

# Institute for the **Ph**ysics of the **U**niverse



Institut  
Physique de  
l'Univers  
Aix\*Marseille Université

*Strengthen and structure our synergies  
to better teach, do research, and transfer*



- Strategy
- 2022-2025 Budget
- AAP IPhU 2022
- AAP AMIDEX/TIGER “Transformation de Parcours de Master”
- AAP AMIDEX/TIGER TRIPS
- AAP AMIDEX Interdisciplinarité
- AAP AMU CPJ (Chaire Professeur Junior)
- Other Calls

## Research

- Successful operation of international projects IPhU teams are involved:  
e.g. ATLAS, LHCb, Belle-II, EUCLID, LSST, CTA, SVOM/COLIBRI, KM3NeT, etc...  
their successful scientific exploitation is naturally a top priority
- Prepare for the next ones (e.g. post-LHC, E-ELT, LISA, ...) and trigger new ideas/projects

## Education

- Strengthen through TIGER the international aspects, and the links with research and the socio-economic and cultural world
- New « Instrument Scientist » curriculum: start in 2022 w/ TIGER & HCERES confirmation in 2024
- Consolidation of the « Physics of the Universe » PhD Program
- Transverse data science: in particular, related to HPC, HTC, Deep Learning, and Quantum Computing (?)
- Increase Attractiveness and Standing of AMU and Coherence of the IPhU Graduate School:  
incoming and outgoing grants, 3 doctoral contracts/yr (downscoped to 1 or 2/yr), contribute to improve hosting of students, develop a sense of belonging in the Graduate School and AMU,...
- Digital Campus to alleviate distance between the Château-Gombert and Luminy Campuses
- Yearly Organization of a summer school for undergraduates and one for Master/PhD students (w/ CIVIS?)
- Send students to CERN and ESO at the time of their summer schools (work on an agreement)
- Aim at an Erasmus Mundus

## Links to socio-economic and cultural sectors

- T80 et T120 (@OHP), IRiS, ePERON (+radio-telescope?) –  
develop an international network (Mexico, IPPOG, master classes,...)
- Partnerships w/ companies for common developments (Lynred, Intel, Nexvision, Thalès, Winlight,...)
- Make the Innovation Cell fully operational and articulated with the AMU existing tools: creativity development workshops, support to inventors (training, coaching, incentive funding,...),...

## Global

- Sustain the visibility and positioning of IPhU
- **Apply to Calls at the Local, Regional, National and European levels** (only hope for postdoc funding?)

# Main goals for next year

make the institute settle down and engage the 5-yr roadmap

## Global

- Increase visibility and positioning of IPhU – Finalization of web pages, collaborative tools,... and start presence on social networks.
- Explore possibilities w/ CIVIS

## Research

- To trigger new ideas, collaboration and projects: organization by Science WGs of thematic days on transverse themes likely to interest all 3 labs : e.g. DM, GW, BSM, Neutrinos
- Reinforce IPhU teams participation to LSST and KM3NeT
- Co-supervision and co-funding of a thesis with Mexico on SVOM/Colibri
- Support collaborative projects (including the hiring of a PhD student, if funding permits)

## Education

- Apply to the TIGER Master Transformation Call for Proposals
- Apply to the TIGER TRIPS Call for Proposals
- Bring the Graduate School program up to speed (Master and Doctorate)
- If Covid permits, organize a Summer School (on Gravitational Waves?)

## Links to socio-economic and cultural sectors

- Participate w/ IRiS to the “Noche de las estrellas” in Novembre (Mexico)
- Deploy in production mode access through the web of ePERON data
- Set up and sign agreement with the rectorate (involvement in IRiS and ePERON activities)
- Finish to set up the Innovation Cell: raise awareness of our colleagues, develop communication and links w/ the different actors (R&D Week in November?)

## Human Resources

320 k€/yr

- 1 (long-)term Pedagogic Engineer for the Graduate School
- 2-yr term engineer to develop the Radon and IR platforms
- **3 PhD students funded/yr**
- *Cannot afford:* Postdocs; Outreach and communication officer (sorely missing); Project assistant (responsibility taken over by the Admin director)

## Research, Innovation and Outreach

190 k€/yr

- Environment (**2k€/yr/student**) of the funded PhD students
- Funding of collaborative projects (through a yearly Call)
- Workshops/conferences; Invitation of Guest Scientists
- Support to Outreach and Communication Cell (in particular educational platforms and actions)
- Support to Innovation Cell (in particular incentive money for innovative projects and actions)

## Education (Graduate School)

320 k€/yr

- Incoming (**4+4½ [M1]; 4+4½ [M2]**) and outgoing (**8 [M1]; 8 [M2]**) grants on merit
- Internship stipends (**5 [M1]; 20 [M2]**) on merit
- Seasonal and thematic schools
- Teaching by research

**Total: 830 k€/yr**

**But A\*Midex Steering Committee voted on 12 Apr 2021**

**Total IPhU yearly budget of 320 k€ over the time period 2022-2025**

**=> Drastic change in strategy required**

# Resulting Budget Strategy for 2022-2025

Institut de Physique de l'Univers (IPhU)	2022	2023	2024	2025
PhD 1	12	9		
PhD 2	12	9		
PhD 3	12	12	9	
PhD 4	12	12	9	
PhD 5	3	12	12	9
PhD 8		3	12	12
PhD 11			3	12
PhD 14				3
# Nombre PhDs	7	8	5	4
# mths2020	24	18		
# mths2021	24	24	18	
# mths2022	3	12	12	9
# mths2023		3	12	12
# mths2024			3	12
# mths2025				3
cost	133 506	152 462	126 706	108 333
PhD IA-ANR 1 (co-financement à 50%)	12	9		
PhD IA-ANR 2 (co-financement à 50%)	12	9		
# mths	24	18	0	0
cost	30 600	22 950	0	0
cost RH PhDs	164 106	175 412	126 706	108 333
cost	51 360	0	0	0
cost RH Other	51 360	0	0	0
<b>COST: Human resources</b>	<b>215 466</b>	<b>175 412</b>	<b>126 706</b>	<b>108 333</b>
<b>PhD operation (1k€/person after)</b>	<b>7 000</b>	<b>8 000</b>	<b>5 000</b>	<b>4 000</b>
<b>Research projects operations</b>	<b>62 000</b>	<b>62 000</b>	<b>62 000</b>	<b>62 000</b>
Research platforms consolidation (COLIBRI, SPACE, IR, and ELIXIR)				
<b>COST: Research</b>	<b>69 000</b>	<b>70 000</b>	<b>67 000</b>	<b>66 000</b>
<b>IPhU Operations</b>	<b>1 743</b>	<b>1 743</b>	<b>1 743</b>	<b>1 743</b>
Innovation (incentive money)	2 000	2 000	2 000	2 000
Outreach				
Education platforms consolidation (IRiS@OHP,ePERON @OHP&OPM)	4 500	4 500	4 500	4 500
<b>COST: Innovation, Outreach and operations</b>	<b>8 243</b>	<b>8 243</b>	<b>8 243</b>	<b>8 243</b>
Incoming grants S1-2022	20 000			
Incoming grants S2-2022	28 000			
Incoming grants S1-2023		16 000		
<b>Incoming grants M1 Full (1/yr)</b>	<b>4 000</b>	<b>12 000</b>	<b>16 000</b>	<b>16 000</b>
<b>Incoming grants M1 Half (2/yr)</b>	<b>8 000</b>	<b>16 000</b>	<b>16 000</b>	<b>16 000</b>
<b>Incoming grants M2 Full (1/yr)</b>	<b>4 000</b>	<b>8 000</b>	<b>8 000</b>	<b>8 000</b>
<b>Incoming grants M2 Half (2/yr)</b>	<b>8 000</b>	<b>8 000</b>	<b>8 000</b>	<b>8 000</b>
<b>Outgoing M1 (1/yr)</b>	<b>2 500</b>	<b>2 500</b>	<b>2 500</b>	<b>2 500</b>
<b>Outgoing M2 (1/yr)</b>	<b>4 500</b>	<b>4 500</b>	<b>4 500</b>	<b>4 500</b>
<b>Internships M1 (3/yr)</b>	<b>4 950</b>	<b>4 950</b>	<b>4 950</b>	<b>4 950</b>
<b>Internships M2 (3/yr)</b>	<b>6 600</b>	<b>6 600</b>	<b>6 600</b>	<b>6 600</b>
Training @OHP	7 000	7 000	7 000	7 000
<b>Cours doctoraux (105h à 45€/h)</b>	<b>4 728</b>	<b>4 728</b>	<b>4 728</b>	<b>4 728</b>
<b>COST: Graduate School</b>	<b>102 278</b>	<b>90 278</b>	<b>78 278</b>	<b>78 278</b>
Total sans MS	179 521	168 521	153 521	152 521
<b>Grand Total = 1 280 000 €</b>	<b>394 987</b>	<b>343 933</b>	<b>280 227</b>	<b>260 854</b>

1 PhD/yr

62 k€/yr



# Resulting Budget Strategy for 2022-2025

## Human Resources

~ 156,5 k€/yr

- ~~1 (long-term) Pedagogic Engineer for the Graduate School~~
- 1 PhD student funded/yr

## Research, Innovation and Outreach

~ 76,3 k€/yr

- Environment (1k€/yr/student) of the funded PhD students
- Funding of collaborative projets (through a yearly Call)
- Workshops/conferences; Invitation of Guest Scientists
- Support to Outreach and Communication Cell (in particular educational platforms and actions)
- Support to Innovation Cell (in particular incentive money for innovative projects and actions)

## Education (Graduate School)

87,2 k€/yr

- Incoming (1+2½ [M1]; 1+2½ [M2]) and outgoing (1 [M1]; 1 [M2]) grants on merit
- Internship stipends (3 [M1]; 3 [M2]) on merit
- Seasonal and thematic schools
- Teaching by research

**Total: ~ 320 k€/yr**

**Crucial to reinject in IPhU the 2020-2021 budget part not spent = 270 k€**

**Would allow to have on 2022-2025:**

**2 PhD students/yr instead of 1**

**3 M2 incoming half-grants instead of 2**

**AMIDEX Steering Committee arbitration not expected before mid-March**

# TIGER Experimentation phase impact on IPhU 2022-2025 Budget

- **Budgets alloués aux parcours lauréats de l'AMI TIGER 2021-2022**
  - Le parcours suivants a été lauréat de l'appel à manifestation d'intérêt TIGER lancé en juin 2021, il est associé à un autre institut.
  - L'institut IPhU devra s'entendre avec cet autre institut sur la gestion de ces budgets et en faire état dans la troisième partie de ce document.

Mention de master	Parcours	Composante(s)	Budget total	Dispositif "stages"	Dispositif "mobilités"	Dispositif "colloques"	Dispositif "événements"	Dispositif "extérieurs"	Institut(s) associé(s) ...
Physique	Physique (acronyme FunPhys)	Faculté Des Sciences (FDS)	12 800 €	4 800 €	8 000 €	0 €	0 €	0 €	IPhU+ISFIN
		Somme totale à répartir	12 800 €	4 800 €	8 000 €	0 €	0 €	0 €	

**=> pour IPhU: 2400€ (~ 1 stage M2) et 4000€ (bourse sortante)**

- **17/11/2021: Notre parcours est éligible à des bourses entrantes pour le M1 et le M2**
  - Un montant de 80 000 euros vous sera donc octroyé pour 8 bourses de mobilité entrante (de 10 000 euros chacune), à répartir sur les trois prochaines années universitaires, et entre IPhU et ISFIN.
  - Exemple d'allocation des ressources :
    - Rentrée 2022 : 2 bourses de M1
    - Rentrée 2023 : 2 bourses de M1 + 2 bourses de M2 (M1 2022 terminant leur master)
    - Rentrée 2024 : 2 bourses de M2 (M1 2023 terminant leur master)
  - **=> pour IPhU 1 boursier M1 en 2022 et 1 boursier M1 en 2023 (40k€ sur 3 ans)**



## Guidelines:

- Scientific relevance, well defined and realistic work plan, and expected impact (national and international), together with matching the institute scientific perimeter and goals
- Implementation of a genuine collaboration between teams of at least two labs of the institute will also be favored
- Proposal can span several years. An evaluation is performed each year to validate the continuation of project funding

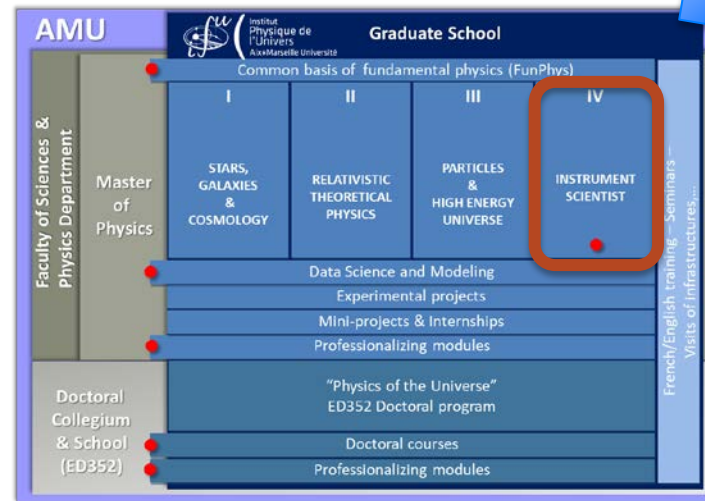
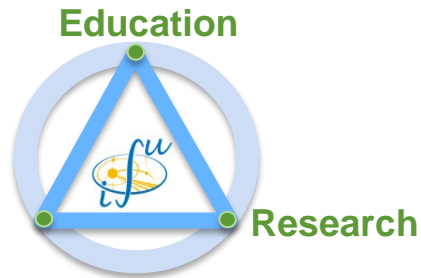
**Budget: 62 k€ (x2 pressure) and 1 PhD (x2.5 pressure) - a little bit more if 2020-2021 remaining budget is reinjected**

**Institute Council arbitration meeting on Mon Feb 21st**

PI name	Title	Leading Labs	Funding	PhD	Visitors
coadou@c ppm.in2p3.fr	School of Statistics, SOS2022	CPPM, CPT, LAM	3 000		
stephane.basa@ lam.fr	Operation of the COLIBRI robotic telescope	LAM, CPPM	10 500	1 PhD (co-fund CNES)	
pralavor@c ppm.in2p3.fr	Direct search for WIMP dark matter	CPPM, CPT, LAM; LUPM/IFAC	8 000		3-week visitor (~2,100Eu)
stephane.arnouts@ lam.fr, olivier.ilbert@ lam.fr	Pix2LSST: from Pixel to Large Scale Structure with Vera Rubin Telescope	LAM, CPPM	10 500		
sylvain.delatorre@ lam.fr	Cosmology with Large Scale Surveys (CLASS)	LAM, CPPM, CPT	19 800	2 PhD (1 might be ANR co-funded)	
denis.burgarella@ lam.fr	International Research Network on Extragalactic Astrophysics and Cosmology (NECO)	LAM, CPPM	10 000		
carlo.schimd@ lam.fr	Radio@OHP, Radioastronomy at the Observatoire de Haute-Provence: a new window on the Universe	LAM, CPPM, OHP	18 390		
lorenzo@ in2p3.fr	BSM Physics at the Terascale	CPPM, CPT; L2C, LUPM; IFIN-HH (Bucharest Univ. & CIVIS)	6 500		Visitor (A. Dumitriu) several 1-month stays for a total of 10,000Eu
escoffier@c ppm.in2p3.fr	International School - The science of the next generation of large cosmological surveys	CPPM, LAM	5 000		
eric.kajfasz@ univ-amu.fr	Summer School on Gravitational Waves	CPPM, CPT, LAM; OCA/ARTEMIS, L2IT, IRAP	5 000		
vincent.lebrun@ lam.fr	From galaxies to cosmology with deep spectroscopic surveys - A tribute to Olivier Le Fevre	LAM, CPPM, CPT, LAM	5 000		
perez@c pt.univ-mrs.fr	John Bell Institute workshop "Black Hole Information Puzzle"	Quantum Field Theory and Quantum Gravity	5 000		
		<b>TOTAL</b>	106 690	3 PhD	12 100

## Transformation of the Master Programme, involves:

UFR – Physics Department  
 Master « Mention Physique » and « Parcours FunPhys »  
 IPhU and ISFIN (essentially)



Socio-economic world

International

Research

### Calendar:

- Opening of the call for proposals: Friday, January 21, 2022
- **Deadline for submission of intent (stage 1): February 25, 2022**
- **Deadline for submission of project proposals (stage 2): Friday, April 8, 2022**
- Announcement of winning projects: Friday, June 17, 2022
- Installation meeting of winning projects: July 2022

## TRIPS (Teaching and Research Interdisciplinary Platform)

For ~ 10 projects for a total of 2.6 M€- 18 institutes

### Types of projects supported:

Have a physical location, Allow training through research,  
Offer interdisciplinary training projects, Set up training and/or allow the realization of student projects involving L-M-D students

### Calendar:

Opening of the Call for Expression of Interest (CEoI): Fri, Jan 28, 2022

**Deadline of the EoI (stage 1): March 15, 2022**

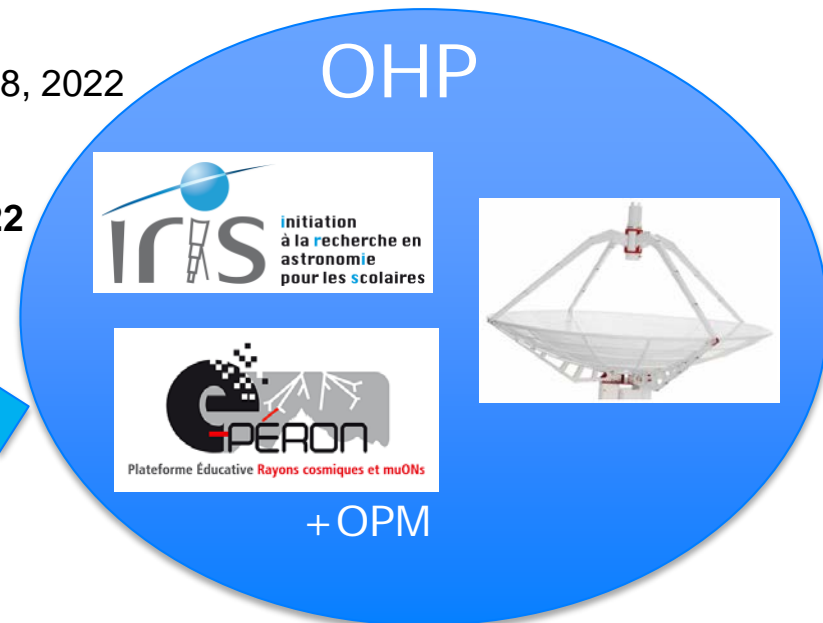
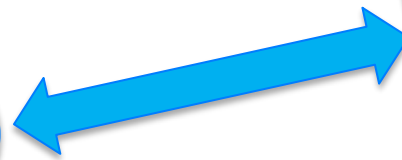
Opening of the TRIPS call for projects (stage 2): April 4, 2022

**Deadline for submission of projects (stage 2): June 03, 2022**

Announcement of winning projects: July 22, 2022

Start of projects: September 2022

Control Room(s)  
@Luminy, ...



+ LSPM/KM3NeT

+ ...

Idea to be discussed ... and also with the Institute Council

## Description of the Call:

<https://www.univ-amu.fr/fr/public/lancement-de-lappel-projets-interdisciplinarite-2021>

## Calendar:

- **Dec 2021 - January 7, 2022** - Consultation of the Institute community by submitting a 2-page LoI (letter of intent) from teams interested in applying
- **Jan 10, 2022 - Jan 21, 2022** - Processing of the Lols by the Institute Council, recoupling with the project leaders and pre-selection of a maximum of 3 projects
- **January 24, 2022 - February 18, 2022** - Preparation of the project files selected by the project leaders, in interaction with the Institute
  - first draft version on **Feb 7<sup>th</sup>** for feedback w/ AMIDEX on interdisciplinary aspects
  - final version on **Feb 18<sup>th</sup>**
- **February 21, 2022 - February 25, 2022** - Processing of the applications by the Institute Council for validation and possible iteration with the applicants before submission to A\*Midex
- **February 28, 2022 noon: deadline for submission of applications to A\*Midex**

PI	Title	Labs	Status	Requested
Aoife Bharucha	Low@LHC - Low mass resonances at the LHC	CPT, CPPM; L2C, LUPM	LoI submitted to IPhU Preselected by Inst. Council Application form Iter1 submitted	2-yr Postdoc + TBD
Damien Dornic	NEXCOS - NEutrinos and X-ray follow-up for Cosmic-ray Source studies	CPPM, LAM	LoI submitted to IPhU Preselected by Inst. Council Application form Iter1 submitted	2-yr Postdoc + TBD
Eric Jullo	DC2DM - Direct and Cosmological characterization of dark matter	LAM, CPPM	LoI submitted to IPhU Preselected by Inst. Council Application form Iter1 submitted	2-yr Postdoc + TBD
Denis Burgarella	IPEACE - Interdisciplinary Project for Extragalactic Astrophysics and Cosmological Enormous Spectroscopic Surveys	LAM, CPPM, CPT(?); I2M	LoI submitted to IPhU Not preselected by Inst. Council	

## Calendar for the Call:

- **7 Feb** : submission to AMU of CPJ projects by Laboratories and/or Institutes
- Preselection of the projects by the AMU governance bodies
- 20 Feb : submission of AMU preselected projects to the Ministry
- Mid-March : Selection of the projects by the Ministry
- Mid-March – mid-June : For each CPJ selected, call for candidates and selection for hiring by ad-hoc Selection Committee

## IPhU Process:

- Following AMU Call sent on 10 Jan, **3 meetings with the directors of the 3 IPhU founding labs** (CPPM, CPT and LAM) and the IPhU Board of Directors were organized successively on Wed 19/01, Wed 26/01 and Fri 28/01 to discuss and try to converge on a single project that would be submitted to AMU on behalf of IPhU.
- It came out of these discussions a **project concerning violent and transient astrophysical events detected and studied in a neutrino/multi-messenger approach**. The person recruited would be assigned to the Physics Department for his teaching and to the CPPM for his research.
- **Meeting with the Director of the Physics Department**, was then held on 31/01 to discuss the teaching aspects, which have been integrated in the CPJ project.
- **Institute Council was consulted** by e-mail on 02/02 for validation of this proposal. No vote against was expressed.
- **Institute Council thus approved** that this CPJ proposal be proposed to AMU by the IPhU. The documents were submitted to the DRV on Feb 7<sup>th</sup>.

## Non exhaustive list...

- 3 projects Région (ELIXIR and radio@OHP)
- 1 project ANR in Particle Physics
- 2 projects MITI 2022 « Événements rares »
- 1 postdoc project CIVIS3i on HE Astrophysics
- 1 project « Chaire AMIDEX » on Gravitational Waves

I probably forgot few other ones I am not aware of, apologies...  
Send me information about them.

**We should try to continue and reinforce this dynamics**

**IPhU working groups can be the forum and place to discuss this**

Within the framework of projects and internships funded or co-funded by IPhU, to comply with the ANR requests within the framework of A\*MIDEX:

**For any communication support** (oral, displayed or digital), you should display the logo of IPhU, the logos of AMU and A\*MIDEX and the logo “Investir l'Avenir”.



They are provided in a zip file as an attachment in the indico agenda, or directly [here](#)

**Concerning publications** – to make it easier to identify them

***In the Acknowledgement section***, please add the following sentence:

"The project leading to this publication has received funding from Excellence Initiative of Aix-Marseille University - A\*MIDEX, a French "Investissements d'Avenir" programme (AMX-19-IET-008 - IPhU)."

***In your affiliation***, please add “IPhU” right after the acronym of your lab

e.g. for a CPT author it should read:

"Aix Marseille Univ, Université de Toulon, CNRS, CPT, IPhU, Marseille, France"

Would be nice if at least the **IPhU funded PhD students had IPhU mentioned in their affiliation.**



**The institute is a real asset for our community involved in the physics of the Universe. It is an asset for the site as well.**

**It is a collaborative adventure in which education, research, innovation and transfer (ERIT) are deeply intertwined.**

**We could be a bit disappointed by the budget level allotted to our institute by AMU/AMIDEX, but we should certainly not get discouraged.**

**It nevertheless allows to keep the wheels turning in the positive and virtuous dynamics that we managed together to put in place between our labs (*remember: I'm not gonna make it alone!*), and that will also make us more efficient when applying for external funding**

**As members of the institute, we need to further improve our working together and with our environment to optimally hinge the institute on the other local (or not) funding initiatives in order to consolidate our resources and have the means to achieve most of the goals of the ambitious ERIT programme on which the institute has been selected in the first place.**



To get information shared in the Newsletter

Send us an email at:

[iphu-contact@univ-amu.fr](mailto:iphu-contact@univ-amu.fr)

**To participate and/or take responsibility in**

- Communication/Outreach
- Innovation Cell
- On the international front
- Summer/Winter Schools
- ...

**To share ideas about**

- Scientific projects
- Pedagogical projects
- Internships
- Projects for students
- Better tutoring of the GS students
- ...

**Send us an email at:**

[iphu-board-of-directors@univ-amu.fr](mailto:iphu-board-of-directors@univ-amu.fr)

or

[iphu-board-of-research@univ-amu.fr](mailto:iphu-board-of-research@univ-amu.fr)

[iphu-board-of-education@univ-amu.fr](mailto:iphu-board-of-education@univ-amu.fr)

**And let's talk about it ☺**

**Thank you very much in advance!**