Institut Polytechnique de Paris
巴黎综合理工大学

Educate, Research & Innovate for a Better Future
Institut Polytechnique de Paris – CSC Programme

Enjoy research in a World-class Institute of Science and Technology!

PhD programs @ IP Paris
IP Paris: A World-class Institute of Science and Technology

QS WUR first entry: 49th World 2nd in France

THE WUR first entry: 95th World 3rd in France

Physical Sciences n°22 worldwide, n°2 in France
Computer Sciences n°48 worldwide, n°2 in France
Life Sciences n°84 worldwide, n°4 in France

Shanghai WUR ranking:
Maths 37th, Physics 28th, Statistics 42nd
IP Paris:
Identity & Objectives

3 MAIN OBJECTIVES

1. Providing top level education in a wide range of fields
2. Leading cutting-edge research to answer global challenges
3. Fostering innovation & entrepreneurship

Top French Graduate Schools of Applied Sciences & Engineering (« Grandes Écoles »)
Educational programs of IP Paris and its schools

Bachelor

Engineer Degree

Master / MSc&T

PhD / PhD Track

Executive Master

Advanced Master

Executive Education

3 year

3 year

2 year

2 year

14 months
IP PARIS:
KEY FACTS & FIGURES

8,000 students (39% international)

1000 Faculty members

1000 PhD students

30 Laboratories

3 incubators accompanying 800 start-ups

Centuries of experience in education and research (Since 1749)

World-Class Research Infrastructures

A campus in the 8th global innovation hub
30 min away from Paris

High employability rate
95% employability rate after graduation

Strategic education & Research partnerships
>40 corporate partners // >200 academic partners
Research @ IP Paris
Cutting-edge research to answer global challenges

30 Laboratories

2,500 Publications per year

1,000 Faculty members

1,000 PhD students

230 Post-doctoral students

10 Research & education departments

1 Grants’ Office

Research @ IP Paris
10 Departments

- Department of Biology
- Department of Chemistry and Processes
- Department of Mathematics
- Department of Physics
- Department of Mechanics and Energetics
- Department of Computer Science, Data and Artificial Intelligence
- Department of Information, Communication and Electronics
- Department of Economics
- Department of Social sciences and Management
- Department of Humanities, Art, Literature and Languages
4 interdisciplinary centers on key societal challenges

Energy for Climate Center addressing the systemic complexity of energy transition

Interdisciplinary Center for Defense & Security

Putting Artificial Intelligence and Data Science at the service of business and society

Biomedical Engineering Center to be launched end of 2021
PhD programs @ IP Paris
Research at IP Paris: PhD programs

1. Master’s degree
2. PhD program
3. 4.
4.
5. PhD degree
A focus on PhD programs

• Earn a PhD degree from a top ranked Institute of Science and Technology!

• IP Paris offers 3-year or 4-year PhD programs in a wide variety of disciplinary fields. The doctoral research conducted within IP Paris is based on 30 laboratories and takes place in a high-quality scientific environment. PhD students are also offered the opportunity to conduct their PhD with companies with renowned R&D Departments.

• **Two doctoral schools:**
  - ED IP Paris : **IP paris Doctoral School**, an interdisciplinary doctoral school, co-accredited with HEC Paris
  - EDMH : **Hadamard Doctoral School of Mathematics**, co-accredited with University Paris-Saclay and University PSL

• PhD graduates **recruited in top companies**

• **Personalized supervision** of PhD students in order to improve their training and increase their employability
PhD programs at IP Paris

IP Paris Doctoral School

900 PhD students (45% international), supervised by more than 800 researchers in 30 research laboratories. ED IP Paris offers a rich doctoral training through the research component ranging from basic research to applied research and prepares students for successful scientific career opportunities (research, teaching, project management, etc.) in universities and the private sector.
Hadamard Doctoral School of Mathematics

Training from pure mathematics to the most applied mathematics, including subjects at the interface with mathematics (particularly with economics, IT, mechanical engineering, physics, engineering, and life sciences). More than 300 PhD students, and more than 240 accredited PhD supervisors.

IP Paris laboratories associated to EDMH Doctoral School:

**École polytechnique**
- Centre de mathématiques appliquées
- Centre de mathématiques Laurent Schwartz

**ENSTA Paris**
- Unité de Mathématiques Appliquées de l’ENSTA Paris

**ENSAE Paris**
- Centre de Recherche en Économie et Statistique

**Télécom Paris**
- LTCI

**Télécom SudParis**
- SAMOVAR
PhD Admissions 2022-2023

• Open to students holding a Master’s degree
• The training takes 3 to 4 years
• Specific PhD proposals for the IP paris – CSC cooperation program are posted by IP Paris labs on the website of the two Doctoral schools
• Applications are submitted exclusively online on the website of the two Doctoral schools.

Admissions calendar:
• Opening of applications on **8 November 2021**
• Deadline for applications: **9 January 2022**
• Interviews from mid-January to mid-February

Applications:
• IP Paris Doctoral School
  [https://www.adum.fr/as/ed/proposition_Setab.pl?site=IPParis&type=Financement%20CSC](https://www.adum.fr/as/ed/proposition_Setab.pl?site=IPParis&type=Financement%20CSC)
• Hadamard Doctoral School of Mathematics
  [https://www.adum.fr/as/ed/proposition.pl?site=psedmh](https://www.adum.fr/as/ed/proposition.pl?site=psedmh)
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<th>Title</th>
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<td>Diversity and function of circular RNAs, from archaea to human cells</td>
<td>Circular RNA, Transcriptome, Biochemistry, Archaea</td>
<td><a href="https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38860">https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38860</a></td>
<td>École polytechnique</td>
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<td>Organotransition metal catalysis for the cycloaddition of new 1,2-dipoles</td>
<td>Catalysis, Organometallic catalysis, Cycloadditions, Heterocycles</td>
<td><a href="https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38845#version">https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38845#version</a></td>
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<tr>
<td>Collective total synthesis of polycyclic natural products through biomimetic cascade reactions</td>
<td>Organic chemistry, biomimetic synthesis, total synthesis, natural products</td>
<td><a href="https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38862#version">https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38862#version</a></td>
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<tr>
<td>New approaches in Isocyanide Based Multicomponent Reactions</td>
<td>Multicomponent, isocyanide, catalysis, Ugi</td>
<td><a href="https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38865">https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38865</a></td>
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<td>Hydrogen-biogas mixtures as alternative fuels: properties, combustion kinetics and innovative energy processes</td>
<td>Hydrogen, biogas, biomass, renewable energies, reaction kinetics, Thermodynamics</td>
<td><a href="https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38842">https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38842</a></td>
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## PhD proposals 2022-2023
### Mechanical engineering

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<td>storage of hydrogen in deep salt caverns</td>
<td>Experimental techniques, Imaging and image processing, Applied mathematics</td>
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<td>Development of an “intelligent” damping device</td>
<td>Shape memory alloys, Additive manufacturing, Damping, Cellular structures, Optimization</td>
<td><a href="https://www.adum.fr/as/ed/voir_proposition.pl?site=IPParis&amp;matricule_prop=38808#version">https://www.adum.fr/as/ed/voir_proposition.pl?site=IPParis&amp;matricule_prop=38808#version</a></td>
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<td>Gradient fatigue life models for materials and structures</td>
<td>Fatigue life, Gradient fatigue, Stress gradient, Material properties gradients, Energy models, Scale effect</td>
<td><a href="https://www.adum.fr/as/ed/voir_proposition.pl?site=IPParis&amp;matricule_prop=38920">https://www.adum.fr/as/ed/voir_proposition.pl?site=IPParis&amp;matricule_prop=38920</a></td>
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<td>Microstructure stored energy as indicator for fatigue of shape memory</td>
<td>Shape memory alloys, Stored energy, Fatigue, multi-scale, Synchrotron, XRD</td>
<td><a href="https://www.adum.fr/as/ed/voir_proposition.pl?site=IPParis&amp;matricule_prop=38809">https://www.adum.fr/as/ed/voir_proposition.pl?site=IPParis&amp;matricule_prop=38809</a></td>
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<td>complex oxides</td>
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<td>Nonlocal collective electronic effects: from model systems to realistic materials</td>
<td>interacting electrons, collective fluctuations, magnetism</td>
<td><a href="https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38861">https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38861</a></td>
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<td>Propagation of quantum information in correlated quantum systems</td>
<td>Quantum entanglement, Quantum simulation, Out-of-equilibrium dynamics</td>
<td><a href="https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38806">https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38806</a></td>
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<td>Quantum simulation of quasicrystals with ultracold atoms</td>
<td>Quantum simulation, Ultracold plasma</td>
<td><a href="https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38805#version">https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38805#version</a></td>
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<td>Gamma-ray polarimetry of the Vela pulsar with the Fermi LAT</td>
<td>pulser, polarimetry, gamma-ray</td>
<td><a href="https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38751">https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38751</a></td>
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<td>Coupled propagation of homogeneous ionization waves at a plasma-</td>
<td>streamer, electron-hole plasma, nanosecond discharge,</td>
<td><a href="https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38854">https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38854</a></td>
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<td>semiconductor interface</td>
<td>dielectric barrier discharge</td>
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<td>Cold Plasma jets for biomedical applications</td>
<td>cold plasma, plasma medicine, biomedical applications</td>
<td><a href="https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38859">https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38859</a></td>
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<td>In-situ Raman spectroscopy of low-temperature plasma-liquid interfaces</td>
<td>operando spectroscopy, vibrational spectroscopy, low-temperature plasma</td>
<td><a href="https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38897#version">https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38897#version</a></td>
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<td>of electron-phonon coupling and of carrier relaxation dynamics in</td>
<td>semiconductors, time-resolved spectroscopy</td>
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<td>materials for potential photovoltaic and thermoelectric applications.</td>
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<td>STRUCTURE AND PROPERTIES OF DENSE SILICA PHASES</td>
<td>silica glass, densification, Irradiation</td>
<td><a href="https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38744#version">https://www.adum.fr/as/ed/voirproposition.pl?site=IPParis&amp;matricule_prop=38744#version</a></td>
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## PhD proposals 2022-2023

### Information technology, Data, AI

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<td>Compiling Mathematical Functions in Biochemical Reaction Networks</td>
<td>analog computing, symbolic computation, bioinformatics</td>
<td>[<a href="https://www.adum.fr/as/ed/voir">https://www.adum.fr/as/ed/voir</a> proposition.pl?site=IPParis&amp;matricule_prop=38858](<a href="https://www.adum.fr/as/ed/voir">https://www.adum.fr/as/ed/voir</a> proposition.pl?site=IPParis&amp;matricule_prop=38858)</td>
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<td>Logical Models of Multi-scale Biological Processes</td>
<td>bioinformatics, boolean networks</td>
<td>[<a href="https://www.adum.fr/as/ed/voir">https://www.adum.fr/as/ed/voir</a> proposition.pl?site=IPParis&amp;matricule_prop=38856](<a href="https://www.adum.fr/as/ed/voir">https://www.adum.fr/as/ed/voir</a> proposition.pl?site=IPParis&amp;matricule_prop=38856)</td>
<td>École polytechnique</td>
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<td>Network Autoregressive Processes model</td>
<td>Network autoregression, High dimensional time series, VAR model</td>
<td>[<a href="https://www.adum.fr/as/ed/voir">https://www.adum.fr/as/ed/voir</a> proposition.pl?site=IPParis&amp;matricule_prop=38850#version](<a href="https://www.adum.fr/as/ed/voir">https://www.adum.fr/as/ed/voir</a> proposition.pl?site=IPParis&amp;matricule_prop=38850#version)</td>
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<td>Socio-Affective Touch in Robotics</td>
<td>social robotics</td>
<td>[<a href="https://www.adum.fr/as/ed/voir">https://www.adum.fr/as/ed/voir</a> proposition.pl?site=IPParis&amp;matricule_prop=38970](<a href="https://www.adum.fr/as/ed/voir">https://www.adum.fr/as/ed/voir</a> proposition.pl?site=IPParis&amp;matricule_prop=38970)</td>
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<td>Open-Data driven Optimization of Urban Mobility via Reinforcement Learning</td>
<td>Reinforcement Learning, Mobility, Open data, Smart cities</td>
<td>[<a href="https://www.adum.fr/as/ed/voir">https://www.adum.fr/as/ed/voir</a> proposition.pl?site=IPParis&amp;matri cule_prop=39025#version](<a href="https://www.adum.fr/as/ed/voir">https://www.adum.fr/as/ed/voir</a> proposition.pl?site=IPParis&amp;matri cule_prop=39025#version)</td>
<td>Télécom SudParis</td>
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APPLY

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