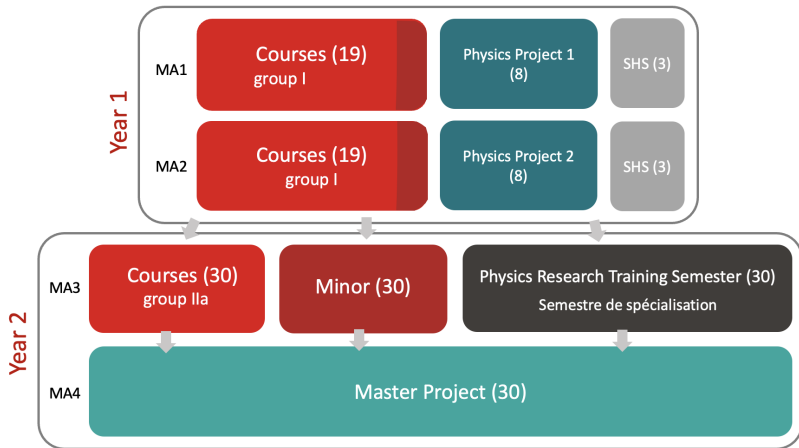


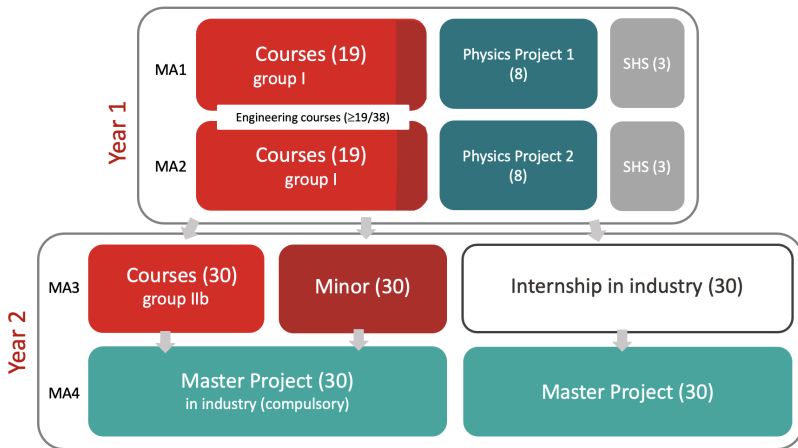
Masters in Physics and Applied Physics

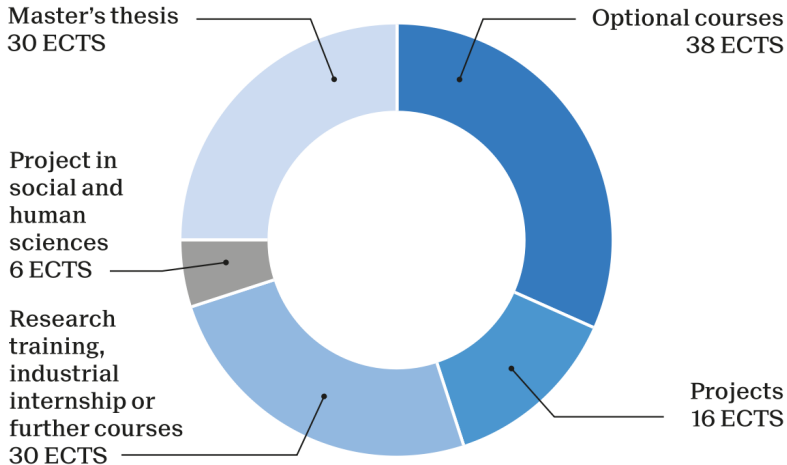
2026-2027

Physics Welcome Day - September 4, 2026









- **1 year : MA1 and MA2 : compulsory**
 - ① **Optional courses** : 38 credits
 - ② **Physics projects** : 16 credits
 - ③ **SHS projects** : 6 credits
- **2 year - fall semester : MA3 : options**
 - ① **3rd study semester** : (further courses) 30 credits
 - ② **Minor** : 30 credits
 - ③ **Research training** : 30 credits (Physics)
 - ④ **Internship in industry** : 30 credits (Applied Physics)
- **2 year - spring semester : MA4 : compulsory**
 - ① **Master project at EPFL** : 30 credits at EPFL
 - ② **Master project in industry** : 30 credits

Fall Semester MA1/MA3

Credits	Astrophysics and Particle Physics	Plasma physics, fusion and fission	Physics of Biological and Complex Systems	Condensed Matter Physics	Quantum Science and Technology
6 ECTS	Machine learning for physicists - 467	Machine learning for physicists - 467	Machine learning for physicists - 467	Attosecond radiation sources - 761	Machine learning for physicists - 467
	Quantum field theory I - 431	Plasma I - 423	MRI Practicals on imaging syst. - 473	Machine learning for physicists - 467	Quantum computing - 541
	Quantum physics III - 425			Quantum physics III - 425	QED & Quantum Optics - 453
	Relativity and cosmology I - 427			Solid state physics III - 419	Solid state physics III - 419
4 ECTS	Astrophysics II - 472	Computer simulation I - 403	Computer simulation I - 403	Computer simulation I - 403	Computer simulation I - 403
	Astrophysics III - 465	Neutron scattering - 640	Intro. to biomedical imaging - 438	Frontiers in nanosciences - 407	Frontiers in nanosciences - 407
	Computer simulation I - 403	Nuclear fusion & plasma phys. - 445	Modeling of experiments - 442	Interacting quantum matter - 502	Interacting quantum matter - 502
	Intro. to particle accelerators - 448	Radiation biology - 450	MRI Practicals - 473	Modeling of experiments - 442	Math. of quantum phys. - 469
	Modeling of experiments - 442	Radiation detection - 452	Radiation biology - 450	MRI Practicals - 473	Modeling of experiments - 442
	Particle detection - 440	Particle detection - 440	Stat. phys. biomacromolecules - 441	Neutron scattering - 640	Quantum information theory - 550
	Particle physics I - 415		Stat. phys. of computation - 512	Physics of materials - 307	Quantum transport - 462
			Stat. phys. phase transitions - 475	Semiconductor physics - 433	Semiconductor physics - 433
8 ECTS	Modern appro. quant. gravity - 504				
	Quantum field theory III - 503				
	The standard model - 505				
3 ECTS			Fundament. of crystallography - 477	Fundament. of crystallography - 477	

Color code : Physics option Engineering option Advanced courses

Spring Semester MA2

CREDITS	Astrophysics and Particle Physics	Plasma physics, fusion and fission	Physics of Biological and Complex Systems	Condensed Matter Physics	Quantum Science and Technology
6 ECTS	Quantum field theory II - 432	Nonlinear dynamics, chaos - 460	Nonlinear dynamics, chaos - 460	Computational quantum physics - 463	Computational quantum physics - 463
	Quantum physics IV - 426	Plasma II - 424		Quantum optics and information - 454	Quantum optics and information - 454
	Relativity and cosmology II - 428			Stochastic methods in physics - 436	Stochastic methods in physics - 436
4 ECTS	Astrophysics IV - 401	Adv. superconduct.magnet tech. - 476	Intro. to biomedical imaging - 438	Electron microscopy - MSE 450	Microwave engineering - QUANT 410
	Astrophysics V - 402		Physics of life - 468	Magnetism in Materials - 491	Nonlinear optics - 470
	Intro. to astroparticle physics - 439			Solid state physics IV - 420	Quant. trans. mesoscopic syst. - 462
	Particle physics II - 416			Spintronics - 510	Phys. photonic devices - 434
	Particle physics: flavour frontiers - 471			Physics of low dim. materials - 474	Solid state syst. for quantum info. - 464
	Select. topics nucl. & part. phys. - 400			Physics of magn. reson. imaging - 478	
3 ECTS			Topics in biophysics - 466		
	Color code :	Physics option	Engineering option		

- ➊ **Master courses SPH** : study plan : [Physics](#)
(options SPH : group Ia)
 - ➋ **3rd year courses + master SB faculty** : Mathematics (SMA) and Chemistry (SCGC)
 - ➌ **Courses outside SB faculty** : [list of approved courses](#) by SPH
 - ➍ **Optional Bachelor courses SPH**
- **Conditions - Physics Master** : 38 credits
 - **Maximum 18 credits** : 3rd year courses + master SB faculty, courses outside SB faculty, optional Bachelor courses SPH
 - **Maximum 6 credits** : optional Bachelor courses SPH
 - **Maximum 6 credits** : courses outside SB faculty approved by SPH

- ➊ **Master courses SPH** : study plan : [Applied Physics](#)
(engineering and physics : group Ib)
 - ➋ **3rd year courses + master SB faculty** : Mathematics (SMA) and Chemistry (SCGC)
 - ➌ **Courses outside SB faculty** : [list of approved courses](#) by SPH
 - ➍ **Optional Bachelor courses SPH**
- **Conditions - Applied Physics Master** : 38 credits
 - **Minimum 19 credits** : engineering courses
 - **Maximum 18 credits** : 3rd year courses + master SB faculty, courses outside SB faculty, optional Bachelor courses SPH
 - **Maximum 6 credits** : optional Bachelor courses SPH
 - **Maximum 6 credits** : courses outside SB faculty approved by SPH

THE 3RD STUDY SEMESTER IS AIMED AT STUDENTS WHO WOULD LIKE TO TAKE ADDITIONAL OPTIONAL COURSES

- **Physics** : 30 credits - (courses : group IIa)
 - **Master courses SPH** : optional courses SPH (group Ia) and “advanced courses” (8 credits courses of theoretical physics)
 - **Master courses other section** : approved by SPH
 - **Doctoral school courses** : maximum 2 courses
 - **Maximum 18 credits** : Master courses other sections, doctoral school courses
- **Applied physics** : 30 credits - (courses : group IIb)
 - **Master courses SPH** : engineering courses (group Ib)
 - **Master courses other section** : **list of approved courses** by SPH
 - **Maximum 18 credits** : Master courses other sections

THE MINOR IS AIMED AT STUDENTS WHO WOULD LIKE TO FURTHER THEIR STUDIES IN A GIVEN FIELD OR DEVELOP INTERFACES WITH OTHER PROGRAMS AT EPFL

- **Physics and Applied Physics : 30 credits**

- ① **Interdisciplinary minor** : focused on courses from several programs
- ② **Disciplinary minor** : focused on a single program, different from that of the main Master's program
 - **Starting date** : first year : registration end of 1st semester (compulsory)
 - **Examples** : minors related to physics or entirely different
- ① **Engineering for sustainability**
- ② **Photonics**
- ③ **Physics of living systems**
- ④ **Quantum science and engineering**
- ⑤ **Space technologies**
- ⑥ **Management of technology & entrepreneurship**
- ⑦ **Financial engineering**

THE RESEARCH TRAINING SEMESTER, OR SPECIALIZATION SEMESTER, IS AIMED AT STUDENTS WHO WOULD LIKE TO DEVELOP A PHYSICS-RELATED RESEARCH PROJECT THAT ALLOWS THEM TO GAIN NEW KNOWLEDGE AND PRACTICAL EXPERIENCE IN A SPECIFIC FIELD

- **Physics** : 30 credits (no grade - pass or fail)
 - **Supervision** : Professor or Senior Scientist (MER) of the SPH section
 - **Location** : inside EPFL (physics laboratory) or outside (laboratory or research institute like PSI, CERN, etc...)
 - **Courses** : the Professor responsible for such work can require you to take some courses relevant for the specialization

THE INTERNSHIP IN INDUSTRY IS AIMED AT STUDENTS WHO WOULD LIKE TO PUT THEIR SKILLS INTO PRACTICE ON A CONCRETE PROBLEM IN AN INDUSTRIAL ENVIRONNEMENT REQUIRING THE TYPICAL ENGINEERING APPROACH : PROBLEM ANALYSIS, STUDY OF POSSIBLE SOLUTIONS, AND FINAL IMPLEMENTATION

- **Applied Physics** : 30 credits (no grade - pass or fail)
 - **Location** : company not a research institute
 - **Supervision** : company supervisor (full responsibility)
 - **Duration** : 4 to 6 months
 - **Companies** : wide database of subjects proposed by companies will be available on **IS Academia** (Internship menu > 100 choices!)
 - **Other internship** : must be approved by the Physics Section
 - **Evaluation** : written report and oral presentation in front of the Physics section supervisor and the company supervisor who will evaluate the internship

THE MASTER'S PROJECT GIVES THE OPPORTUNITY TO CARRY OUT THEORETICAL AND/OR PRACTICAL WORK CONDUCTING RESEARCH IN A SPECIFIC AREA OF PHYSICS.

- **Physics and Applied Physics** : 30 credits
 - **Supervision** : Professor or Senior Scientist (MER) of the SPH section
 - **Duration** : 17 weeks at EPFL and 25 weeks outside EPFL
 - **Registration** : **IS Academia**
 - **Evaluation** : written report and oral presentation, which will be evaluated and graded by a jury

- **Physics and Applied Physics** : 16 credits
 - **General case** : physics projects I and II are performed in a **laboratory** of the Physics Section (**short presentations**)
 - **Exceptionnal case** : physics projects I and II can exceptionnally be performed in an other section of EPFL upon the approval of Physics Section.
 - **Application** : **Project matching software**

Two projects in the following fields:	16
Astrophysics, particles, high energy physics	
Condensed matter physics	
Physics of biological and complex systems	
Plasma physics and energy	
Quantum science and technology	

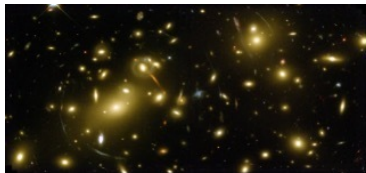
PARTICLE PHYSICS

- Prof. Frédéric Blanc
- Prof. Laurent Dufour
- Prof. Viktor Gorbenko
- Prof. Radoslav Marchevski
- Prof. Joao Penedones
- Prof. Chiara Perrina
- Prof. Riccardo Rattazzi
- Prof. Olivier Schneider
- Prof. Mike Seidel
- Prof. Lesya Shchutska



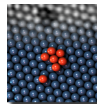
ASTROPHYSICS

- Prof. Richard Anderson
- Prof. Michaela Hirschmann
- Prof. Pascale Jablonka
- Prof. Jean-Paul Kneib
- Prof. Emma Tolley
- Dr. Yves Revaz

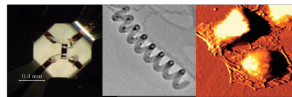


NANOSTRUCTURES WITH WELL DEFINED SIZE, SHAPE AND COMPOSITION

- **Prof. Harald Brune** (nanostructures)
- **Prof. Hugo Dil**
- **Prof. Cécile Hébert** (electron microscopy)
- **Dr. Stefano Rusponi**



- **Prof. Henrik Ronnow**
- **Dr. Arnaud Magrez**

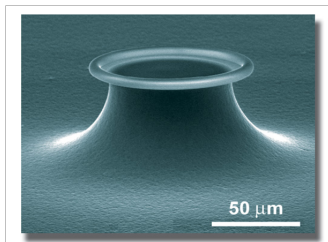


QUANTUM DEVICES AND QUANTUM PHOTONICS

- **Prof. Mitali Banerjee**
- **Prof. Fabrizio Carbone**
- **Prof. Tobias Kippenberg**

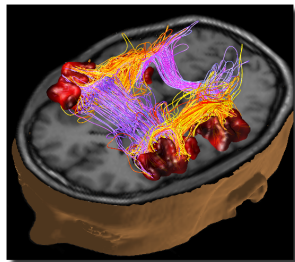
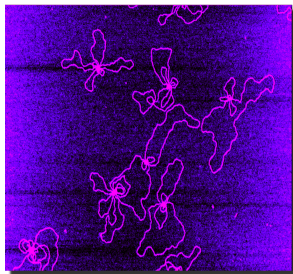
THEORY AND SIMULATION

- **Prof. Giuseppe Carleo**
- **Prof. Andreas Läuchli**
- **Prof. Frédéric Mila**
- **Prof. Alfredo Pasquarello**
- **Prof. Manuel Guizar Sicaïros**
- **Prof. Christian Wäckerlin**
- **Prof. Oleg Yazyev**
- **Dr. Sylvain Bréchet**



FUNCTION, STRUCTURE AND
PROPERTIES OF BIOLOGICAL SYSTEMS

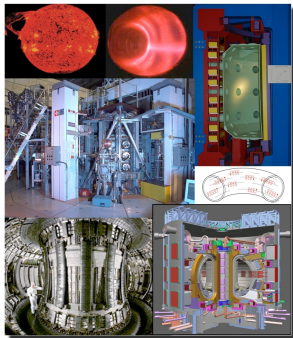
- **Prof. Paolo De Los Rios**
- **Prof. Rolf Gruetter** : LIFMET
- **Prof. Dimitrios Karampinos**
- **Prof. Florent Krzakala**
- **Prof. Sulfiana Manley**
- **Prof. Sahand Rahi**
- **Prof. Guillermina Ramirez-San-Juan**
- **Prof. Hennig Stahlberg**
- **Prof. Mathieu Wyart**
- **Prof. Lijing Xin**
- **Prof. Lenka Zdeborová**
- **Dr. Cristina Cudalbu**
- **Dr. Georges Wagnières**



- Prof. Ambrogio Fasoli
- Prof. Ivo Furno
- Prof. Andreas Pautz
- Prof. Paolo Ricci
- Prof. Christian Theiler
- Prof. Laurent Villard
- Dr. Stefano Alberti
- Dr. Stephan Brunner
- Dr. Stefano Coda
- Dr. Jonathan Graves
- Dr. Jean Philippe Hogge
- Dr. Mathieu Hursin
- Dr. Benoît Labit
- Dr. Joaquim Loizu
- Dr. Holger Reimerdes

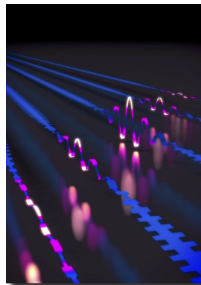
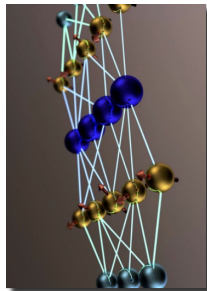
FUSION AND FISSION,
TOKAMAK

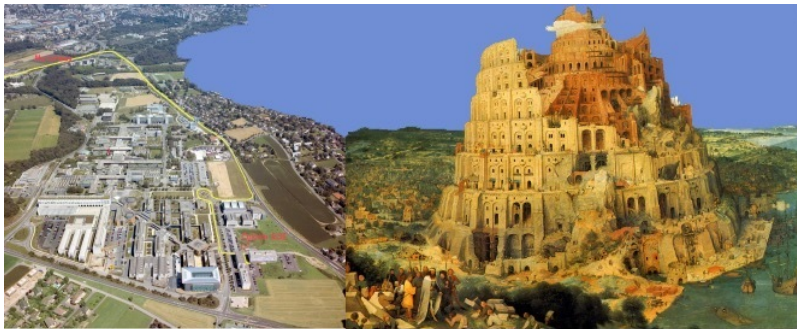
Swiss Plasma Center



PHOTONICS, QUANTUM COMPUTING,
QUANTUM MATTER

- **Prof. Mitali Banerjee**
- **Prof. Jean Philippe Brantut**
- **Prof. Fabrizio Carbone**
- **Prof. Giuseppe Carleo**
- **Prof. Nicolas Grandjean**
- **Prof. Zoe Holmes**
- **Prof. Tobias Kippenberg**
- **Prof. Vladimir Manucharyan**
- **Prof. Yihui Quek**
- **Prof. Vincenzo Savona**
- **Prof. Pasquale Scarlino**
- **Dr. Raphael Butté**
- **Prof. Christophe Galland**





WHY ? WHAT FOR ?

- Engineering projects involve humans and society
- Transverse social skills are required
- In our information age, projects to acquire social competences are key : probably more than ever before !

WHAT KIND OF COMPETENCES AND SKILLS ARE DEVELOPED BY SHS PROJECTS ?

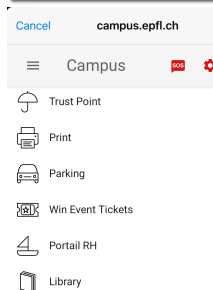
- **Practical** : **understanding** practices, norms, values and history of social environments
- **Cultural** : **knowing** the rules and habits of the working environment
- **Intellectual** : **learning** other ways of reasoning and different thinking schemes
- **Emotional** : **developing** the ability to perceive and express emotions

GROUP WORK BASED ON COURSES AND PROJECTS

- **Physics and Applied Physics** : 6 credits (first year : MA1 and MA2)
- **Language** : French or English
- **Evaluation** : according to study plan (report, oral presentation, etc...)
- **Registration** : **IS Academia**
- **Collège des humanités website** : www.epfl.ch/schools/cdh
- **Office** : **CM 2 267**
- **Email** : scienceshumaines@epfl.ch

EPFL IS A COMMUNITY OF AROUND 20000 PERSONS

- **Community** : we all enrich EPFL every day with our background, skills and identities
- **Respect** : EPFL is committed to uphold the values of respect, well-being and trust
- **Trust and Support Network** : to live up to these values EPFL has created this network
- **Trust Point** : accessible through EPFL Campus mobile app



EVERYONE HAS A ROLE TO PLAY! WE ARE ALL CONCERNED!

- **Health days : sport activities and health village EPFL - UNIL**
- **Moodle : EPFL Promoting Respect**
- **Trust and Support Network (TSN) : Speak up and seek support**
- **Respect Compliance Office (RCO) : Internal entity to file formal complaints**





- **Information** : primary resource
 - Physics section : www.epfl.ch/schools/sb/sph/en
 - EPFL Masters : www.epfl.ch/education/master
 - Physics master program :
edu.epfl.ch/studyplan/en/master/physics-master-program
 - Applied Physics master :
edu.epfl.ch/studyplan/en/master/applied-physics
- **Contacts** : secondary resource
 - sylvain.brechet@epfl.ch
 - valerie.schaererbusinger@epfl.ch