

Lucia DI CIACCIO,
Pablo DEL AMO SANCHEZ,
Francesca CALORE,
Roberto COVARELLI (Uni Torino),
Diego GUADAGNOLI,
Loïc ROLLAND,
Ingo SCHIENBEIN (UGA)

GraSPA2024



16 | July ANNECY
23 | 2024 FRANCE

Summer SCHOOL

on Particle and Astroparticle Physics

ANNECY
FRANCE

GraSPA 2024

<https://lapp.in2p3.fr/graspa2024>



Why?

- Inspire students to pursue Particle and Astroparticle physics before they choose a Master topic (3rd and 4th year students)
- Bonus: visibility for our labs and universities among Master students
- Bonus 2: create/strengthen links with other institutes/universities

What? How?

- **1 week-long School**, ~4h (theoretical & experimental) **introductory courses** on few topics: LHC physics, neutrinos, heavy flavours, astrophysics, astroparticles, dark matter, gravitational waves. Hands-on sessions on computational tools (ROOT), Virgo-like interferometers, astroparticle pheno
- **Accommodation and lunches paid by School**, travel funded by students (travel grants for 1 - 2 students; a few paid by students' institutes).
- Mostly local lecturers, a few high profile externals
- Budget ~ 20 k€ in 2024

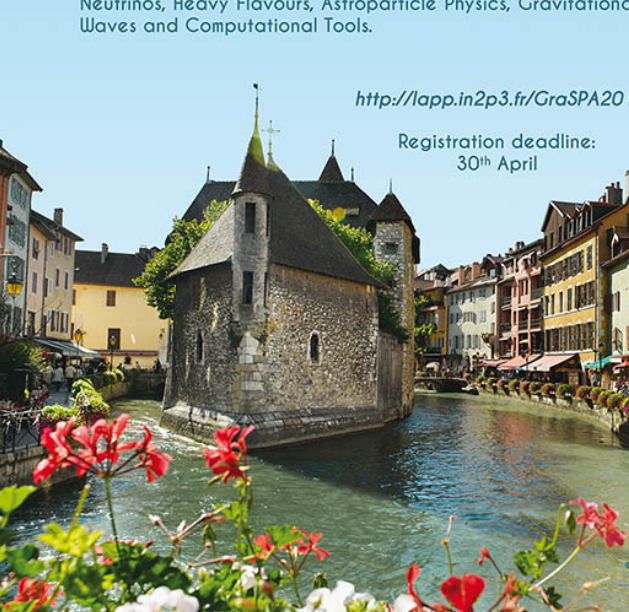
Graduate School in Particle and Astroparticle physics of Annecy-le-Vieux

22 - 26 July 2013

Introductory courses aimed at 4th year, or advanced 3rd year, physics students. Topics covered include LHC Physics, Neutrinos, Heavy Flavours, Astroparticle Physics, Gravitational Waves and Computational Tools.

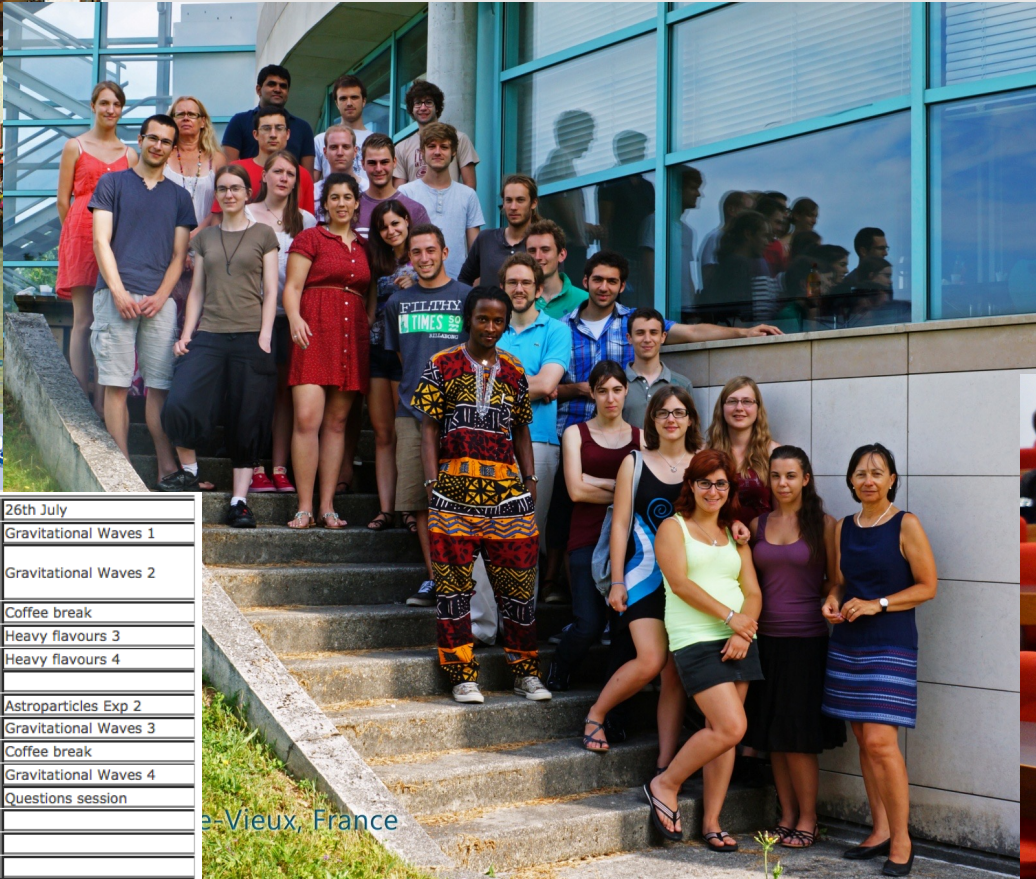
<http://lapp.in2p3.fr/GraSPA2013>

Registration deadline:
30th April



How it all started: GraSPA 2013

- Our first try: 4 days long, 23 students (16 external students + 7 LAPP/LAPTh interns), lecturers from LAPP, LAPTh, LSM and external, ~7 k€ budget (USMB DRI + Enigmass + IDPASC)
- Great success!!! → Expand from prototype to full product!



(Photocopy for everyone)

To everyone at LAPP, all the teachers, all the intern students, Myriam, Pablo, Lucia, Michael, Julien, Basil,
This is a short letter, so that we can all say a few words and thank you for running this course and all the effort you have put in, we have all thoroughly enjoyed it



Time	22nd July	23rd July	24th July	25th July	26th July
8h	A	Welcome speech	Astroparticles Th 2	Computing 1	Gravitational Waves 1
9h	R	8h30 Introduction to the Standard Model of Particle Physics	LHC Physics Exp 2	Computing 2	Gravitational Waves 2
10h	R	Coffee break	Coffee break	Coffee break	Coffee break
10h30	I	LHC Physics Th 1	Neutrinos Th 2	Computing 3	Heavy flavours 3
11h30	V	LHC Physics Th 2	Astroparticles Exp 1	IDPASC	Heavy flavours 4
14h	L	LHC Physics Exp 1	Heavy flavours 2	Excursion	Astroparticles Exp 2
15h		Astroparticles Th 1	Neutrinos Exp 1	Excursion	Gravitational Waves 3
16h	Reception	Coffee break	Coffee break	Excursion	Coffee break
16h30	Reception	Neutrinos Th 1	Neutrinos Exp 2	Excursion	Gravitational Waves 4
17h30	Reception	Heavy flavours 1	Questions session	Excursion	Questions session
18h	Reception			Excursion	
20h				Social dinner	

Annecy-le-Vieux, France



GraSPA in 2024

- 110 applications, 32 admitted (+2 local summer students)
- ~2/3 3rd year students (end bachelor), ~1/3 4th year students (beginning master)
- Lecturers from LAPP, LAPTh, LPSC, Torino, Zaragoza
- CERN visit, one day of Hands-on activities, Q&A session on research careers in academia
- New in 2024: all students did a 5-min presentation on their project work/summer work/physics topic of interest
- Great students' satisfaction in end-of-School feedback survey

	Tue 16	Wed 17	Thu 18	Fri 19	Sat 20	Mon 22	Tue 23
8:30-9:00	Welcome to the labs (30')		LHC Exp [Bellan]	Flavour Physics [Guadagnoli]			
9:00-9:30	Intro to PP [del Amo Sanchez]	(B)SM [Clement]				Gravitational Waves EXP [Rolland]	Students (11)
9:30-10:00			LHC Exp [Bellan]		Hands-on		Gamma-ray Astrophysics [Caroff]
10:00-10:30						coffee	
10:30-11:00	coffee	coffee	coffee	coffee	coffee	Gravitational Waves EXP [Rolland]	coffee
11:00-11:30	Students (1,2)	(B)SM [Clement]	Astroparticle TH [Calore]	Cosmological Surveys [Doux]	Hands-on		Neutrino Physics [Zambelli]
11:30-12:00						Students (9)	
12:00-14:00	lunch	Lunch (from 12:30)	lunch	lunch	lunch	lunch	lunch & school's end
14:00-15:00	Intro to detectors [Lorenzo Martinez]	Gravitational Waves TH [Buskulic]	Astroparticle TH [Calore]	Visit to CERN	Hands-on	Dark matter direct detection EXP [Vogel]	
15:00-16:00	Intro to Astrophysics [Genolini]	Gravitational Waves TH [Buskulic]			Hands-on	Dark matter direct detection EXP [Vogel]	
16:00-16:30	coffee	coffee	coffee			coffee	
16:30-17:30	Intro to Astrophysics [Genolini] + Students (3)	Students (5, 6)	Neutrino Physics [Zambelli]			Q&A session	
17:30-19:00	Students (4) Reception	Students (7)	Students (8)		19h30: Dinner	Students (10)	

GraSPA2024



საჭიროა (1.1) განგოლება გადაწეროს შემდეგი სახით:

$$\vec{\Lambda} = \frac{1}{2m}(\vec{p} \times \vec{L} - \vec{L} \times \vec{p}) - \frac{\kappa \vec{r}}{r}$$

ჰამილტონიანისთვის, რომელიც ასე გამოიყურება:

(Physics in Georgian)

$$H = \frac{p^2}{2m} - \frac{\kappa}{r}$$

შეიძლება შემოწმდეს რომ

$$[\vec{\Lambda}, H] = 0$$



GraSPA
2024



Budget in 2024

INCOME (€)	
Enigmass	9 500
IN2P3 subvention colloque/conf	2 000
CPTGA	1 500
LAPP	7 000
LAPTh	1 500
TOTAL INCOME	21 500

Tried Erasmus+ funding in 2024, bureaucracy/administration is orders of magnitude more complex and needs more preparation before we try again

Enigmass support, crucial for GraSPA

EXPENDITURES (€)	
Accommodation	11 400
Lunches	5 500
Social dinner	1 700
Coach (CERN visit)	700
External lecturers' travel	800
Coffee breaks	1 500

2013 to 2024, and the future

2013

23 students

4 days

7 k€

Among few schools for undergrads

Organised by LAPP

2024

34 students

7 days (Hands-on, CERN visit, Q&A)

21 k€

Among tens of schools for undergrads

LAPTh, LPSC, Torino actively taking part in organization

- 11 very successful editions! (# applications, feedback)
- Students could increase a bit (40? 45?) but probably not duration
- Involvement from other institutes?
- Pedagogy improvements

Some GraSPA graduates





THANK YOU TO ALL COLLABORATORS!

Corinne Feullar
Nicolas Hantz
Sophie Lieunard
Nathalie Lyko
Maud Coppet
Cécile Jacob
Eric Grouas
Myriam Froger
Claudine Bombar
Rachel Nabet
Nicole Berger
Elodie Hureau

Loïc Rolland
Damir Buskulic
Romain Gouaty
Silvia Manconi
Christopher Alléné
Michal Was
Sami Caroff
Narei Lorenzo Martinez
Emanuele Re
Carole Perigois
Pasquale Serpico
Marco Delmastro
Laura Zambelli
Emmanuel Mamosa

Frédéric Girault
Sylvain Garrigue
Vincent Poireau
Cédric Delaunay
Pierre Salati
Andreas Goudelis
Eric Pilon
Elisabeth Petit
Philippe Ghez
Giovanni Lamanna
Diego Guadagnoli
Gilles Maurin
Francesca Calore

Roberto Covarelli
Riccardo Bellan
Julien Masbou
Aldo Ianni
Julia Vogel
Thomas Schwetz-Mangold
Asmaa Abada
Sacha Davidson
Teresa Marrodan
Karol Lang
Alessandro Mirizzi
Thomas Tram
Fernando Barao

Laurence Perotto
Ingo Schienbein
Cyrille Doux
Benoît Clément
David Maurin
Daniel Santos
Jérémy Quévillon
Fabrice Piquemal

Apologies if I forgot
you!!! - Pablo

Erasmus+ BIP attempt in 2024

- Blended Intensive Programme: hybrid (online + in-person parts), short training programmes now eligible for Erasmus+ funding (both for students AND for organisers).
Minimum of 15 Erasmus+ students required!!!
- Multitude of difficulties encountered, mostly administrative/bureaucratic:
 - Some International Relations (IR) departments not responding
 - Some IR departments/contact people not really aware how BIPs work
 - Some universities keep BIP funding for the programmes organised by their partners only
 - Even when all of the above was fine, Erasmus agreements did not always cover BIPs → needed additional iterations between IR departments to modify agreement in a hurry
- Result:
 - minimum of 15 Erasmus+ students not attained
 - → Erasmus+ label retired 1 month before start of the School
 - → less funding for School, and for applicants that had managed through all the bureaucratic steps!
- Conclusion: take time to ensure all the above difficulties have been addressed by a sufficiently high number of partners before trying again