


Physics of Complex Systems Master

Your future...

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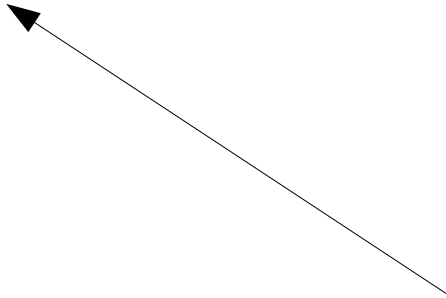




Total cost of a 3-year PhD

→ 50 k€ for student's direct salary ; rest social benefit / charges

→ 1400 € net / month



**From now to a 10⁵ € contract,
and beyond**

Disclaimer : following deals with French system mostly

The calendar

- Dedicated week for tour of labs : Oct 29 – Oct 31
 - Oct 29 : Paris-Sud
 - Oct 30 : LPS/ENS + Paris-Diderot
 - Oct 31 : Sorbonne Université
- Take contacts as early as possible
- Internships : mid March → end of June
Often (not always) viewed as pre-PhD / trial period (for you... and advisor !)
- End of June : process mostly over
- Oct 1st : most probable beginning of fellowship
Duration : 3 years (no more, no less) ; may differ abroad



A young and immature cignet
(L – M1 student)



Starting to fly
(M2 student)

Compared to previous internships : **reversed situation !**
You are no longer “a burden”, but a “promise”

- phone,
- write,
- go see etc.
- show motivation and interest

Observation : the vast majority of PCS student does find interesting PhD


A new player : the doctoral school



- Each PhD student has to be enrolled in a given doctoral school ; will rule your doctoral life
- Each advisor is affiliated to a unique doctoral school ;

The doctoral school is always monitoring the PhD
2 ways to get in

- **track C** : in 33% of cases, also **directly provides contract** quite competitive ; auditions often in June
Requires lot of preparation ; seek help !
You can apply to several schools (those of potential advisor)
This is a 10^5 € audition ; do not mess up
- **track ABLC** : other cases, **“PI” provides the funding**
Specific situations aside (Ens, X)




Track C : application (April/May) → short-listing → audition (June)

Criteria : academic records important
but **audition ABSOLUTELY essential**

Track ABLC : audition also required, somewhat formal, ABLC
Doctoral school often validates the PI choice (not always !)

How does it work for you ?

- You get lucky :
interesting subject ; internship + funded PhD → track ABLC
do not mess up
 - A bit less lucky :
interesting subject but no available funding for PhD
(may come later ; but usually requires to go through track C)
 - Unlucky (various scenarios) : go see elsewhere
 - Before May : still ok for track C somewhere
 - After May : too late, look only for funded PhDs
-  Track C : never apply to a given PhD advertised without taking contact with the corresponding supervisor

How does it work for the advisor ?

- Getting lucky : a good student, success at doctoral school competition ; students' track C is advisor's track ABLC
- Otherwise, advisor has to find the money
Hunt for contracts : season open all year.

ED PIF numbers, for 160 new comers

Some typical numbers

~ **30% doctoral school competition**

~ **50% from “PI/lab” contracts**

~ **20% specific (Ens, X)**

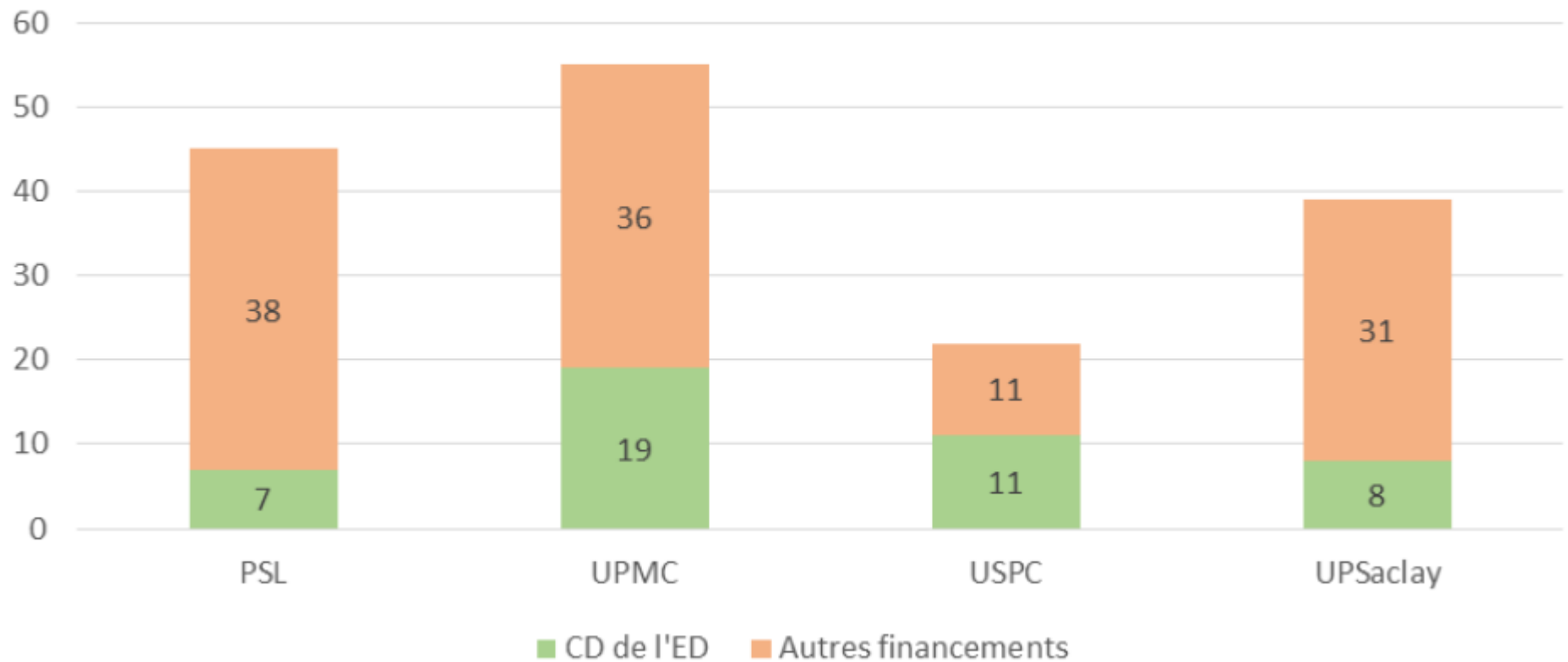
RECRUTEMENTS SUR AUTRES FINANCEMENTS (laboratoire ou étudiant) : 116 étudiants financés (en date du 24/10/2016)

L'origine des financements est la suivante :

- CD spécifiques normaliens ou polytechniciens : 33 (9 Ulm, 8 Lyon, 10 Cachan, 6 X)
- CD Polytechnique : 1
- IDEX : 6 (1 SPC, 3 Paris Saclay, 2 PSL)
- LabEx : 15
- Programme doctoral UPMC (Interface Pour le Vivant) : 3
- FRM : 1
- Human Frontiers : 1
- Europe : (9ERC +2Marie Curie)
- Bourses étrangères : 10 (dont 3 CSC, 1 CMCU)
- ANR : 7
- CEA : 7 (dont 2 CFR)
- Institut Curie : 2
- ESPCI : 1.5
- Agrégé préparateur ENS : 1
- CNRS : 2
- Ville de Paris : 2
- ONERA : 2.5
- CERN : 1
- CD handicap : 1
- CIFRE : 3
- Capital Fund Management : 2
- autres : 3

Some heterogeneity though in different places
Also time dependent

Répartition des financements par établissements en 2016



Getting the information

Home - physics-complex-systems - Mozilla Firefox

Home - physics- x +

https://physics-complex-systems.fr/en/ 150 % Rechercher

Météo Le Monde Cyclisme L'équipe Maps Thesaurus KwesMat Marc Mézard Fred Restagno Zimbra Sci hub FX Coudert BU PSud Lib gen Pivot C. Guimard

PCS complex systems

ACCUEIL CURSUS CANDIDATURES ALUMNI PARTENAIRES EN FR

matter, the interface between social sciences and physics, soft matter, biological systems, complexity in the quantum realm, or questions raised in the context of « big data » and « machine learning ».

PCS complex systems

If you are an L3 student majoring in FUNDAMENTAL PHYSICS

You may attend the M1 & M2 international “Physics of Complex Systems” (i-PCS) program, in Italy for the M1 and in Paris for the M2. All courses are delivered in English. You obtain a double Italian-French degree. A small amount of additional integrative exam allow to obtain the engineer diploma of the Politecnico di Torino

PCS complex systems

If you are an M1 student majoring in FUNDAMENTAL PHYSICS

You can directly attend the M2 year “Physics of Complex Systems” (PCS) in Paris. The first semester is common with the international i-PCS Master. All courses are delivered in English.

Documents

Internships & PhD

FAQ

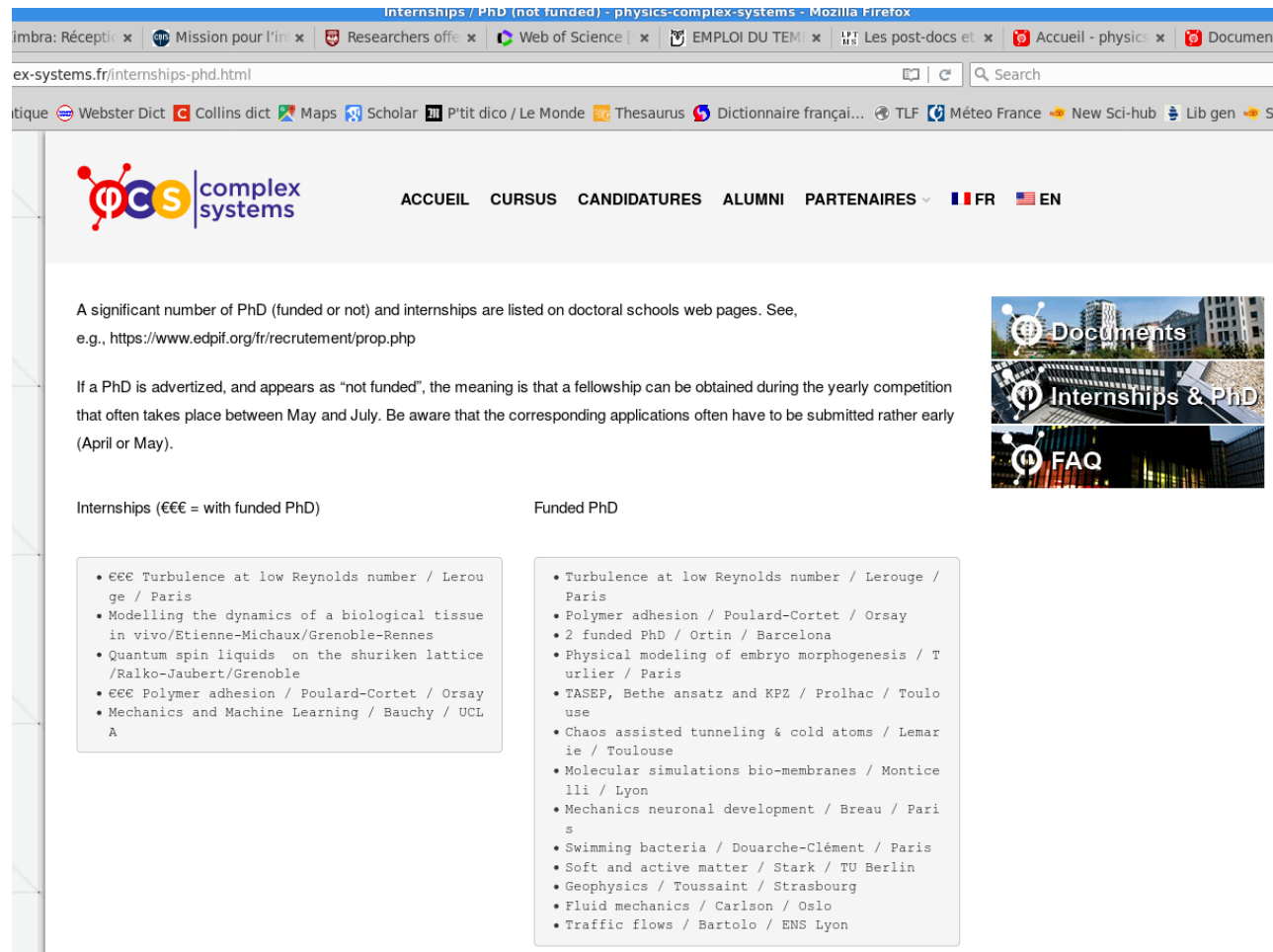
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https://physics-complex-systems.fr/candidature/

Internships & PhDs

- Doctoral schools websites
- Laboratory web sites
- PCS site continuously updated



The screenshot shows the PCS website with the following content:

PCS complex systems ACCUEIL CURSUS CANDIDATURES ALUMNI PARTENAIRES FR EN

A significant number of PhD (funded or not) and internships are listed on doctoral schools web pages. See, e.g., <https://www.edpif.org/fr/recrutement/prop.php>

If a PhD is advertised, and appears as "not funded", the meaning is that a fellowship can be obtained during the yearly competition that often takes place between May and July. Be aware that the corresponding applications often have to be submitted rather early (April or May).

Internships (€€€ = with funded PhD)

- €€€ Turbulence at low Reynolds number / Lerouge / Paris
- Modelling the dynamics of a biological tissue in vivo/Etienne-Michaux/Grenoble-Rennes
- Quantum spin liquids on the shuriken lattice /Ralko-Jaubert/Grenoble
- €€€ Polymer adhesion / Poulard-Cortet / Orsay
- Mechanics and Machine Learning / Bauchy / UCL A

Funded PhD

- Turbulence at low Reynolds number / Lerouge / Paris
- Polymer adhesion / Poulard-Cortet / Orsay
- 2 funded PhD / Ortin / Barcelona
- Physical modeling of embryo morphogenesis / Turlier / Paris
- TASEP, Bethe ansatz and KPZ / Prolhac / Toulouse
- Chaos assisted tunneling & cold atoms / Lemarie / Toulouse
- Molecular simulations bio-membranes / Monticelli / Lyon
- Mechanics neuronal development / Breau / Paris
- Swimming bacteria / Douarache-Clément / Paris
- Soft and active matter / Stark / TU Berlin
- Geophysics / Toussaint / Strasbourg
- Fluid mechanics / Carlson / Oslo
- Traffic flows / Bartolo / ENS Lyon

Documents
Internships & PhD
FAQ

Internships & PhDs

- On you to search for internship/PhD
- Do not hesitate to contact researcher before visit
- Internships (in France) require “convention de stage”, to be completed *before* the beginning. Depend on host institution. Have to be signed as well by Univ of enrolment.



Some French labs are restricted area (ZRR)
2 month process necessary before beginning of internship



Internships are paid : 550 € / month

Becoming a TA / “monitorat” (once you have obtained a contract)

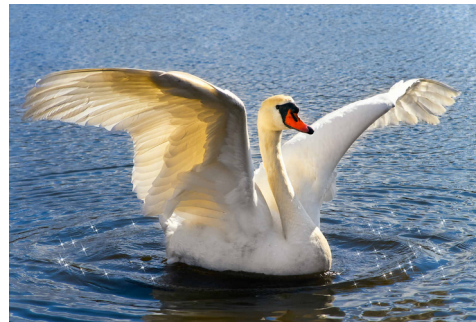
- Universities offer possibility to teach → 64h/year
- Salary bonus of ~ 200 € net / month (→ 1600 € / month)
- Get in touch locally with head of teaching departments
There can be several (fundamental physics, applied physics etc)
- Not easy to get, requires effort and insight ;
rather obscure process, but worth it



Incompatible with some contracts (like EU funded)

but usually better paid, up to ~ 2000 € / month

Good luck



Spirits up !