

The image is a composite of a satellite view of Earth from space, showing the curvature of the planet and various landmasses. Overlaid on this is a semi-transparent map of the world, with continents in shades of green and oceans in dark blue. A small, solid blue dot is positioned on the map, specifically over the Iberian Peninsula, which corresponds to the location of the city of Marseilles (马赛) in France. The text 'Welcome to' is written in a yellow, sans-serif font, and '马赛!' is written in a larger, stylized yellow font with a thick outline, both centered on the image.

Welcome to
马赛!

Welcome to
Luminy and
its Calanques!

Parc Scientifique
de Luminy



The logo of the Centre de Physique des Particules de Marseille (CPPPM) is located in the top right corner. It consists of a blue square with a white diagonal line and a red sphere at the end of the line.

CENTRE DE PHYSIQUE DES
PARTICULES DE MARSEILLE

CPPPM

大家好！

Welcome to CPPPM!

欢迎！ 欢迎！



© Francis Quintric

A joint CNRS/AMU research lab of excellence over 160 people strong

(40 perm. scientists; 35 postdocs and PhD students;
75 engineers, technicians and admin. Staff;
50-60 visiting scientists from all over the world,
over 30 interns, each year)

Over 200 publications in international journals/yr

At the heart of the Universe and Matter



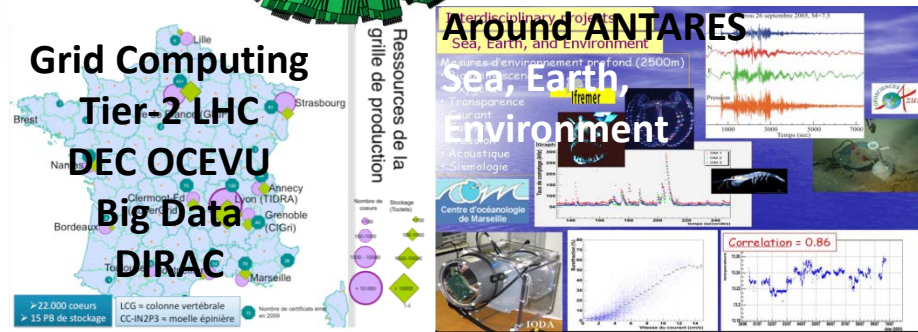
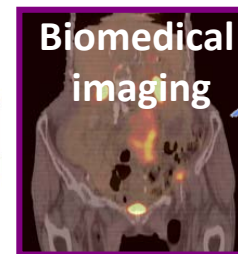
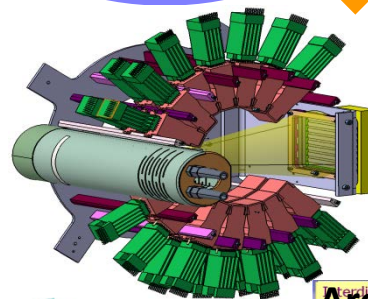
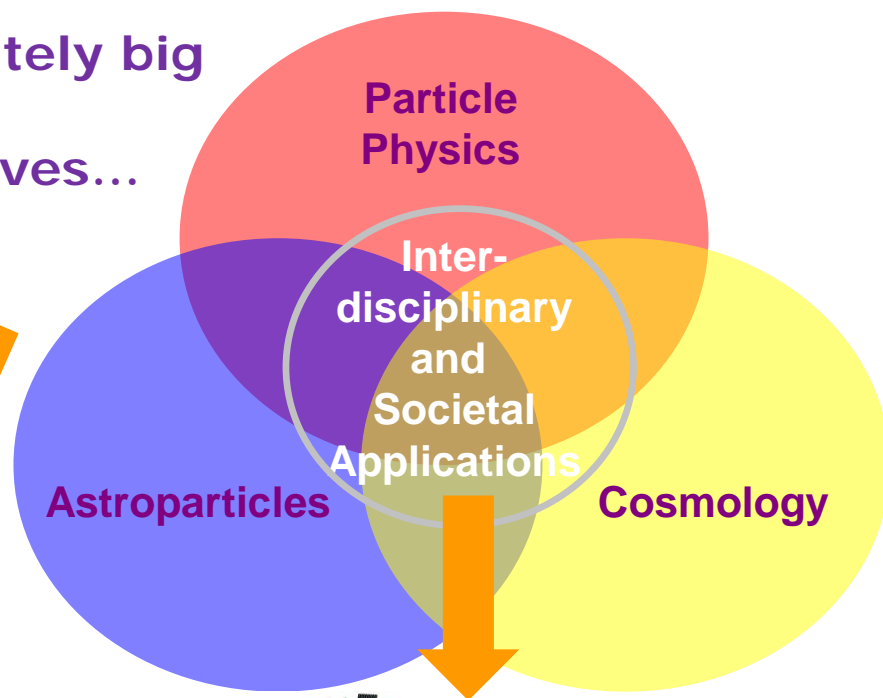
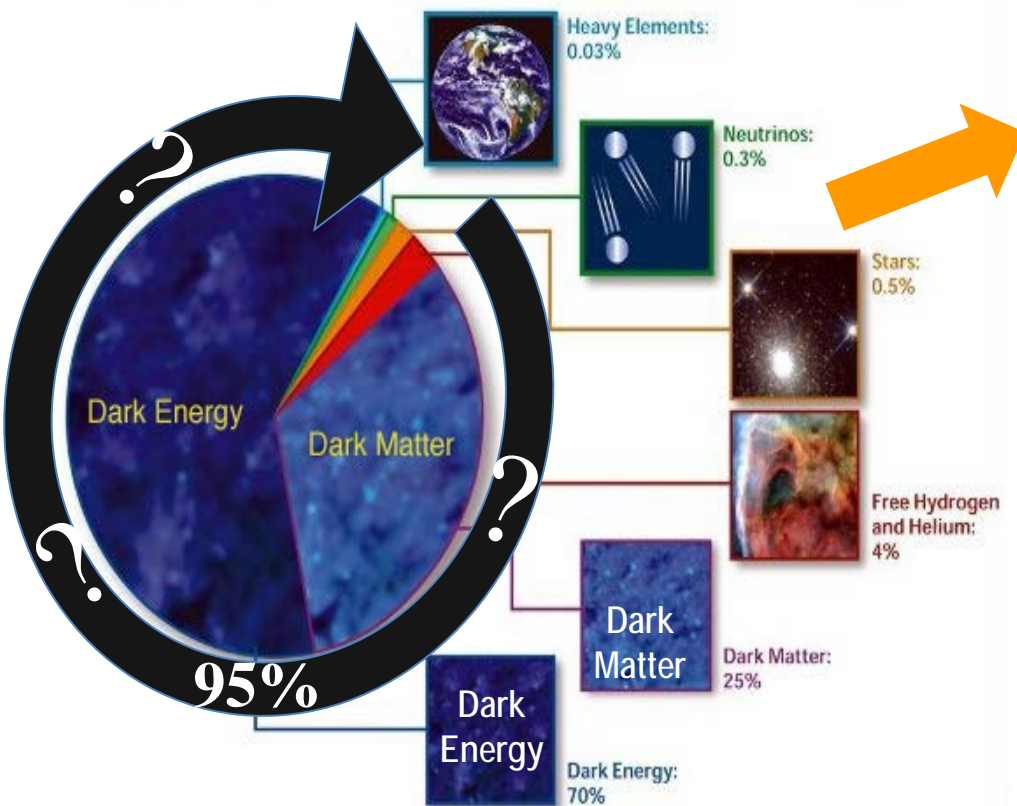
<https://www.cppm.in2p3.fr/>

Eric Kajfasz (kajfasz@cppm.in2p3.fr)

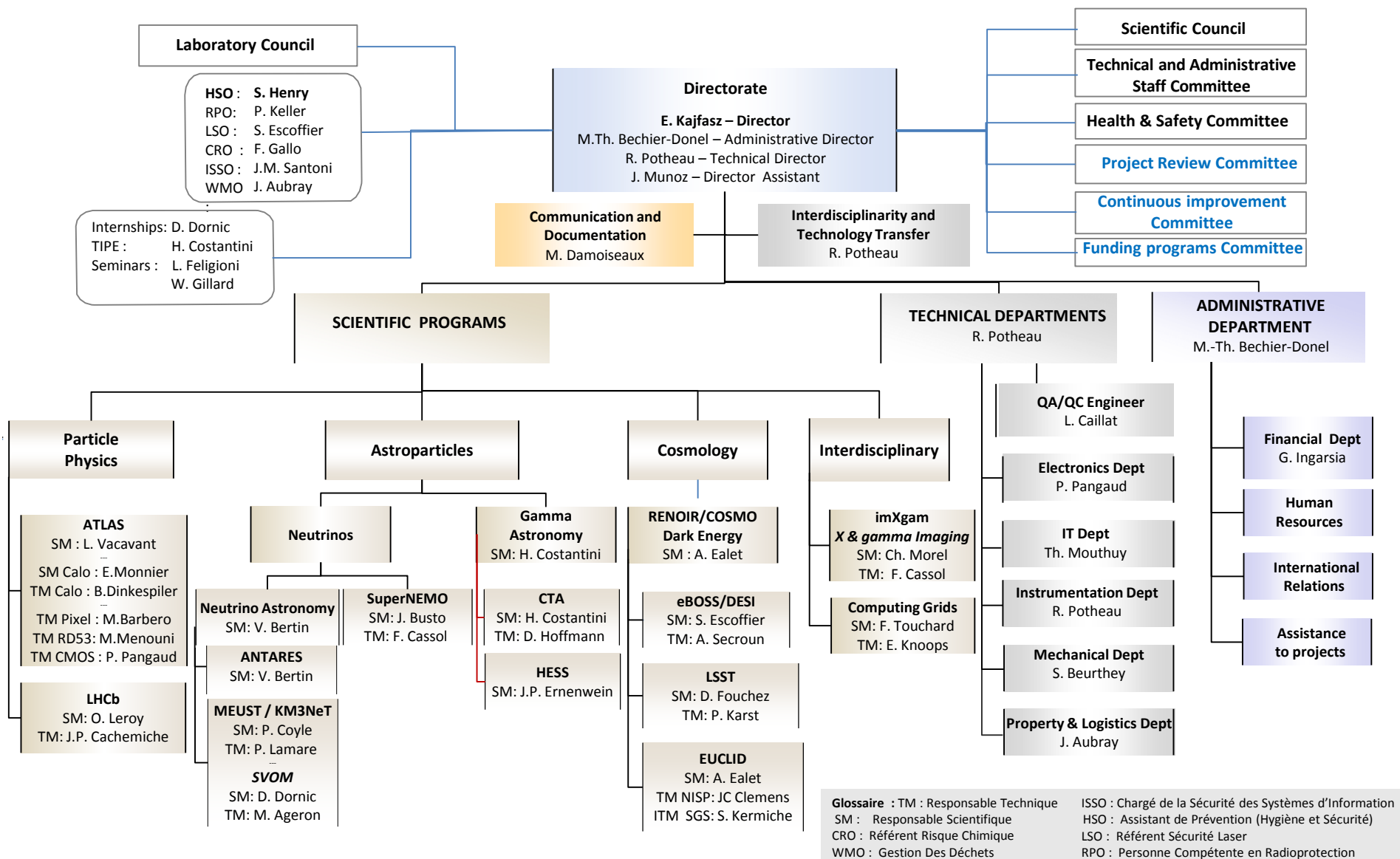


Our missions

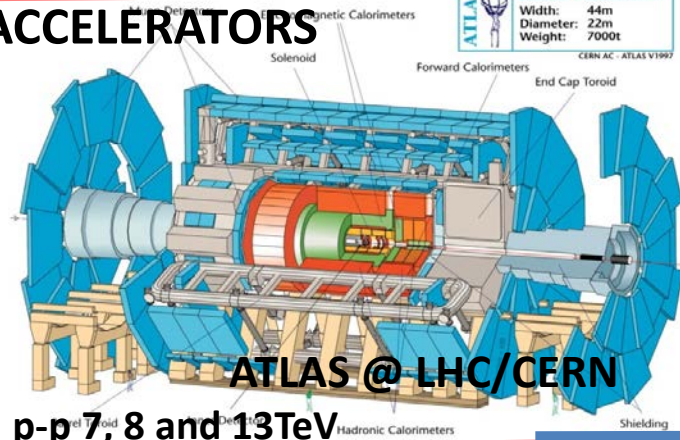
**From the infinitely small to the infinitely big
Understand our Universe,
What it is made of and how it evolves...**



Our organization



AT ACCELERATORS



ATLAS @ LHC/CERN

p-p 7, 8 and 13TeV

ON TOP OF MOUNTAINS

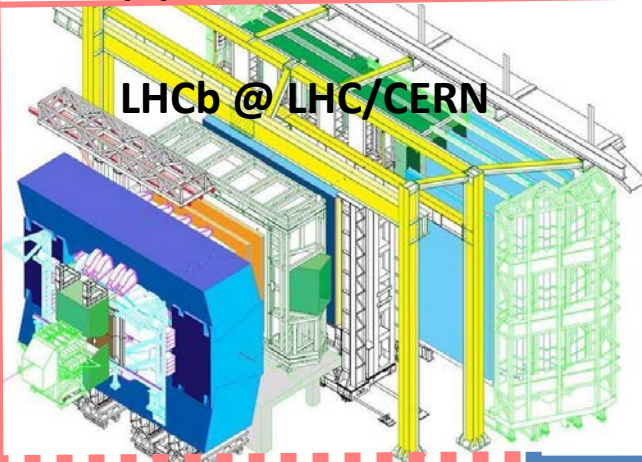


**SNLS/SNFactory
BOSS/eBOSS
DESI**



LSST

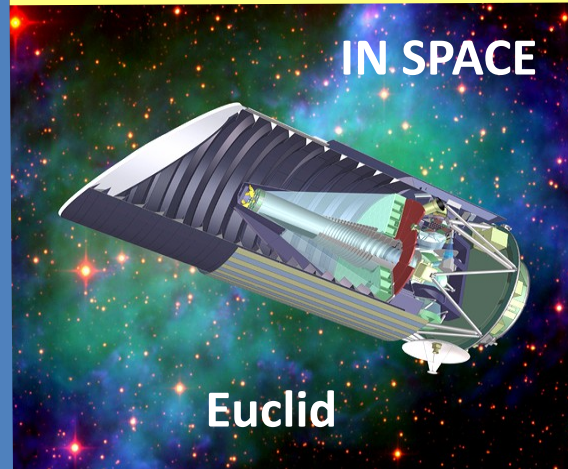
LHCb @ LHC/CERN



**International
Scientific
Collaborations
all over the Planet**

...

IN SPACE



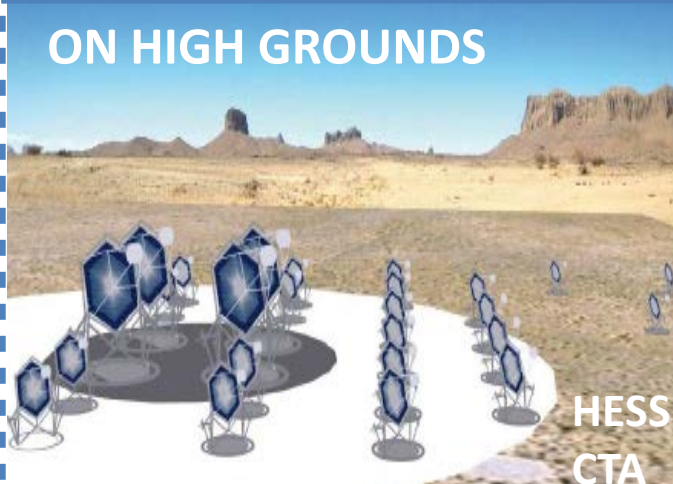
Euclid

UNDER MOUNTAINS



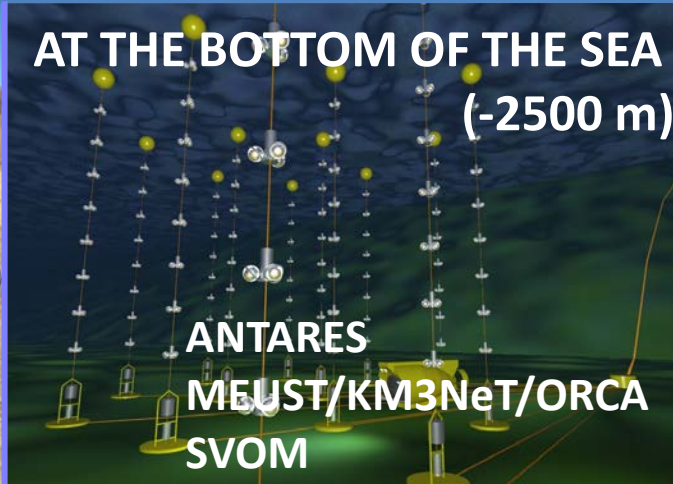
SuperNEMO

ON HIGH GROUNDS



**HESS
CTA**

AT THE BOTTOM OF THE SEA (-2500 m)



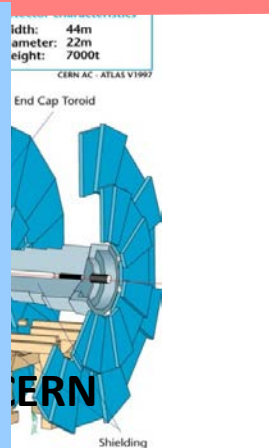
**ANTARES
MEUST/KM3NeT/ORCA
SVOM**

Precision measurement
of the SM
Discovery and study of
the Higgs boson
CP violation - Search for
New Physics

ATLAS Pixel detectors
(current, IBL, upgrades)
e/γ calorimeter
(endcaps, operations, ID
and performance)

Trigger and filtering
(HLT, Lar trigger
upgrade)

LHCb trigger/DAQ
(current L0 Trigger and
40 MHz readout)



Characterize
Dark Energy
Cosmological
parameters
multi-probe
approach

LSST Camera Filter
Changer System &
“Ground” Segment
EUCLID Near-IR
Spectro- and Photo-
meter focal plane
& Ground Segment



**International
Scientific
Collaborations
all over the Planet**

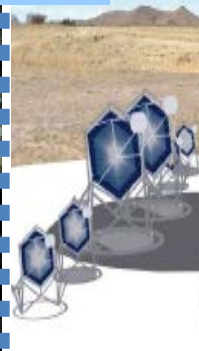
Neutrino and Gamma Astronomy
Sources of CR acceleration
Indirect detection of Dark Matter
multi-messenger approach
Neutrino mass hierarchy (ORCA)

CTA NectarCAM DAQ

KM3NeT infrastructure and line integration
SVOM ground segment (Follow-up telescope)

Nature of the
Neutrino


Radon management
and effects



Top-notch techn(olog)ical skills for top-notch science

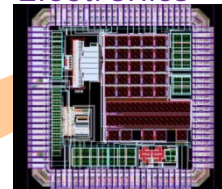
- Recognized technical skills and leadership
 - Micro-electronics (planar and 3D; radiation hardness)
 - Pixels detectors for particle physics (ATLAS)
 - Transfer to:
 - X-Ray imaging (imXgam) => **4 patents and startup company** imXPAD
silicon and CdTe (FP7 Calypso)
 - ... but also robotized avionics (silicon fly retina – FP7 Curvace)
 - Fast acquisition (FPGA based) and fiber optics transmission (LHCb)

But also for...

 - Hadron therapy (FP7 ENVISION)
 - ATLAS: LAr calorimeter readout and trigger upgrade
 - ALICE: readout upgrade
 - Characterization of IR detectors for space missions
 - Submarine Infrastructures (ANTARES/MEUST)
 - Equipressure systems
 - Submarine connectors
 - 2 patents; startup company**  **strong interest from the industry (sustainable energies)**
FUI with EDF, Comex and Subsea Tech
FUI with NEXANS, Comex and Subsea Tech
 - Interaction with Competitiveness Clusters
 - OPTITEC, SCS, Mer Méditerranée, Eurobiomed, Pégase



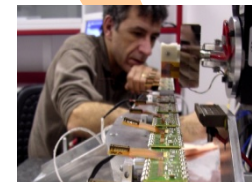
Electronics



DAQ/info



Instrumentation



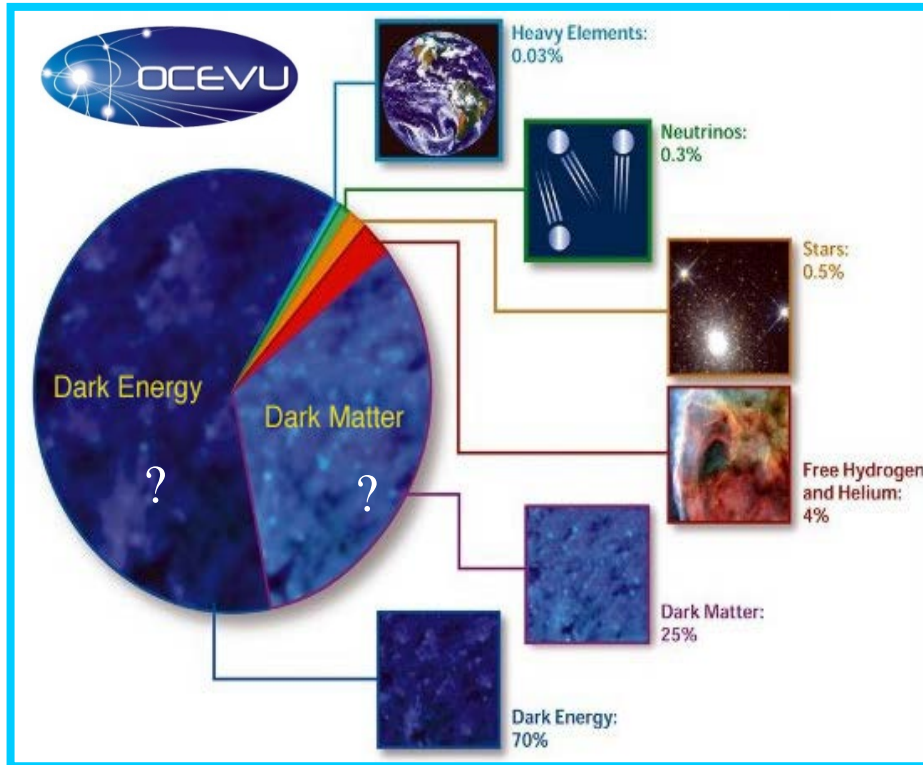
Very
strong
technical
skills

Mechanics



« Investissements d'avenir »

- **Labex OCEVU: Origins, Constituents et Evolution of the Universe**
 - Coordinated by Aix-Marseille Université (and CPPM); 10 M€ over 8 years (2012-2019)



Partners:

Aix-Marseille Université
Univ. de Montpellier
 Univ. Paul Sabatier (Toulouse)
CNRS: IN2P3, INP et INSU

CPPM
CPT
LAM
L2C
LUPM
IRAP

Collaborative projects in:
Research
Education
Transfer to society

Combine and reinforce our strengths in:
 Cosmology, (Astro-)Particles Physics
 Observation, Experimentation, and Theory

- **France Life Imaging (FLI)** selected in the call « Infrastructures in Biology and Health » : Spectral & photon counting CT for small animals
- Projects of **A*MIDEX** : M2 P3TMA « Académie d'Excellence », prototype of an X-Ray camera for diagnostics in fusion plasma in Tokamaks, « Académie d'Excellence – Collège Doctoral » - shared PhD student w/ Barcelona
- **Future of OCEVU** : “EUR” project **IPU - Institute for the Physics of the Universe** – (2018-2027)
 strong support from A*MIDEX, OCEVU Steering Committee (chair by Saul PERLMUTTER), CERN, CNES (CPPM, CPT, LAM) – Research, Education (**Graduate School**) and Transfer – Funding PIA-3 and A*MIDEX (16+8M€)
Advisory Committee: Abhay ASHTEKAR, Gerard 't HOOFT, Peter JENNI, Saul PERLMUTTER

We are resolutely open to the world...

Cooperations (**with agreements between universities**):

Algeria

China

Colombia

Czech Republic

Hungary

India

Italy

Lebanon

Morocco

Romania

Russia

Spain

USA

...

Over half of our PhD students and postdocs are foreigners

Currently 7 PhD co-directions with foreign universities (2 China, 1 Columbia, 1 Italy, 2 Romania, 1 Spain)

LIA FCPPL

France-China Particle Physics Lab

An “outside the walls” laboratory

over 200 Chinese and French collaborators

A network of which CPPM is the administrative headquarters



CPPM Collaborative Projects with:

IHEP, Beijing, 中国科学院高能物理研究所 - 北京

Tsinghua Univ., Beijing - 清华大学 - 北京

USTC, Hefei 中国科学技术大学 - 合肥

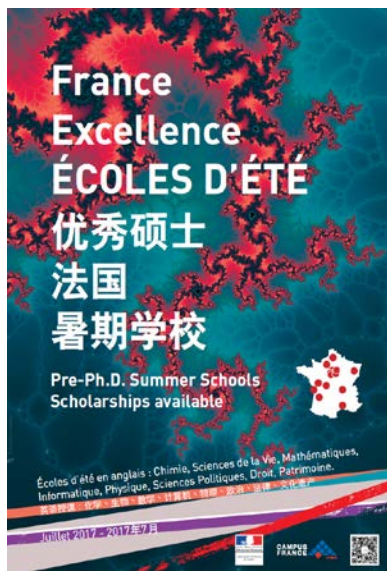
Shandong University, Jinan - 山东大学 - 济南

**Next FCPPL Workshop
will be held in Marseille Spring '18**

Summer School at CPPM

Programme of the School at CPPM

- Particle Physics (PP)
- Astroparticle Physics (AP)
- Cosmology
- Mini-Projects
 - Afternoon A: collective work on ATLAS data analysis
 - Afternoon B: in 10 groups of 2 (3) on projects randomly selected on PP and AP
 - Personal work of the 10 groups to prepare a 10' presentation of their work
- Time for discussion with researchers (also about possible thesis subjects)
- French classes
- Social and Cultural Activities
(July 14, 16 all day; and dinner w/ teachers on July 19)



- All your meals are provided for

- We will also provide you with city bus/metro tickets

- 1 ticket for 1 destination even if you have to make connections between different City bus/subway(metro) lines – RFID validation inside the bus or at the subway gates
- You are advised to use hats/caps/sun glasses and lotion
- Please, always keep an eye on your belongings

Summer School at CPPM - Programme

Also connect to: <http://indico.in2p3.fr/e/CPPMSummerSchool2017>

all the slides will be available here + updated info

WiFi connection: Eduroam

CPPM network - SSID=cppm WPA2key=2008accec01

	Tue 11	Wed 12	Thu 13	Fri 14	Sat 15	Sun 16	Mon 17	Tue 18	Wed 19	Thu 20	Fri 21	Sat 22
08h00-08h30		breakfast @CROUS	breakfast @CROUS	breakfast box	breakfast box	breakfast box	breakfast @CROUS	breakfast @CROUS	breakfast @CROUS	breakfast @CROUS	breakfast @CROUS	breakfast box
08h30-09h00		Présentation & Introduction	intro PP - 1 Yann	Chao + Ruiqi Go by RTM	free time	William + Eric Go by RTM	intro CO - 1 William	Cosmo – SN Dominique	SuperNEMO José	Free time or Personal Work	Conclusions PP Steve	Leave for train departures at 06:14 and at 10:06 with taxi and NAP bus
09h00-09h30												
09h30-10h00		FRENCH (FLE) Valérie Du Rusquec	Break		intro AP - 2 Heide	Marseille Tour Visit by bus	Break	Break	Break		FRENCH (FLE)	
10h00-10h30												
10h30-11h00		lunch @SOGERES	lunch @SOGERES	lunch box	lunch tray + Heide	lunch box	lunch @SOGERES	lunch @SOGERES	lunch @SOGERES	lunch @SOGERES	lunch @SOGERES	
11h00-11h30												
11h30-12h00		Machine Learning Yann	ATLAS Laurent	Downtown Visit by foot starting at 16:30	CTA Heide	Calanques Visit by boat	Research Projects A ATLAS Romain + PHD Students	Cosmo – BAO Julien Bel	Research Projects B ATLAS, LHCb, CR	FRENCH (FLE)	Projects presentations and grading (Auditorium)	
12h00-12h30												Break
12h30-13h00		intro AP - 1 Vladimir	LHCb Julien		Discussion AP	restaurant	General Disc. Sel. Projects B	Discussion CO	General Discussion	Personal Work		
13h00-13h30	Imagerie Med. Christian			Discussion PP							dinner tray	back by 521 RTM bus
13h30-14h00		Pickup by Cédric at 17:16 with NAP bus	intro AP - 1 Vladimir		LHCb Julien	Discussion AP	restaurant	General Disc. Sel. Projects B	Discussion CO	General Discussion		
14h00-14h30	Machine Learning Yann			ATLAS Laurent							Downtown Visit by foot starting at 16:30	CTA Heide
14h30-15h00		Break	Break		KM3NET ORCA Vincent	Cosmo – Voids Alice	Romain, Julien, Heide, William	Break				
15h00-15h30	intro AP - 1 Vladimir			LHCb Julien					Discussion AP			
15h30-16h00		Imagerie Med. Christian	Discussion PP		dinner tray							
16h00-16h30	Pickup by Cédric at 17:16 with NAP bus			intro AP - 1 Vladimir		LHCb Julien	Discussion AP					
16h30-17h00		Machine Learning Yann	ATLAS Laurent		Downtown Visit by foot starting at 16:30			CTA Heide	Calanques Visit by boat	Research Projects A ATLAS Romain + PHD Students	Cosmo – BAO Julien Bel	Research Projects B ATLAS, LHCb, CR
17h00-17h30	Break			Break		KM3NET ORCA Vincent	Cosmo – Voids Alice					
17h30-18h00		intro AP - 1 Vladimir	LHCb Julien		Discussion AP							
18h00-18h30	Imagerie Med. Christian			Discussion PP		dinner tray						
18h30-19h00		Pickup by Cédric at 17:16 with NAP bus	intro AP - 1 Vladimir		LHCb Julien		Discussion AP					
19h00-19h30	Machine Learning Yann			ATLAS Laurent		Downtown Visit by foot starting at 16:30		CTA Heide	Calanques Visit by boat	Research Projects A ATLAS Romain + PHD Students	Cosmo – BAO Julien Bel	Research Projects B ATLAS, LHCb, CR
19h30-20h00		Break	Break		KM3NET ORCA Vincent		Cosmo – Voids Alice					
...	intro AP - 1 Vladimir			LHCb Julien		Discussion AP						
		Imagerie Med. Christian	Discussion PP		dinner tray							
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	Machine Learning Yann			ATLAS Laurent		Downtown Visit by foot starting at 16:30		CTA Heide	Calanques Visit by boat	Research Projects A ATLAS Romain + PHD Students	Cosmo – BAO Julien Bel	Research Projects B ATLAS, LHCb, CR
		Break	Break		KM3NET ORCA Vincent		Cosmo – Voids Alice					
	intro AP - 1 Vladimir			LHCb Julien		Discussion AP						
		Imagerie Med. Christian	Discussion PP		dinner tray							
	Pickup by Cédric at 17:16 with NAP bus			intro AP - 1 Vladimir		LHCb Julien	Discussion AP					

All classes (including FLE) are held in the CPPM auditorium
 Research Projects A: Computing rooms in building B (CR Bld B)
 Research Projects B: Physics TP room + 2 CPPM meeting rooms (or CR Bld B)
 Personal Work: CR Bld B or 3 CPPM meeting rooms

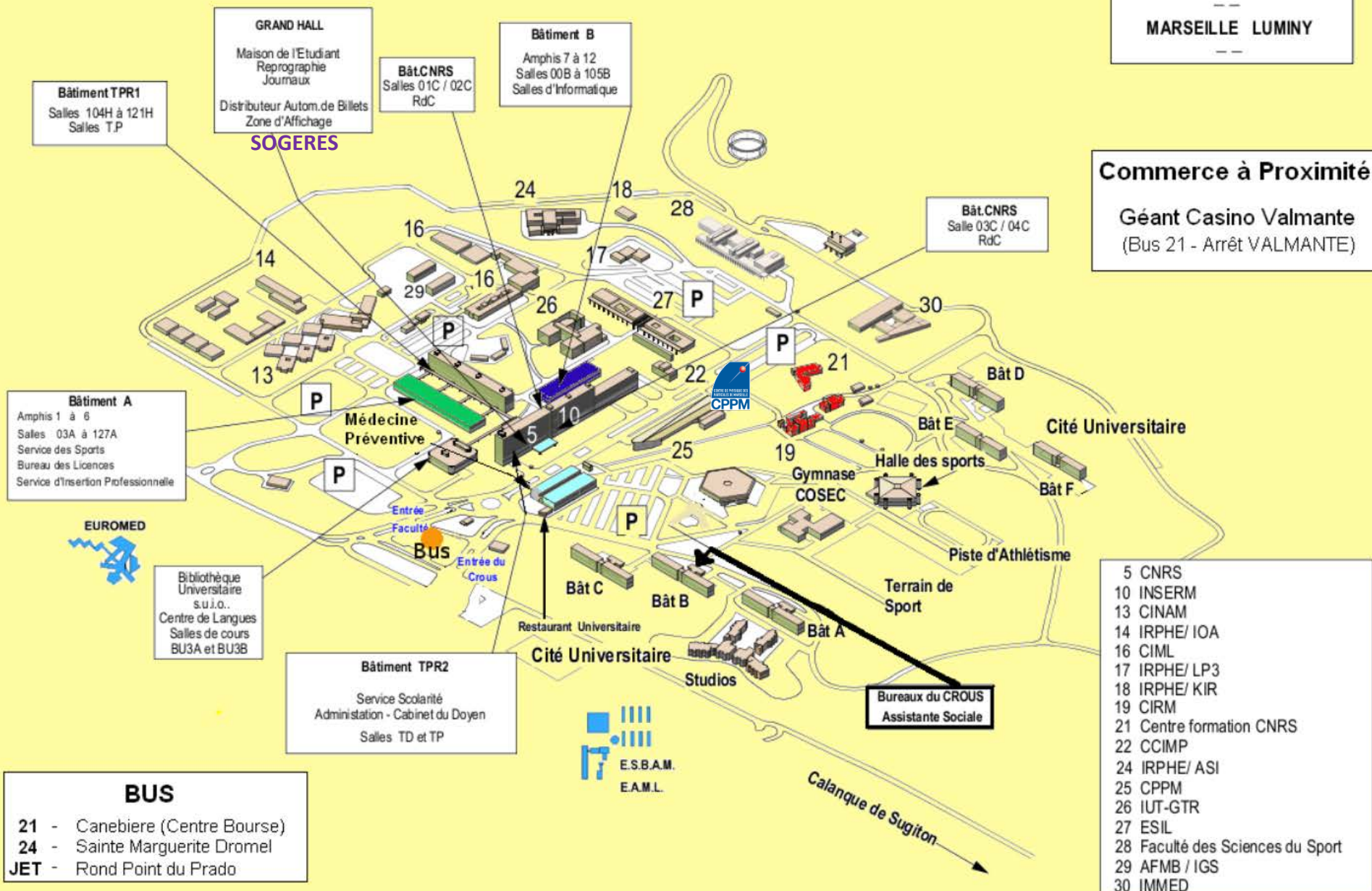
PLAN DU CAMPUS LUMINY

PARC SCIENTIFIQUE
ET TECHNOLOGIQUE

MARSEILLE LUMINY

Commerce à Proximité

Géant Casino Valmante
(Bus 21 - Arrêt VALMANTE)



BUS

- 21 - Canebiere (Centre Bourse)
- 24 - Sainte Marguerite Dromel
- JET - Rond Point du Prado

Particle Physics



Yann COADOU

ATLAS



Steve MUANZA



Laurent VACAVANT

LHCb



Julien COGAN

Imaging



Christian MOREL

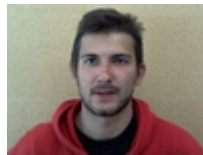
coadou@cppm.in2p3.fr
 muanza@cppm.in2p3.fr
 vacavant@in2p3.fr
 cogan@cppm.in2p3.fr
 morel@cppm.in2p3.fr
 bertin@cppm.in2p3.fr
 kulikovskiy@cppm.in2p3.fr
 costant@cppm.in2p3.fr
 busto@cppm.in2p3.fr
 julien.bel@cpt.univ-mrs.fr
 fouchez@cppm.in2p3.fr
 gillard@cppm.in2p3.fr
 pisani@cppm.in2p3.fr
 kukla@cppm.in2p3.fr
 dumitriu@cppm.in2p3.fr
 serrano@cppm.in2p3.fr
 vdurusquec@yahoo.fr
 meaux@cppm.in2p3.fr
 c.wang@cern.ch
 ruiqi.zhang@cern.ch
 pepe@cppm.in2p3.fr
 garnier@cppm.in2p3.fr
 kajfasz@cppm.in2p3.fr

Astroparticle & Neutrinos

ANTARES/KM3NeT



Vincent BERTIN



Vladimir KULIKOVSKIY

CTA



Heide COSTANTINI

SuperNEMO



José BUSTO

Cosmology

Julien
BEL
(CPT)



Dominique FOUCHEZ

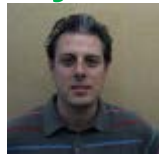


William GILLARD



Alice PISANI

Afternoon A

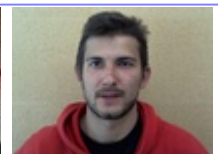


Romain KUKLA

Ana
DUMITRIU



Justine SERRANO



Mini-projects

Organization



Cédric MEAUX



Angélique PEPE

Chao
WANG

Ruiqi
ZHANG

Esthere
GARNIER



Marie-Thérèse DONEL



Jocelyne MUNOZ



Eric KAJFASZ

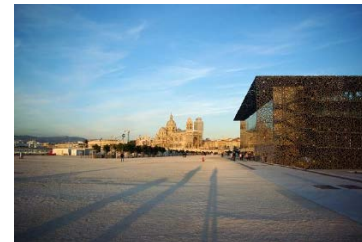
French Classes

Valérie
Du RUSQUEC

Friday July 14th (more detailed info later on)

WANG Chao et ZHANG Ruiqi will be your guide all along this day

- Take the City bus (line 21) to go downtown
 - For those of you who feel confident to leave Campus on their own
Meet at 16:15 at Vieux-Port subway station exit (on the Old Harbor side)
 - For the others:
Meet with Chao and Ruiqi at the Bus Stop at the campus entrance at 15:00
- Visit on foot starting at 16:30-19:30 with a touristic guide from TOCTOC Marseille

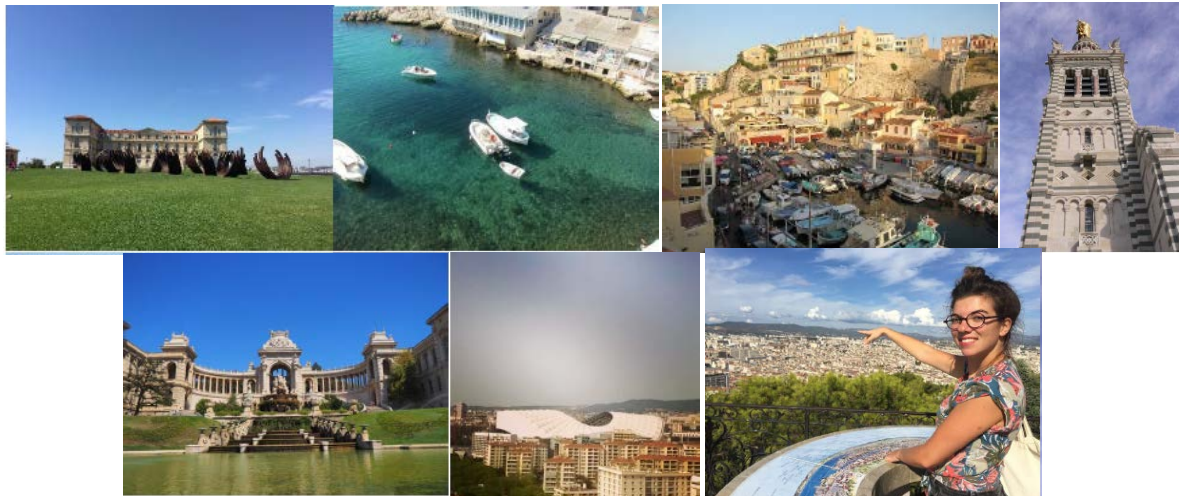


- 19:30 at the Restaurant **Ahwash** where dinner has been booked for you
- 14th of July Fireworks on the Old Harbor (Vieux-Port)
- Around 23:00-23:15 start walking towards “Place Castellane”
Chao and Ruiqi will lead the way to a special “NAP Tourisme” bus to drive you back to campus

Sunday July 16th (more detailed info later on)

William GILLARD and I will be your guide all along this day

- Take the City bus (line 21) to go downtown
 - For those of you who feel confident to leave Campus on their own
Meet at 9:45 at Vieux-Port subway station exit (on the Old Harbor side)
 - For the others:
Meet with me at the Bus Stop at the campus entrance at 8:45
- Bus tour 10:00-12:30 with a touristic guide from TOCTOC Marseille



- Regroup at Vieux-Port ~13:30 to get on a boat...
14:00-17:00 Visit by boat of the Calanques
- 19:30 at the Restaurant **La Nautique** where dinner has been booked for you
- Around 21:30-22:00 back to campus with City bus 521

Other info...

Do not hesitate to contact us for any question you may have on physics, thesis possibilities at CPPM, logistics,...:

- **In person**
- **By email**
- **Using the Questions/Comments box**

In case of emergency, please contact:

- **Éric KAJFASZ / Director of CPPM at +33 (0)6 72 07 48 58**
- **Esthere GARNIER / Organization at + 33 (0)7 83 30 10 23**
- **Medical emergency: dial 112 (European number)**

The background of the slide is an aerial photograph of the CPPPM building and its parking lot. The building is a large, modern structure with a curved roof and many windows. The parking lot is filled with cars, and there are trees and greenery around the building.

Once again,
Welcome to CPPPM!
I wish you a fruitful
and enjoyable School!