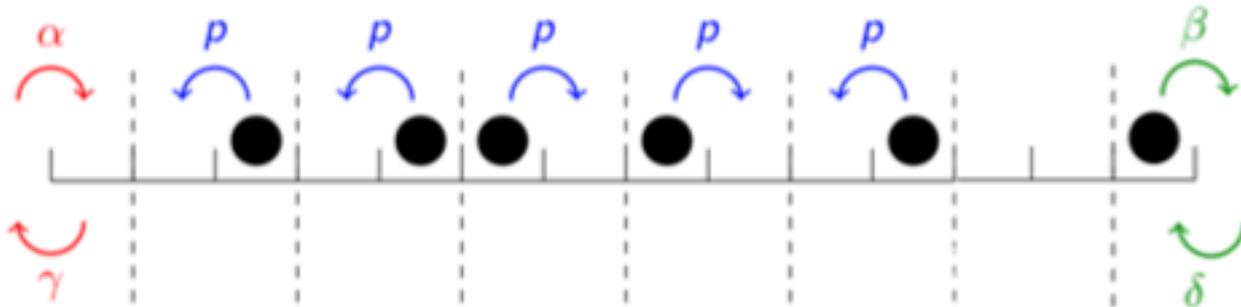
Supervisor: Eric Ragoucy

Synopsis.

A wide class of models escapes the familiar context of equilibrium thermodynamics, for which a steady state appear while allowing a current (of heat, of particles, etc.). Surprisingly, there is actually no 'universal' description of this type of stationary state (the equivalent of a Boltzmann distribution), and the study of these models must be done on a case-by-case basis.

In the 1D case, an additional mathematical structure (**integrability**) provides a deeper (**universal**) understanding of this steady state.

The purpose of the internship is to understand this stationary state through integrability by studying various known examples and constructing new models.



M2 stages at LAPTh: HEP and astro/cosmo groups

- *LAPTh includes one of the **largest and most vibrant** HEP & astro/cosmo groups in France*

***HEP staff:** P. Aurenche, G. Bélanger, F. Boudjema, C. Delaunay, A. Djouadi, D. Guadagnoli, J.P. Guillet, B. Herrmann, E. Pilon and E. Re*

***Astro-cosmo staff:** F. Calore, P. Chardonnet, P.D. Serpico, R. Taillet, P. Salati*

- *The HEP – astro/cosmo interface is also very prolific. We welcome ideas / collaboration at this interface*

M2 stage: astro/cosmo proposal #1

Title: *Diagnosis of astrophysical sources and dark matter with high-energy gamma rays*

Supervisor: *Francesca Calore*

Co-Supervisor: *Pasquale D. Serpico*



Synopsis.

- *One open issue in gamma-ray astrophysics:
The identification of “**unresolved**” gamma-ray emitters*
- *Apply Machine-Learning ideas to the wealth of Fermi LAT data, to **classify the different possible sources***
- *... and maybe shed light on Dark Matter sub-structures as well*

M2 stage: HEP proposal

Title: *Novel observables for LHC's Run 3: from theory to measurement*

Supervisor: *Diego Guadagnoli*



Synopsis.

- *Run 3 of LHC will literally be a **downpour of data** on beauty-, charm- and strange-meson decays*
- *Interestingly, there are **persistent deviations** in a whole body of beauty-meson decays, with respect to predictions*
- *Take an interesting TH scenario, and study its implications in terms of quantities measurable at Run 3*
- *TH stage, yet close contact with actual data*

M2 stage: astro/cosmo proposal #2

Title: *Assessing the current viability of axions as phantom dark-energy emulators*

Supervisor: *Pasquale D. Serpico*

Synopsis.

- **Supernovae Ia** are good, but not exact candles to measure the acceleration of the universe and **infer the properties of Dark Energy**
- Certain new particles (e.g. **axions**) that mix with photons **may also produce effects** eventually interpreted as a Cosmological Constant
- How large is the room for such axion-induced effects?



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