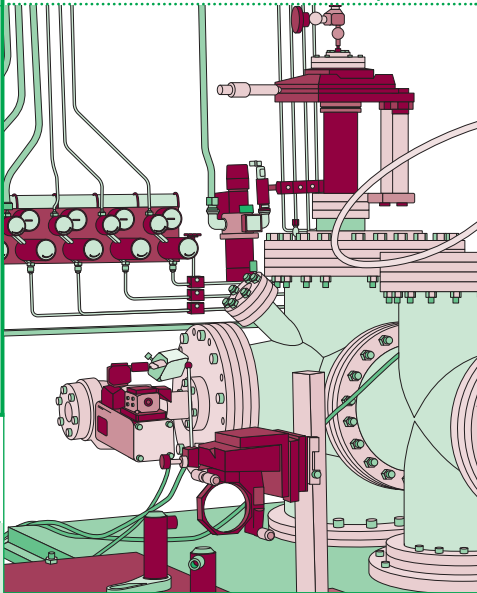
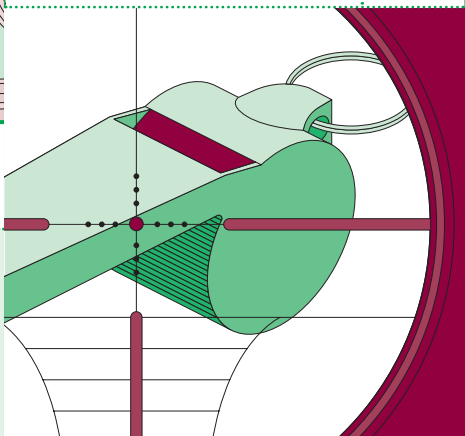
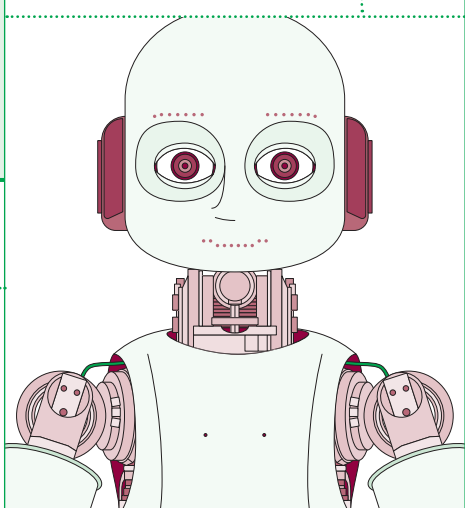
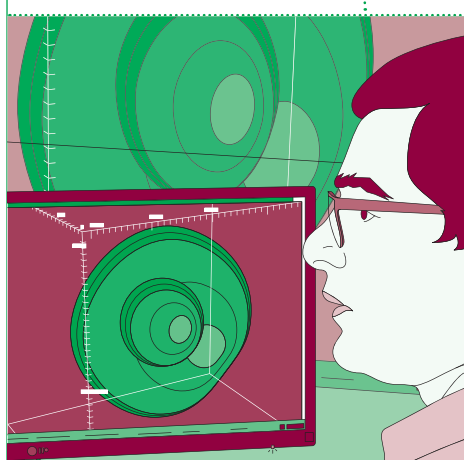


Issue 05	Year 2017	Country France	Title ATTOLAB: a light scalpel	Page 10	Section Teaching, Learning	Page 05
L'Édition of université paris-saclay september					AN OVERVIEW OF TODAY'S PHYSICS	
Section Life on Campus	Page 20			Title Please (don't) blow the whistle	Page 8	
SOON ON THE SACLAY PLATEAU			Section Business & Innovation	Page 18	THE INFORMATION AND COMMUNICATION TECHNOLOGIES CLUSTER	
Author Gilles Bloch	Page 03	“Creativity and imagination are on the agenda of this academic year”		Title Are robots social beings?	Page 14	
Title Collaborative sense-making: visualization is key	Page 12	“Sharing with people that really do change the world.”				
			université PARIS-SACLAY			
Illustration UPSaclay viewed by Andrew Archer	Pages 07, 16	Address Espace Technologique, Bât. Discovery – RD 128 – 2 ^e étage, 91190 Saint-Aubin – France		Website universite-paris-saclay.fr		



A GREAT WITNESS' VIEW



© Université Paris-Saclay

Régis Réau

Senior Scientific Director R&D, Air Liquide
Great witness of the 2017 PhD. graduation ceremony

A doctorate is a special passport, a door opener to the large international community of scientists. Behind the title of PhD, lie scientific excellence, curiosity, passion, the ability to manage complexity and multidisciplinary and... to learn from failure!, and a taste for innovation. Everywhere Université Paris-Saclay's PhD will go, they will be recognized for these qualities, in fundamental research as in industry.

Université Paris-Saclay is already a world-class university in many areas. Its reputation will considerably grow further because it is the cornerstone of the Paris-Saclay ecosystem, which includes public and private R&D, and startups. All the key players of innovation are here. Within a few years, this ecosystem will be a reference.

To deal with today's and tomorrow's issues (climate change, population growth, digital transition, etc.), we need diverse talented research enthusiasts, just like these PhD. from Université Paris-Saclay.



doctorates

awarded by
Université Paris-Saclay
this year.



facebook.com/
UParisSaclay



@universite_paris_saclay



@UPSaclayNews



ledition@universite-
paris-saclay.fr



EDITOR'S LETTER



© UPSaclay

This new *Édition* is particularly placed under the sign of innovation and shared knowledge, two trademarks of Université Paris-Saclay.

Thanks to the mobilization of local authorities, inhabitants, scientific communities, industrialists and all our ambassadors and supporters, our Paris-Saclay site has been selected to host the heart of World Expo 2025

in France. But the competition is just beginning with the other candidates: Osaka, Japan; Yekaterinburg, Russia and Baku, Azerbaijan. To designate the finally chosen city, 170 member states of the International Bureau of Exhibitions (BIE) will vote at the 164th general assembly of this organization, in November 2018. We therefore have a year to echo the values of hospitality and exchange around the planet's major stakes.

Creativity and imagination are also on the agenda of this new academic year with the launch of "Plug in labs Université Paris-Saclay" digital platform, a very powerful interface that identifies the expertise of our hundreds of laboratories and technological platforms, and helps knowledge sharing between public research facilities and companies, whether they be key accounts or SMEs. Université Paris-Saclay will also get its Design Center underway: it will provide laboratories, researchers and engineers with the necessary resources to connect, by design, research projects and R&D with use and markets. Named "The Design Spot", this project will also train students to become more familiar with the discipline, and to promote the integration of this design aspect into their achievements. Finally, like many structures of Université Paris-Saclay, the Design Center will have a reflective mission, hosting research activities on the discipline itself. Visit us in a few months to discover the prefiguration of this very ambitious program.

Gilles Bloch,
President of Université Paris-Saclay

“Creativity and imagination are on the agenda of this academic year.”

Coupon

SUBSCRIBE FOR FREE!



by sending your full name,
postal address and email address at:
ledition@universite-paris-saclay.fr

or by sending this coupon via postal services to:
Université Paris-Saclay, Espace Technologique,
Bât. Discovery – RD 128 – 2^e étage,
91190 Saint-Aubin – France

Thank you and happy reading!

first name

.....

address

.....

postal code

.....

email

.....

last name

.....

city

.....

country

.....

AWARDS & PRIZES



· **Paris-Sud University** gained 5 ranks in the 2017 Shanghai Ranking, ranking No. 41.



© Mme Y. Rigault (Association CECUPE)

· **Jorge Linares** (CNRS, UVSQ) received the Medal of the French Senate during the “Latin America and Caribbean” Day.

· The “**Pharmaceutical Marketing**” and “**Pharmaceutical Biotechnology and innovative therapies**” Master’s degrees from Université Paris-Saclay were ranked respectively 4th and 6th best Master’s degrees in Management and Marketing of Pharmaceutical Industries and Health in the 2017 Eduniversal classification.

· The 2017 Great Scientific Prize of the Fondation Louis D. Institut de France was awarded to **Tatiana Giraud** (CNRS, Paris-Sud University).

· In 2017, **Télécom ParisTech** is ranked first of the French engineering schools in the U-Multirank ranking. It is also second in the world in the Engineering category at Master’s level.

· **Bastien Berret** (UPSud), **Anna Cadoret** (École polytechnique), **Simona Mura** (UPSud), **Filippo Santambrogio** (UPSud) and **Vincent Secherre** (UVSQ) were appointed junior members of the Institut Universitaire de France. **Silvio Franz** and **Myriam Taverna Bonvento** (UPSud) were appointed senior members.

· The “**Listen & Warn**” student project (Télécom ParisTech) won the Public and Special Prizes from Fondation Sopra Steria-Institut de France.

· The “**BigData - massive data management**” advanced Master’s degree (Télécom ParisTech) is No. 1 in Big Data for the 3rd consecutive year on the Meilleurs-masters.com site. The “**SmartMobility - digital transformation of mobility systems**” advanced Master’s degree received the Innovation Award.

· 5 out of 12 mentions of the La Recherche Award relate to research that involve at least one Université Paris-Saclay member: the **Institute of Plant Science Paris-Saclay** (Inra, UEVE, UPSud, CNRS; category: “Biology”), **ONERA** (category: “Astrophysics”), **École polytechnique** and **CNRS** (category: “Mathematics”), Paris-Sud University and CNRS (category: “Physics”), **Inria** (Special Prize).



© Mayline Gautié

· The 2016 Paul Langevin Prize went to **Silke Biermann** (CNRS, École polytechnique).

· **Miho Janvier** (UPSud) is one of 21 TEDGlobal 2017 Fellows from around the world.

· The French Court of Auditors presented its first Thesis Award to **Arthur Jatteau** (ENS Paris-Saclay).



© KEF

· **Jeongmo Kim**, a student from École polytechnique, received the 2017 Kwanjeong Educational Foundation Fellowship.

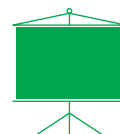
· **Diego Martinez** (AgroParisTech) received, for his thesis, the “specific mention” in the category “Young Researcher PhD” at 2017 International Award on Local Development.

· The Young Investigator Award in Organic Chemistry Division of the Chemical Society of France in 2017 was awarded to **Xavier Guinchard** (CNRS).

· **DC Brain**, a startup from Télécom ParisTech, won the AI Paris Awards in the best technology category.

· The 2016 Galien International Prize rewards the work of **Emmanuel Jacquemin** (UPSud).

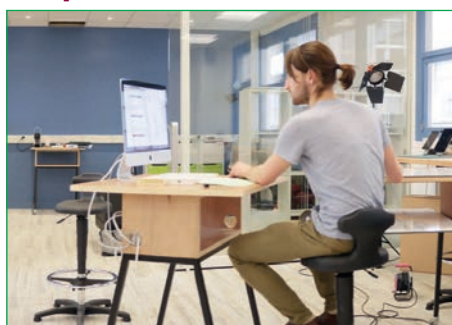
· **Stephan Cléménçon** (Télécom ParisTech) received the first Criteo Faculty Research Award (CFRA).



A first joint bachelor's degree

Université Paris-Saclay members have shared their Master's and PhD degrees: Bachelor's degrees are the next step. Paris-Sud University and ENS Paris-Saclay have in fact already created a joint program in the third year of their Bachelor's degree in Fundamental Physics. Half of the credits represent courses developed jointly by professors from the two members. To allow each institution to retain its specificities, the second half of the education credits will remain separate. An example of cooperation between a university and an engineering school in Université Paris-Saclay, this program will welcome its first students in September 2018.

Design at the heart of products



© Télécom ParisTech

Researchers and students can already learn design even before the Université Paris-Saclay's Design Center is ready. Two Master's degrees about design are available at Université Paris-Saclay with Télécom ParisTech and ENS Paris-Saclay's Design Department. Addressing theory, history and project management, these courses cover a wide variety of sectors: product, fashion, communication, graphic design, scenography, media, industrial or digital design, services, etc. Télécom ParisTech's Studio Design is dedicated to the development of student projects, in addition to the FabLab. It offers many tools for designing and testing products, and modular spaces for prototyping. In fact everything you need to create innovative products and tomorrow's start-ups.

ses.telecom-paristech.fr/studio-design

universite-paris-saclay.fr/fr/formation/master/design#mention

An overview of today's physics



© Orane Tasky et Deborah Michel

How has physics progressed over the past two years? The Société Française de Physique, i.e. the society of French physicists, chose Université Paris-Saclay for its 24th General Congress that intends to give an answer to this question. Its main ambition is twofold: to provide a unique opportunity for participants to learn about research fields outside their speciality and to disseminate research findings to the public and society.

Bringing scientists from laboratories all over France, and even further, to Orsay from July 3rd to 7th, 2017, this event addresses all fields of physics for which significant progress has been achieved. Among a rich scientific programme, researchers from Université Paris-Saclay members presented their advances in quantum physics (Alain Aspect, ICGS), nuclear physics (Elias Khan, UPSud), photonics (Isabelle Ledoux-Rak, ENS Paris-Saclay) or about the gravitational waves (Thibault Damour, IHES).

Ultrafast physics, energy, antimatter, high-energy physics, astrophysics, plasma physics, nanotechnologies or biophysics were also part of the program. Societal issues were also addressed: women's careers, research funding, open science, the dissemination of scientific culture, etc. Furthermore, conferences and lab work were presented to pupils from local schools. Prof. Sylvie Retailleau, President of Paris-Sud University, a founding member of Université Paris-Saclay, then shared her point of view on higher education and research.

Researchers also visited several scientific facilities of Université Paris-Saclay: an opportunity to discover the Synchrotron SOLEIL, the pioneer of particle accelerators in Europe at Orsay or some laboratories associated to VIRGO that helped observe the first gravitational waves. Finally, Cédric Villani, the 2010 Fields medalist, sponsored an image contest about "Science and humor": the picture above presents the winning photo.

<sfp2017.fr>

DON'T MISS OUT ON...



SEPTEMBER

Description

The 22nd International Workshop on Electromagnetic Nondestructive Evaluation (ENDE 2017)

Date

6 to 8

Place

Saclay, France

Host

CEA Paris-Saclay, CentraleSupélec, CNRS Paris-Sud University, Labex Digicosme

Link

ende2017.fr

Description

The Paris-Saclay Junior Conference on Data Science and Engineering

Date

14-15

Place

Orsay, France

Host

Université Paris-Saclay members

Link

junior-data-science.org

Description

The European Heritage Day

Date

16-17

Place

Europe

Host

Université Paris-Saclay members

Link

europeanheritagedays.com

Description

The European Researchers' Night at a luminous accelerator

Date

29

Place

Gif-sur-Yvette, France

Host

Synchrotron SOLEIL

OCTOBER

Description

A conference about light sheet microscopy

Date

4

Place

Villejuif, France

Host

CEA Paris-Saclay, CNRS, École polytechnique, ENS Paris-Saclay, Inra, Inserm, Paris-Sud University, UVSQ

Link

universite-paris-saclay.fr/fr/evenement/conference-microscopies-a-feuille-de-lumiere

Description

The Saclay Crunch, a Paris Saclay Seed Fund pitch session

Date

5

Place

Massy, France

Host

Université Paris-Saclay members

Link

universite-paris-saclay.fr/en/news/first-saclay-crunch-on-4th-april-at-edf-lab

Description

The Fête de la Science to discover the work of scientists and discuss with them

Date

7 to 15

Place

France

Host

Université Paris-Saclay members

Link

fetedelascience.fr/

Description

The IOGS centenary

Date

13 to 15

Place

Palaiseau, France

Host

Institut d'Optique Graduate School

Link

iooans.institutoptique.fr

Description

The International Conference on Novel Nanomaterial (ICON²): engineering and properties

Date

18 to 20

Place

Gif-sur-Yvette, France

Host

CEA Paris-Saclay, Labex NanoSaclay, Labex PALM

Link

iramis.cea.fr/meetings/ICON2-2017/index.php

NOVEMBER

Description

Labex P2IO Day

Date

15

Place

Gif-sur-Yvette, France

Host

CEA Paris-Saclay, CNRS École polytechnique, Paris-Sud University

Description

The "Challenge Startup" that will take our startups meet Silicon Valley's entrepreneurs

Date

16 to 28

Place

California

Host

Université Paris-Saclay members

Link

challengestartup.tumblr.com/

Description

The European Big Data Value Forum 2017

Date

21 to 23

Place

Versailles, France

Host

CEA Paris-Saclay, CentraleSupélec, Inria, IRT SystemX

Link

european-big-data-value-forum.eu

DECEMBER

Description

The Pedagogical Initiatives Day to discuss teaching innovations

Date

13-14

Place

INSTN

Host

Université Paris-Saclay members

SEPTEMBER-NOVEMBER

Description

Université Paris-Saclay's Welcome Road to greet all new students and researchers

Place

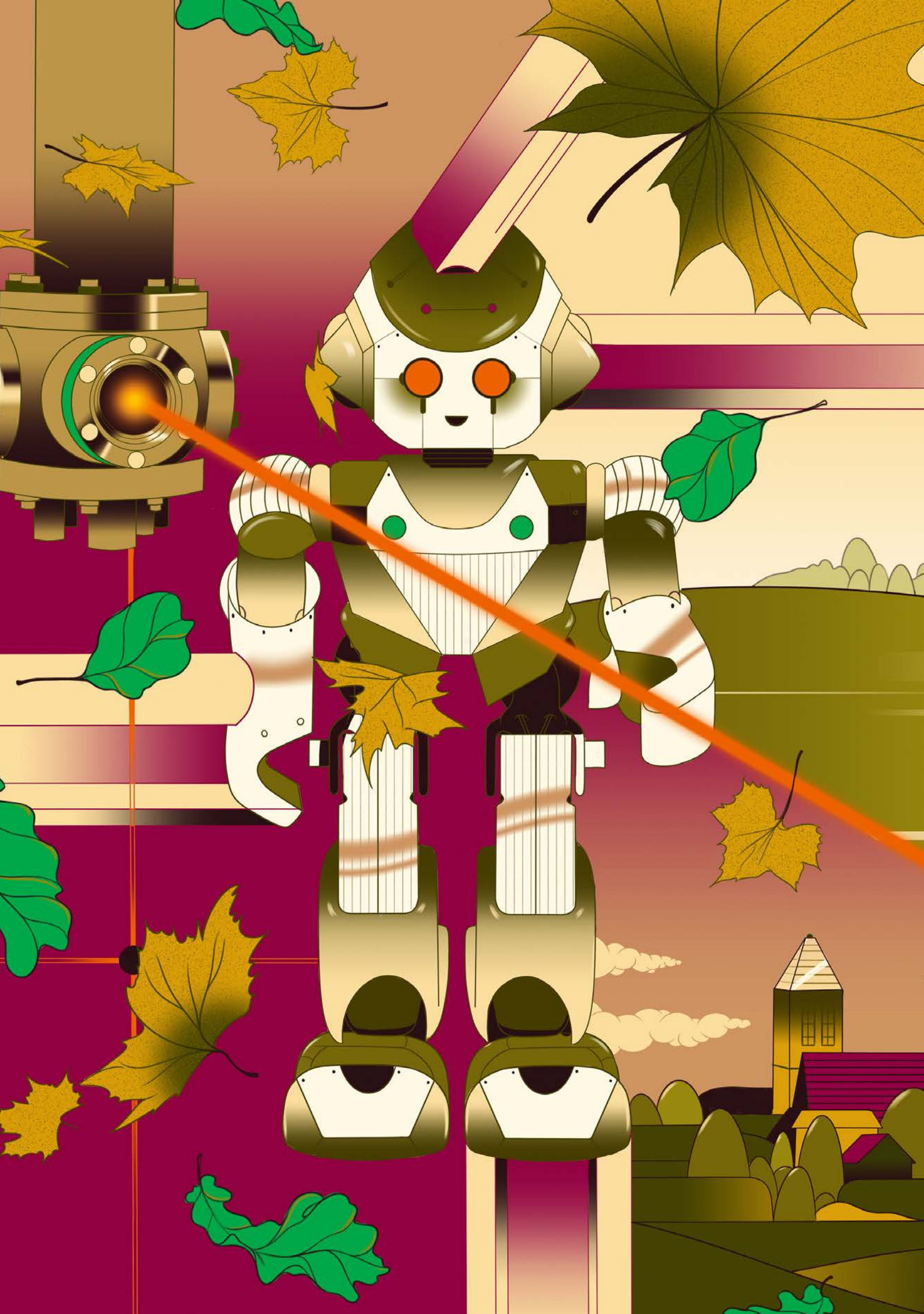
Université Paris-Saclay campus

Host

Université Paris-Saclay members

Link

universite-paris-saclay.fr/en/news/welcome-road-2017-campus-kick-off



Keywords

Justice, Whistleblower,
Climate, Radicalization,
Automated cars

Institute

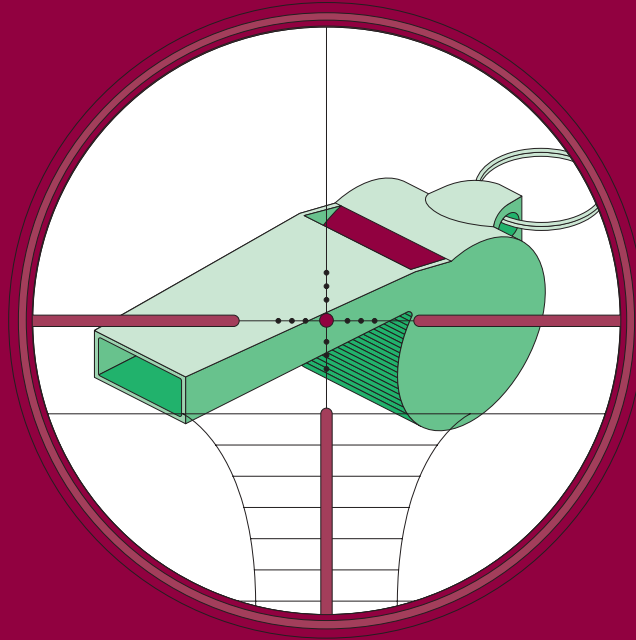
Paris-Sud University

Expert

Sandra Charreire-Petit

Title

Please (don't) blow the whistle



Name

**Sandra
Charreire-
Petit**



© Sandra Charreire-Petit

Paris-Sud University, Université Paris-Saclay

A Professor of strategic management at Paris-Sud University, Sandra Charreire-Petit focuses on the deployment of whistleblowing systems in France, the figure of the whistleblower and their possible resilience. She is the Head of the Humanities and Social Sciences (SHS) doctoral school at Université Paris-Saclay.

Given increasing media coverage, whistleblowers are still poorly protected. The Sapin II law tries to improve the situation... with limited success.

Véronique Vasseur denouncing La Santé Prison in 2000, Irène Frachon and the Mediator scandal in 2010, Olivier Thérondel and the Cahuzac affair in 2014, Antoine Deltour revealing the LuxLeaks, etc. Laws are increasingly protective of whistleblowers. But things could still be better.

Reporting on a company's internal problems is not new: the French civil code states that an employee can disclose "any life- or health-threatening situation". The employee has to contact their line management, so that the issue can be solved. Yet whistleblowing remains frowned upon in France: from reporting to uncovering and betraying, the shift is easy.

In the us, even when publicized, reports are seen as an internal control system like any other, a way to anticipate and manage the risks (particularly frauds). The Sarbanes-Oxley Act (sox) of 2002 postulates that these disclosures are beneficial to investors. The law therefore forces companies to facilitate this whistleblowing and intends to enforce the

American view even outside the us: any company listed in the United States must comply.

However, the Anglo-Saxon legal basis on which this law is built is not adapted to all countries. Its application therefore translated into corporate charters or code of ethics in France.

“The whistleblower stands as a defender of democracy and of the public interest.”

On December, 9th 2016, the Law on transparency, the fight against corruption and the modernization of the economy (known as the Sapin II Law) was passed. With this legislative text, whistleblowing scales up in France. In addition to frauds, the employee may expose "a crime or offense, a serious and manifest breach of an international obligation [...], of the Law or a regulation, or a threat or serious damage to the public interest". The alert becomes an ethical issue and the whistleblower stands as a defender of democracy and



of the public interest, far beyond the financial interests of investors. Consequences of this can be brutal.

A majority of reported problems can be handled internally, without an audience and especially without media. But even in these cases, most whistleblowers are subject to retaliatory violence: demotion, harassment, mandatory transfers, dismissal, etc. With important consequences to their career, their savings, their health or their family.

There is no typical profile for a whistleblower. They are not heroes but people who can not act as if they had not seen, known or understood anything. To tell or not to tell is a real dilemma for an employee with sensitive data: should they stay true to their values, their management or to the company that may suffer from the consequences of illegal actions? Must they speak or just obey?

The Sapin II Law will protect these whistleblowers by giving them a proper status. This is the first time a protective framework has been put in place in France: a real progress, with strong penal measures (theoretically) in case of retaliation, and possible financial assistance in case of legal action.

Public opinion is also changing gradually: Antoine Deltour was awarded the 2015 European Citizen's Prize for disclosing the extent of the tax agreements reached by multinationals with the Luxembourg Government, through audit firms: overall, tax evasion is a shortfall estimated to 1,000 billion euros per year for European States. Society is becoming less tolerant of this kind of abuse and demands transparency.

However, the Sapin II Law is not perfect. Indeed, the timescale for justice is not the same as for whistleblowing. Exposing a problem is often the last step in a long process. Before they have the chance to assert their status, the whistleblower may already have suffered numerous reprisals.

In addition, since April 2017, a European directive makes the secrets of strategic affairs almost sacred, making it difficult to share evidence with judges and journalists.

French Sapin II Law also mandates the establishment of a disclosure procedure in all companies with more than 50 employees, in all towns with more than 10 000 inhabitants and in State administrations. Companies and administrations are sometimes reluctant to implement such procedures because it would mean admitting the weakness or ineffectiveness of their conventional internal controls.

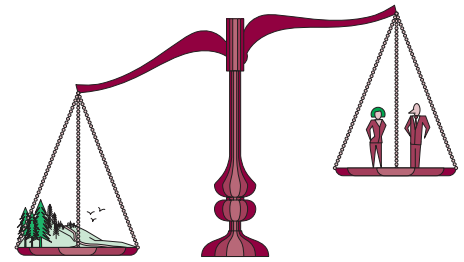
And if the companies do put in place a whistleblowing procedure, by way of a lot of time, energy and internal advertising, they are hoping not to see it used... Being deployed to not be used is a first in the history of managerial procedures! The new legal provisions are then creating a managerial paradox and a double bind for employees!

Publication

· S. Charreire-Petit et al. Whistleblowing and resilience: Analysis of an individual trajectory. *M@n@gement*, 16(2), 141-173

» focus

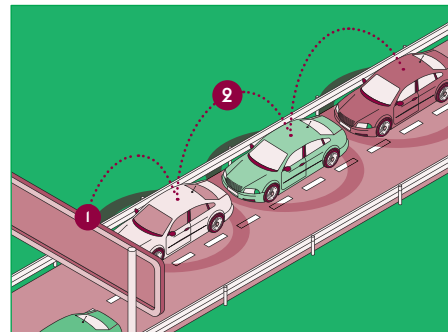
The law goes green



Large profits, low risk: environmental crimes are most profitable. A professor at UVSQ, Laurent Neyret proposes to use criminal law to punish those who destroy our planet. Tomorrow's environmental Law should come to the aid of Nature and effectively combat trafficking of all kinds. To do so, the legal team led by Laurent Neyret now wants to tackle the problem at the international level: "Today, nobody can say that it does not concern them".

» focus

Automated cars: who is responsible?



1- Speed Harmonization, 2- Platooning

In case of an accident with a self-driving car, the current French law is in fact applicable as it stands. The vehicle insurer will compensate the victim, before requesting a refund of the money already paid from the responsible party. With systems storing large amounts of data, the identification of this party should be simplified, in civil and criminal laws: the manufacturer, programmer or holder of the registration certificate could be responsible if there is no driver!

Publications · "L'enrichissement du rapport de l'expert automobile par les enregistreurs de données collectées", *Jurisprudence automobile*, 2017, n°895, p. 15

· "The legal challenges of the connected vehicle", 12th ITS European Congress, 19-22 juin 2017, Strasbourg.

» focus

Understanding radicalization

You can't make laws without first understanding. This is why Xavier Crettiez (UVSQ) studies radicalization. He showed it is a process that involves the environment in which the person lives, at different scales: family and friends (validation by "superiors"), group (economic segregation, exclusion policy, etc.), the national and international contexts (wars, etc.). At the personal psychology level, radicalization can improve self-esteem and be viewed as a new chance of success, by giving a purpose.

Publications · "Radicalisation: processus ou basculement", *Radicalités*, n°1, ORAP - Fondation Jean Jaurès

· X. Crettiez, B. Ainine, *Soldats de Dieu, Paroles de djihadistes incarcérés*, Paris, Editions de l'Aube, 2017

Keywords

Laser, Attoseconds,
Lightening rod, Watt,
Hologram

Institute

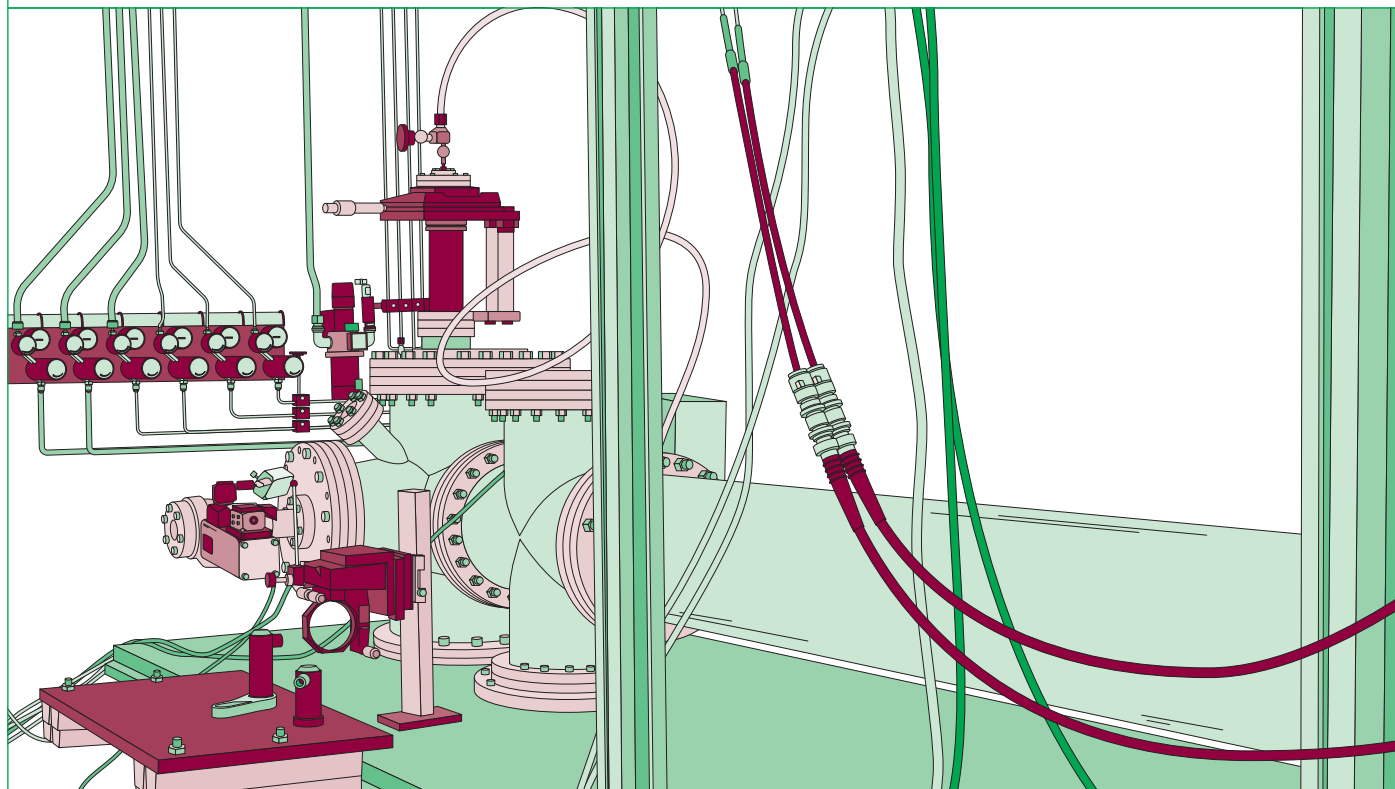
CEA Paris-Saclay

Expert

Bertrand Carré

Title

ATTOLAB: a light scalpel



Name

**Bertrand
Carré**



© Bertrand Carré

CEA Paris-Saclay, Université Paris-Saclay

A researcher in the Attophysics Group at LIDYL, CEA Paris-Saclay/CNRS, Bertrand Carré works in the field of nonlinear optics, especially the production of attosecond light pulses and their applications to the studies of ultrafast electronic and nuclear dynamics in atoms and molecules. He is a graduate of École polytechnique and did his PhD in Physics at Paris-Sud University. He now coordinates the ATTOLAB platform.

Inaugurated in February, the new ATTOLAB platform will shed light on ultrashort physical and chemical phenomena. Numerous results are already available.

A “smithery for high-speed optics”. That’s how Lionel Poisson, a researcher from Laboratoire Interactions, Dynamiques et Lasers (LIDYL, CEA/CNRS), presents the new platform, a cutting-edge facility with original laser sources recently installed on a CEA Paris-Saclay site. This platform’s lasers are accurate enough to study extremely minute and brief phenomena, such as the rapid movements of electrons and nuclei within matter.

With this new equipment, the ATTOLAB project now includes three experimental platforms, installed at the heart of Université Paris-Saclay and run by Laboratoire Interactions, Dynamiques et Lasers (LIDYL), Laboratoire d’Optique Appliquée (LOA) and Laboratoire Charles Fabry (LCF). The project is even more important, since it is run jointly by eight institutions, seven of which are members or partners of Université Paris-Saclay: CNRS, CEA, UPSud, IOGS, ENSTA ParisTech, École polytechnique and Synchrotron SOLEIL.

On the new platform, inaugurated in February, the lasers provide very short and intense pulses of light with perfect control over their temporal (duration) and spatial shape. These pulses are obtained by compressing a femtosecond (10^{-15} s) laser pulse. In order to reach extremely short durations, the laser also have to cover a large spectral range, from infrared light to extreme-uv (xuv) light.

The laser pulses can form a video recording with hitherto unseen resolution from a series of successive images, produced by “ultrafast stroboscopy” methods. Ultrafast phenomena at the frontiers of knowledge in physics become observable and can be broken down into instants. How much time passes between the moment when a light pulse strikes an atom and the moment when, in response, that atom releases an electron? A few attoseconds. That is, a few billionths of a billionth of a second. That is the time scale that ATTOLAB has finally made observable. Researchers witnessed this “birth” of an electron in 2016. Such accuracy will be useful in studying many fundamental processes in physics and chemistry, with applications in next-generation electronics, chemical reaction monitoring or medicine. The platform will be open to external proposals from 2018.



With this platform, researchers also opened new directions in the areas of optical physics and material characterization. A team from Université Paris-Saclay members developed a method to generate “optical vortices” in the xuv spectral range with femtosecond duration and controllable properties. These vortices occur when light is twisted around its propagation axis, like a bright corkscrew with a dark heart, where light waves cancel each other out. They make original surveys of chemical and biological molecules possible. These research results will be useful in solving some key questions about light-matter interactions and ultrafast mechanisms.

At LOA, another equipment can deliver very short but also very intense pulses to probe the plasmas these pulses create by interacting with matter. In a world premiere, researchers generated electron bunches with an unprecedented duration as short as 1 femtosecond, in a downsized laser system. Ultrafast imaging and ultrashort x-ray generation are among anticipated applications.

The multisite ATTOLAB consortium also studied the electronic transport in semi-conductor materials under laser light excitation. In these materials, in a fraction of a second, the electrons distribute between several unstable states before “relaxing” to a stable equilibrium. Researchers were finally able to observe the transient intermediate states previously inaccessible by conventional methods. They showed that optical manipulation of such systems is possible, e.g. the ultrafast control of the material conductivity.

To manipulate the ATTOLAB light pulses, especially in the xuv range, researchers use mirrors manufactured at LCF. This is because the mirrors require specific treatments, ultra-precise polishing and special coatings to achieve the best performance. Consisting of a stack of very thin layers, these mirrors amplify the reflection of xuv light – in a way, the opposite of the anti-reflective coatings of commercial eyeglasses. Without this, the extremely short flashes of light would be destroyed at the first reflection and the physicists wouldn’t be able to use them.

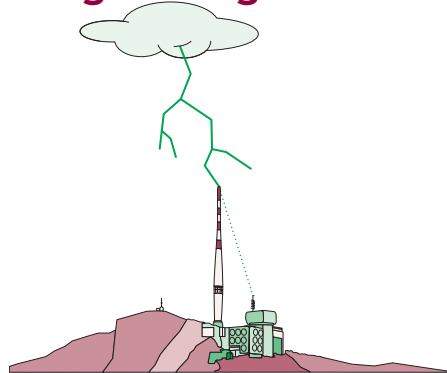
ATTOLAB thus brings together fundamental science and high technology. A unique expertise, numerous physicists, cutting-edge tools and a close collaboration with industrial partners (including market leaders in attosecond technology Thales and Amplitude Technologies) are what makes ATTOLAB a success, at the best level worldwide.

Publications

- V. Gruson et al. Attosecond dynamics through a Fano resonance: Monitoring the birth of a photoelectron. *Science* 354, 734 (2016)
- R. Généaux et al. Synthesis and characterization of attosecond light vortices in the extreme ultraviolet. *Nature Communications* 7, 12583 (2016)
- D. Guénot et al. Relativistic electron beams driven by kHz single-cycle light pulses. *Nature Photonics* 11, 293 (2017)
- G. Lantz et al. Ultrafast evolution and transient phases of a prototype out-of-equilibrium Mott-Hubbard material. *Nature Communications* 8, 13917 (2017)

» focus

The next generation of lightning rod



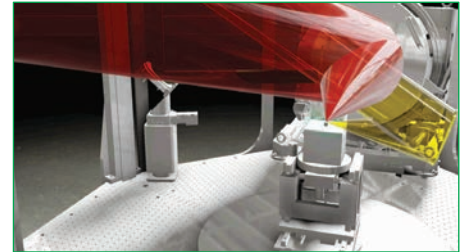
Lightning protection traditionally involves metallic rods. To improve this technique, the “Laser Lightning Rod” European project aims to build a novel lightning rod based on cutting-edge laser technology. Upward lightning discharges will be initiated through a powerful high repetition rate laser generating plasma filaments in the air. Developed by a consortium led by CNRS, ENSTA ParisTech and École polytechnique, this system could be easily deployed to protect vulnerable installations such as electrical plants, launching pad, airports, etc.

Publication · B. Prade et al. Transfer of microwave energy along a filament plasma column in air, *Applied Physics B* 123, 40 (2017)

<llr-fet.eu>

» focus

APOLLON is almost ready



© CILEX/CEA/M. Bougeard

The APOLLON laser source will deliver ultra-short (15 fs), ultra-intense laser pulses, corresponding to a record peak power of 10 PW. The facility should be open to the first users in 2018. Currently, most of the optical components are in their final commissioning phase, delivered or already in place, and first tests show the energy required to reach 1PW is already available. APOLLON will allow for the exploration of new properties of matter and the study of light-matter interaction at extreme intensities.

Publication · D. Papadopoulos et al. (2016). The Apollon 10 PW laser: Experimental and theoretical investigation of the temporal characteristics. *High Power Laser Science and Engineering*, 4.

» focus

Plasma holograms

Ultra-high intensity optics could be based on the use of plasma optics, such as plasma holograms. A team from CEA Paris-Saclay and CNRS used a holographic method to manipulate ultra-intense laser beams thanks to plasma gratings, which could be created by modulating the intensity of a laser pulse sent on a flat solid target before the main pulse. Using compact plasma-based optical elements to control ultra-intense beams is a promising approach, since plasmas can sustain considerable light intensities compared to conventional methods.

Publication · A. Leblanc et al. Plasma holograms for ultrahigh-intensity optics. *Nature Physics* 13, 440-443 (2017)

Keywords

High Performance Computing,
Visualization, Platform,
Software, Hardware

Institute

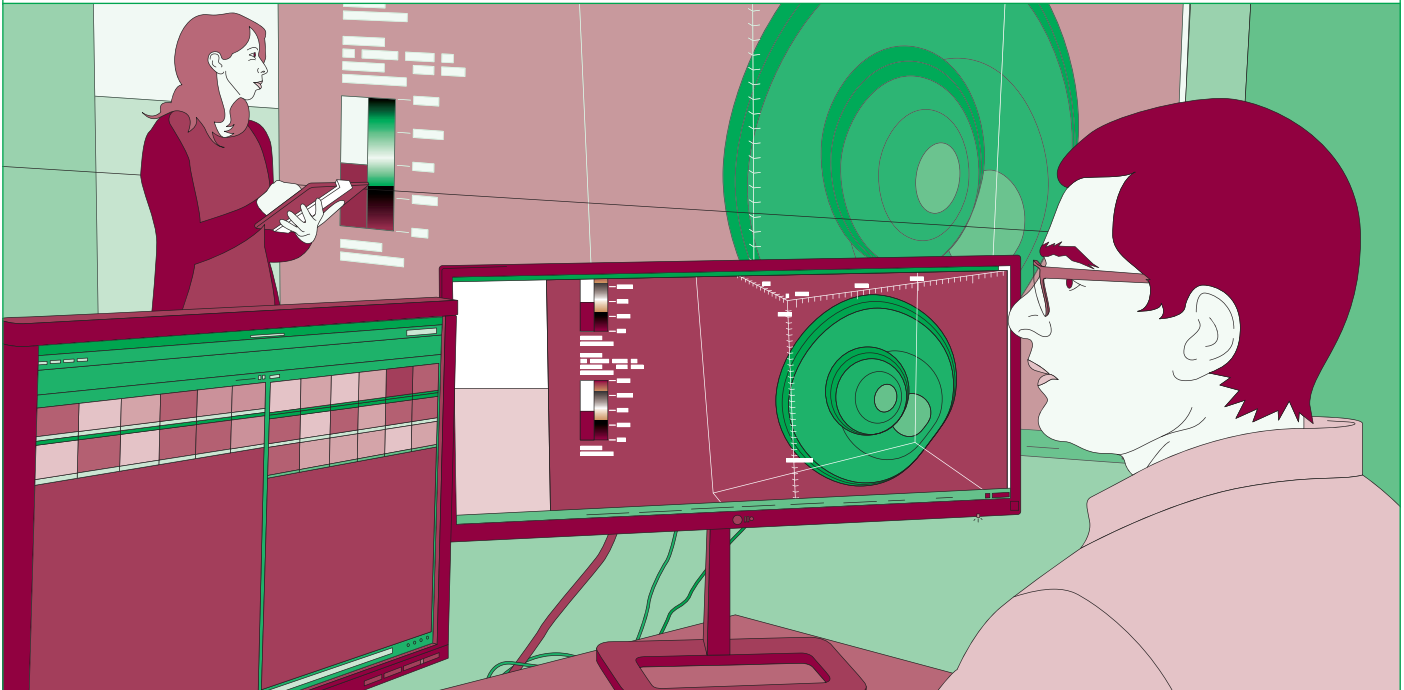
Paris-Sud University

Expert

Michel Beaudouin-Lafon

Title

Collaborative sense-making: visualization is key



Name

Michel
Beaudouin-
Lafon



Paris-Sud University, Université Paris-Saclay

A Professor at Paris-Sud University, Michel Beaudouin-Lafon directed the Laboratory for Computer Science (LRI, UPSud/CNRS), where he now heads the Human-Centered Computing team. His research interests include fundamental aspects of human-computer interaction, novel interaction techniques and computer-supported cooperative work. He is the laureate of an ERC Advanced Grant and heads the Digiscope project.

Through their research and their equipment, Université Paris-Saclay members develop tools to better visualize the results of their simulations. A good way to combine their knowledge and spark ideas.

A picture is sometimes worth a thousand words... or a thousand data tables! Numerical simulations are becoming increasingly complex and provide extraordinary amounts of data to researchers that are supposed to analyze them. To understand, sort and treat these data, scientists usually prefer graphical visualizations. Large rooms and large screens help to compare data results, chat with colleagues, or take a step back on a set of representations.

Thanks to the Digiscope project, a one-of-a-kind network of software and hardware infrastructures has been implemented on the territory of Université Paris-Saclay. Ten rooms were equipped to facilitate the visualization of large amounts of complex data. Each room is designed to meet somewhat different user needs. Four platforms display data in 3D and two provide a fully immersive environment, with three wall displays but also displays on the floor and even on the ceiling. All have very large

screens, with a surface of 3 to 60 m² and up to 130 millions of pixels, and means of interaction (tablets, touchscreens, interactive tables, motion tracking, etc.). A telepresence network and content sharing systems connect all these rooms to enable distant collaboration.

Scientists are using these platforms to visualize their research results. But they also conduct research to improve visualization techniques, including collaborative visualization tools.

A tiled visualization tool is being developed on the MANDELBROT platform housed at CEA Paris-Saclay. Instead of one huge image, the TileViz software allows to present many images side by side. This web application allows to view, sort and annotate the thumbnails. On this wall of images, scientists can analyze multiple scenarios of simulations displayed at the same time, with varied parameters, or they can visually compare similar results.

For example, a first test of the web application was developed in partnership with two teams from Paris-Sud University and CEA Paris-Saclay. The team from Neurospin (CEA Paris-Saclay) studies the morphology of the



human cerebral cortex convolutions. In order to early detect subtle anomalies associated with psychiatric syndromes, researchers have to model the normal variability of these folds. They intend to create a dictionary of normal convolutions, from several tens of thousands of brains. To do so, they use automatic classification programs that they must train first. This learning is based on images identified by human experts who must also validate the automatic software's first results. These experts must therefore view and compare many images in high definition, which is what TileViz allows them to do.

Applications in climate science or astrophysics are also considered with other laboratories of Université Paris-Saclay's territory. MANDELBROT's 11 m² screen, like those of the other platforms, makes collaborative work involving several researchers easier. To further increase collaboration, the team from Paris-Sud University that is already involved in TileViz also develops cooperation tools on the WILD platform (Wall-sized Interaction with Large Datasets).

With collaborators from CNRS, Inria and Télécom ParisTech, these researchers in human-computer interaction have created a series of collaborative actions to facilitate content management and data exchange in front of a giant screen. Tested with dreamlike cards from the Dixit game, these gestures ("Preview", "Throw and Catch" and "Shared Clipboard") combine the movements of both partners to perform an action: give a preview of a card or send it to a remote collaborator, store a group of cards, etc.

With these tools, it becomes easy to work in groups with data resulting from many hours of computation on a supercomputer. Natural and fun, the collaborative gestures reduce the fatigue involved when moving in front of a large wall display, and encourage exchanges and discussions.

Along the same lines, the CamRay project (UPSud, Inria, CNRS) displays a real-time video of their partner on the wall in front of the collaborator, whether the partner is at the other end of the same room or in another room far away. The user then sees what their colleagues are doing and the data they are handling, and they can follow instructions given in a visual way: for example, by following the gestures that they see their partner make in the live video, they can move "this" tile "there". With pictures, it is indeed much easier to understand.

Digiscope's 10 collaborative visualization platforms:

- CEA Paris-Saclay: VIKI
- CentraleSupélec: SINAPSE
- CNRS: EVE
- ENS Paris-Saclay: SHIVA
- Inria: WILDER
- Maison de la Simulation: MANDELBROT
- Paris-Sud University: WILD
- Télécom ParisTech: PIXLS, IRIS
- Université de Versailles Saint-Quentin-en-Yvelines: MIRE

<digiscope.fr/en>
<maisondelasimulation.fr/Phocea/Page/index.php?id=173/>

Publications

- I. Avelino et al. CamRay: Camera Arrays Support Remote Collaboration on Wall-Sized Displays. In Proc. ACM Conference on Human Factors in Computing Systems (CHI '17), ACM, pp 6718-6729, 2017
- C. Liu et al. CoReach: Cooperative Gestures for Data Manipulation on Wall-sized Displays. In Proc. ACM Conference on Human Factors in Computing Systems (CHI '17), ACM, pp 6730-6741, 2017

» focus

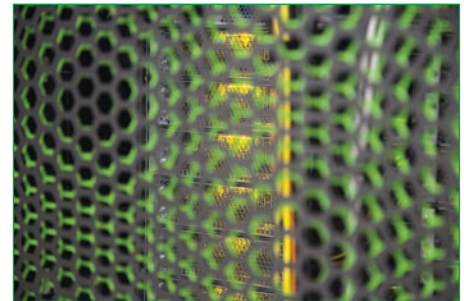
Let's Smilei together

Smilei is an open-source, ergonomic and massively parallel particle-in-cell code, applied today to a wide range of physics-related fields, from laser-plasma interaction to astrophysics. It is being co-developed by both physicists and high-performance computing (HPC) experts from CEA Paris-Saclay, CNRS, École polytechnique and UPSud. That way, it benefits from the latest advances in HPC (including an innovative parallelization strategy) and from the experience of its future users.

Publication - J. Derouillat et al. SMILEI: a collaborative, open-source, multi-purpose particle-in-cell code for plasma simulation (à paraître).

» focus

A little help for simulations



© CentraleSupélec

Numerical simulations present many challenges: parallelization, required computing capacity, data storage, etc. To pool their computing power, CentraleSupélec and ENS Paris-Saclay created Fusion, a cluster of more than 3,000 processing cores. Housed at IDRIS (CNRS), the supercomputing center also offers a hub for exchange around the methods and techniques used and developed by the researchers. It aims to increase in computing power and to be accessible to researchers from other institutions and industry.

<universite-paris-saclay.fr/en/news/fusion-a-model-of-collective-design>

» focus

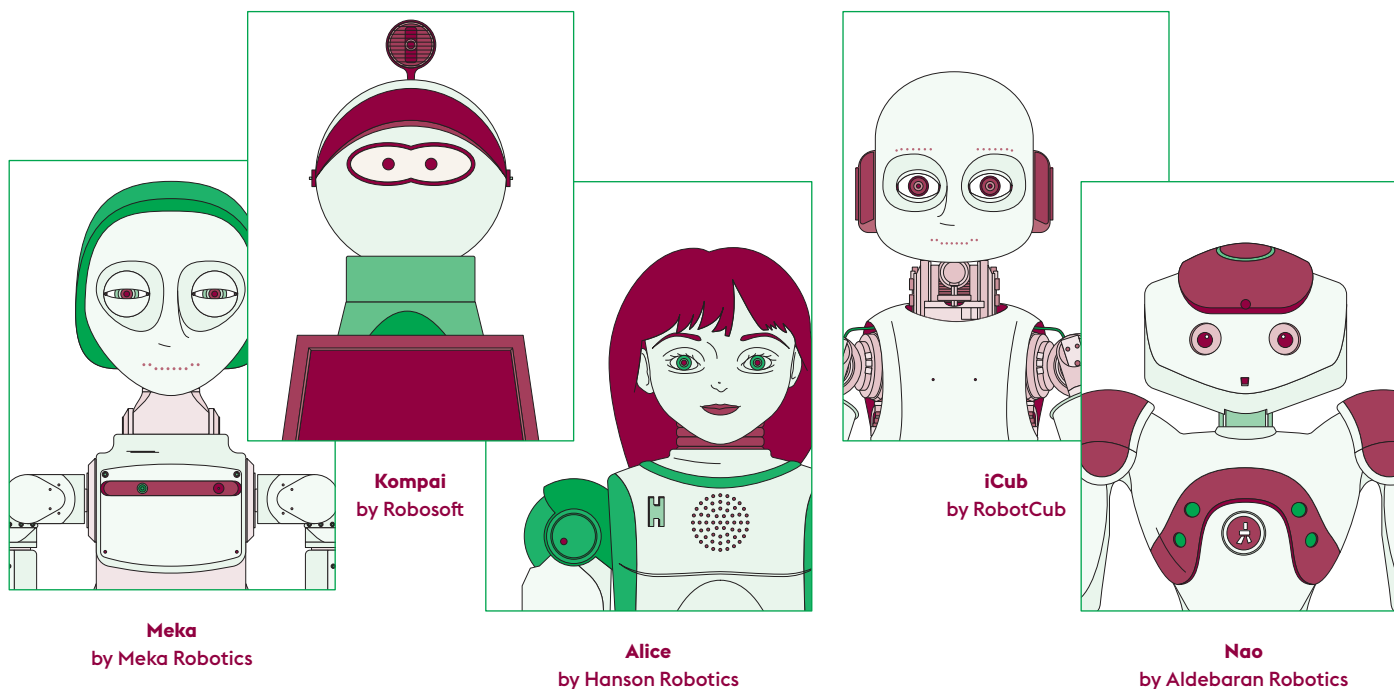
Large-scale research

Extreme computing in France is structured by Very Large Research Infrastructures ("TGR") managed by CNRS. A member of the European infrastructure PRACE (Partnership for Advanced Computing in Europe), GENCI (Grand Équipement National de Calcul Intensif) promotes high performance computing and coordinates three national centers, two of which are on Université Paris-Saclay's campus: IDRIS and TGCC. Interdisciplinary by nature, the Institute for Development and Resources in Intensive Scientific Computing (IDRIS) is a computer resource center and a hub of expertise. The Very Large Computing Center (TGCC) of CEA has been designed to accommodate the French first petaflop machine, Curie, which will soon be upgraded.

<idirs.fr>
<genci.fr/eng>

RESEARCH

<p>Keywords</p> <p>Artificial Intelligence, Robot, Smart city, Automated car</p>	<p>Institute</p> <p>ENSTA ParisTech</p>	<p>Expert</p> <p>Adriana Tapus</p>
<p>Title</p> <h2 style="text-align: center;">Are robots social beings?</h2>		



<p>Name</p> <p>Adriana Tapus</p>	
<p>ENSTA ParisTech, Université Paris-Saclay</p>	
<p>Vice Provost for Interfaces graduate school at Université Paris-Saclay and a full Professor at ENSTA ParisTech, Adriana Tapus was one of Robohub's "25 women in robotics you need to know about" in 2016. Her research aims to design a robotic system with social abilities that exhibits personality and emotions to improve the users' quality of life.</p>	

A great challenge of artificial intelligence, the social robot must be able to identify, express and cause emotions. Just like humans.

Robot and Franck, Wall-e, Big Hero 6, Star Wars... In these movies, "assistant" robots designed to help humans made us laugh, worry and cry. These robots "feel" emotions. Above all, they are making us experience such sentiment. Their character, their awkwardness, their desires make full-fledged characters out of them. From science fiction to the real world: researchers from Université Paris-Saclay territory take up the challenge.

Giving a personality to assistant robots is key to make communication easier and to establish long term relationships between humans and robots. These robots are indeed bound to take care of isolated, ill, elderly people or people with disabilities, to collaborate with humans to accomplish complex tasks, or to intervene in situations where human contact is welcome (receptionist or translator robots, etc.)

From the invention of the Turing test in 1950, interaction with a human being has been at the heart of artificial intelligence. In this test, a machine is declared intelligent if it can

pose as a human, i.e. mimic a human conversation. Humans indeed have a brain designed and gifted for community: "Man is by nature a social animal", Aristotle said. Identifying faces, imitating fellow humans, respecting customs, giving or accepting compliments, reacting adequately, etc.: living in a community requires a number of skills that are acquired with practice.

“Interaction with a human being is at the heart of artificial intelligence.”

The social robot must therefore continuously learn and adapt its behavior to the situation as well as to its conversation partners. It should behave as an individual, with both its own personality and a strong sense of social interaction. Some empathy, good manners and maybe a sense of humor: tomorrow's artificial intelligence will be sociable and caring. Many challenges thus arise.



Most research is interested in using facial expressions, postures and of course speech for interaction. With the HEROES project (for “Haptic Emotional robot Experiments with Sensitive body”) in collaboration with CEA Paris-Saclay, a research team from ENSTA ParisTech, CNRS and Paris-Sud University breaks new ground in addressing the interaction via touch. Researchers aim to develop a humanoid robot sensitive to tactile emotional stimulation, like stroking a person’s hand to reassure them, putting your hand on their shoulder, hugging them, etc.

To make the robot sensitive to touch, a set of tactile (pressure, etc.) and physiological (temperature, etc.) sensors will be added to some parts of its body (arm, shoulder, hand, for example). The robot will be able to learn how to detect and recognize the emotional state of the user, in order to “feel” it better and react to it more appropriately. First results show that the robot is capable of inferring someone’s gender and personality in 75% of the test cases, only by shaking hands.

In addition to simulate an emotional response, the robot should be able to elicit one to ensure a two-way relationship. So, in addition to a humanized appearance, it must develop social and emotional interaction strategies in line with our society’s rules. And it must know when to use any particular method. For example, the same research team developed a system to adapt the robot’s behavior (strength, amplitude and arm stiffness when shaking hands, etc.) to elicit different emotions and various dominance style. To better design the robots, it is therefore important to understand humans first.

Researchers studied how we recognize emotions. They made people, part of which suffers from autism, interact with a human, two more or less expressive robots, and a virtual agent with a human figure (an avatar). People with autism are known for their difficulty to interact but also for their affinity to robots. These robots are then often used in socialization therapies, to teach autistic people how to get in touch with people and, in particular, how to recognize emotions. These therapies must adapt to the individual needs of infant or adult patients: they are thus personalized.

Researchers have shown that it is easier for non-autistic people to recognize an emotion (anger, happiness, fear or sadness) by relying on proprioception, rather than on facial visual cues. Proprioception is the perception of the position in space of different body parts. A bit as if you would identify an emotion by remembering what you do with your own body when

you try to express it. But for people with autism, it would be the other way around: the visual clues are paramount.

This research will allow to adapt the robots used in socialization therapies depending on the individual’s visual and proprioceptive profile. This way, assistant robots can also help humans be more social!

Publications

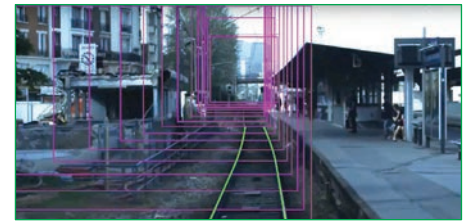
- A. Aly et al. Towards intelligent social robots: Current advances in cognitive robotics, Cognitive Systems Research, Volume 43, 2017, Pages 153-156
- P. Chevalier et al. Impact of sensory preferences of individuals with autism on the recognition of emotions expressed by two robots, an avatar, and a human. Journal Autonomous Robots Volume 41 Issue 3, March 2017 Pages 613-635
- P. H. Orefice et al. Let’s Handshake and I’ll Know who You Are: Gender and Personality Discrimination in Human-Human and Human-Robot Handshaking Interaction. In Proceedings of the Humanoids International Conference, Cancun, Mexico, November 2016

» focus
French intelligence

“France is AI”. The French Tech has launched an initiative to bring together economic operators around artificial intelligence. Researchers, companies, startups and institutional stakeholders defined France’s major orientations in this field, by addressing ethical, social and societal issues. Several Université Paris-Saclay members (CEA Paris-Saclay, CNRS, ENS Paris-Saclay, HEC, Inria, Inserm, ONERA, Télécom ParisTech, Télécom SudParis) and partners (IRT SystemX) took part in the 10 working groups.

<gouvernement.fr/en/franceia-the-national-artificial-intelligence-strategy-is-underway>

» focus
Is my automated car safe?

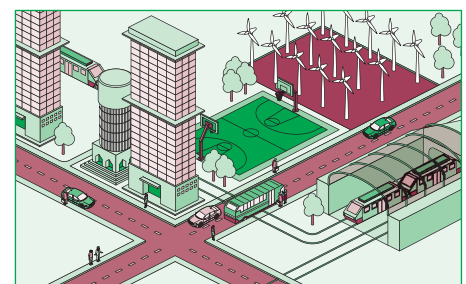


© IRT SystemX

A high level of safety requires effective test tools. With its industrial and academic partners, IRT SystemX develops virtual demonstrators able to take into account a multitude of possible scenarios to test the AI, as well as software to ensure the driver can intervene if necessary. Some programs also help explain the decisions taken by the AI. The Institute thus provides the constructors with methods and tools to demonstrate the safety of their automated cars and obtain authorization to put them on the market.

<irt-systemx.fr/en/>

» focus
Tomorrow’s city



One of a kind in France, the CNRS research federation on Computer, Human and Social Sciences (SIHS) makes SHS and ICTS work hand in hand at UVSQ on smart and sustainable cities. Researchers try and design the future of urban sites (housing, transport, facilities and governance), by analyzing and modeling people’s behaviors and habits, and technological and sociological advances. From big data to smart data, smart buildings and even smart cities!

<federation-sihs.uvsq.fr>





Art feeling at home



Hélène Launois greets Valérie Lhostis (a physicist and chemist at Laboratoire d'études du comportement des bétons et des argiles) in her workshop, March 2017
© Élisabeth de Lavergne

Discovering sciences and interpret them through artistic creations. Reinvent research through art. Several Université Paris-Saclay members welcome artists for a few weeks or a few months. At CEA Paris-Saclay, plastic artist Hélène Launois uses LEDs, neon lights or optical fibers to build machines, models and sculptures. These are inspired by scientists' prototypes and research, as is also the work of sculptor Thomasine Giesecke at CentraleSupélec. As for Patrick Corillon, he focuses on studying low temperatures in a CNRS/UPSud laboratory. Artists regularly accompany IOGS students with an "Arts & Sciences" program run by Éric Michel. HEC also created a contemporary art space for the first time in a French business school.

An astrophysicist at TEDGlobal 2017



© Bret Hartman/Ryan Lash/TED

"It is a great privilege!" Visibly enthusiastic, Miho Janvier is full of praise for the concept of TEDGlobal. An astrophysicist at UPSud, the researcher joined 20 other "Builders. Truth-Tellers. Catalysts" at the end of August in Arusha, Tanzania. The TEDGlobal 2017 Fellow shared her "ideas worth spreading" to a packed room and innovators from around the world.

For her only 4 minutes of presentation, the "solar weather" specialist chose to talk about her job and her research topic: how are solar storms born and how do they spread? what is their influence on the planets in the solar system, particularly on Earth? are they a danger to space travel? It was the first time this topic was addressed in a TED conference.

Already chosen as a "Wired Innovation Fellows" last year for her virtual reality project that takes the audience into the Sun, the researcher has lived and traveled abroad a lot. Coming from "multiple cultures", she is open to the world. A character trait that threw the TED Fellows community's doors

wide open. This community indeed intends to promote collaborations and international exchanges. This year, 18 countries are represented among the new Fellows selected for their talent, creativity and uniqueness.

Joining this international network, being "a part of the tribe", is an opportunity to discuss science but also outreach, art & science projects or the role of women. The young researcher used this "amazing experience" to share ideas – or just a drink! – with "people that really do change the world". She returns with "a lot of collaboration ideas with artists".

But Miho Janvier also took advantage of the opportunity to visit schools. Showing her work and her life as a researcher to these students allowed her to "leave her laboratory" and better share her passion for the sky.

<tedglobal2017.ted.com>

Outreach as an option

To better understand and learn, try to explain! Following this principle, several courses from Université Paris-Saclay members provide optional science outreach extra. And this is also an opportunity to open up to society and the general public.

When they redesigned their engineering degree, ENS Paris-Saclay added a "knowledge dissemination project" option in its "Higher Education" pathway. Students can write an article for a non-specialist audience, create

an exhibition or a MOOC. Educational projects can also be carried out in connection with the Institut Villebon - Georges Charpak (cf. *L'Édition #2*).

At IOGS, outreach projects are mandatory in year 1. Among these projects, students can choose "Support to science and technology in a primary school" (ASTEP) and assist teachers in implementing the science discovery activities, especially related to photonics, a key field of IOGS's.

Also in year 1, Orsay's Fundamental Physics Magisterium (UPSud) offers a "Physics outreach" option. Creating movies, games or performances, students learn how to popularize by practice and explain in an innovative way the physics they learn themselves everyday.

Title

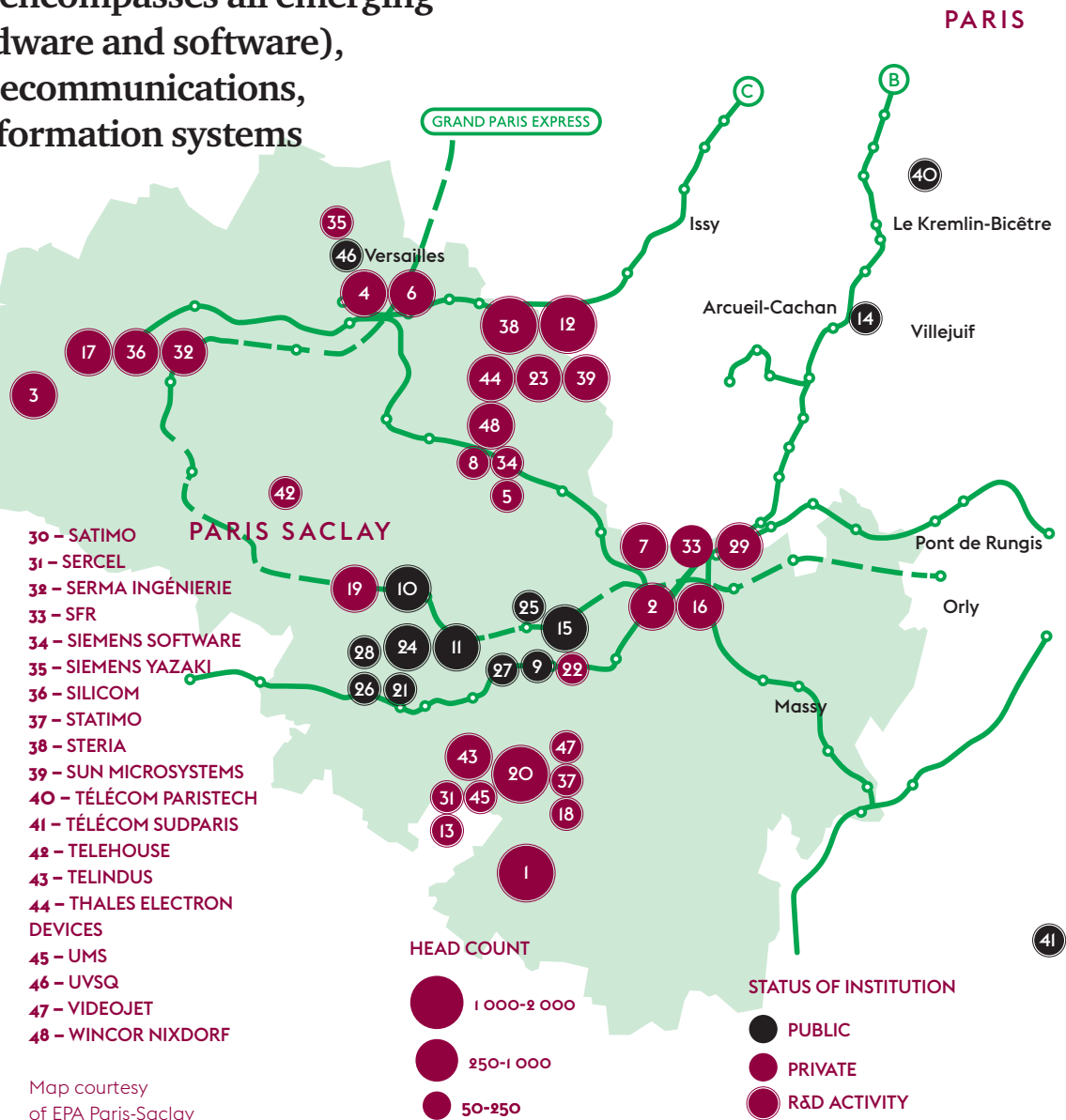
Information and Communication Technologies

The ICT cluster encompasses all emerging computer (hardware and software), networking, telecommunications, Internet and information systems technologies.

- 1 – ALCATEL LUCENT
- 2 – ALSTOM GRID
- 3 – ANSYS
- 4 – APTUS
- 5 – ARCHOS
- 6 – BLIZZARD ENTERTAINMENT
- 7 – BULL
- 8 – CAPGEMINI PROSODIE
- 9 – CASIO
- 10 – CEA PARIS-SACLAY
- 11 – CENTRALESUPÉLEC
- 12 – DASSAULT SYSTEMES
- 13 – ECONOCOM
- 14 – ENS PARIS-SACLAY
- 15 – ENSTA PARISTECH
- 16 – ERICSSON FRANCE
- 17 – EURIWARE
- 18 – HEXAGON METROLOGY
- 19 – HONEYWELL
- 20 – HP
- 21 – IDRIS
- 22 – III-V LAB
- 23 – INEO DEFENSE INDUSTRY
- 24 – INRIA
- 25 – IRT SYSTEMX
- 26 – LIMSI – UPSUD
- 27 – LIX – ÉCOLE POLYTECHNIQUE
- 28 – LRI – UPSUD
- 29 – SAGEM DEFENSE SECURITE

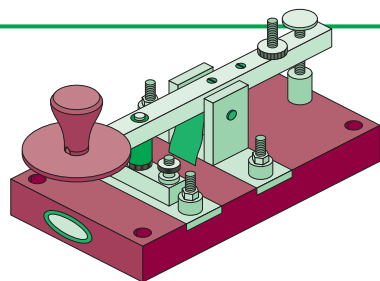
- 30 – SATIMO
- 31 – SERCEL
- 32 – SERMA INGÉNIERIE
- 33 – SFR
- 34 – SIEMENS SOFTWARE
- 35 – SIEMENS YAZAKI
- 36 – SILICOM
- 37 – STATIMO
- 38 – STERIA
- 39 – SUN MICROSYSTEMS
- 40 – TÉLÉCOM PARISTECH
- 41 – TÉLÉCOM SUDPARIS
- 42 – TELEHOUSE
- 43 – TELINDUS DEVICES
- 44 – THALES ELECTRON
- 45 – UMS
- 46 – UVSQ
- 47 – VIDEOJET
- 48 – WINCOR NIXDORF

Map courtesy of EPA Paris-Saclay



37 000
employees

400
institutions



1910

The French Radio Society (SFR), which became Thales, was founded by 3 alumni from École polytechnique (Brenot, Girardeau, Ferrié).

58 Masters, including 10 fully English-spoken Masters with 14 "Mentions":

- Bioinformatics
- High performance computing, simulation
- Electronic, electrical energy, automation

- Computer science
- Engineering of complex systems
- Computer methods applied to company management
- Mathematics and applications
- Intellectual property law

- Digital law
- International and European law
- Innovation, business and society
- History
- Sociology
- Human and social sciences



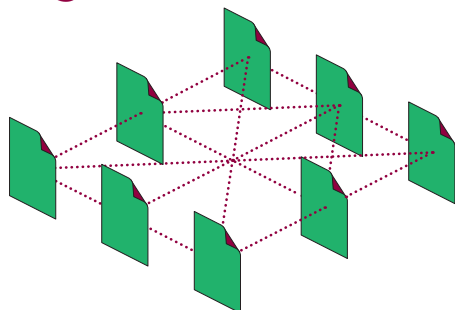
An Institute for the Digital Society

This laboratory aims to understand and anticipate the consequences of using digital tools in our daily lives. Bringing together researchers, regulatory bodies and the voluntary sector, the Institute addresses the technological, legal, societal and economic challenges associated with emerging technologies. It puts the uses (e-health, e-education, e-justice, etc.) and users at the heart of research.

UPSaclay members: CEA Paris-Saclay, Ecole polytechnique, Inria, Télécom ParisTech, Télécom SudParis, Paris-Sud University

universite-paris-saclay.fr/en/research/project/lidex-isn/

DigiCosme



The digital revolution must benefit everyone: that is the message delivered by the DigiCosme laboratory. More than 300 researchers and as many PhD students are studying the new challenges of the digital world, both in the corporate world and in everyday life: resource management, big data, distributed architectures, networks, etc.

UPSaclay members: CEA Paris-Saclay, CentraleSupélec, CNRS, École polytechnique, ENS Paris-Saclay, ENSTA ParisTech, Inria, Télécom ParisTech, Télécom SudParis, Université Paris-Sud, Université de Versailles St-Quentin.

digicosme.lri.fr/tiki-index.php?page=Home

universite-paris-saclay.fr/en/research/project/labex-digicosme-mondes-numeriques-programmes-et-architectures-distribues

5 initiatives

Université Paris-Saclay supports 5 Strategic Research Initiatives (IRIS) in relation to ICSTS.

Beyond 5G Initiative (B5GI) focuses on the challenges of future communications: energy consumption, security and scaling, especially in the context of the Internet of Things.

The **Paris-Saclay Center for Data Science (CDS2.o)** is a research and engineering program devoted to the question of data (management and visualization of data, statistics, signal processing, automatic learning, etc.) in all areas of application.

The **Paris-Saclay Institute for Control and Decision** is an interdisciplinary project around the theory of control and its applications in robotics, neuroscience or energy management. **icode** brings together mathematics, engineering, economics and decision science.

IQUPS aims to become the center for **Quantum Engineering at Université Paris-Saclay**, by creating quantum devices and combining theoretical and experimental approaches. The teams gathered here have been at the forefront of this evolution since the 1980s.

Spintronics Research Initiative (SRI) will develop low-power ICT applications in nano scale physics and spintronics beyond the limits of current technology.

universite-paris-saclay.fr/en/research/projects/

Transparent algorithms

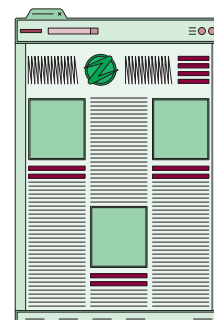
Have you ever wondered why the price of your plane tickets increases with each visit to the website? Some algorithms are fully locked and unfathomable. Faced with this problem, the TransAlgo project (Inria, IMT, CNRS) wants to define what is a transparent, neutral, fair or equitable software. It is a matter of checking whether the algorithm does what it is supposed to do and whether it complies with ethical and legal rules. The first of its kind in Europe, this initiative aims to create tools capable of testing these algorithms.

www.inria.fr/en/news/news-from-inria/transalgo

OwnPage

To reach your audience differently, with personalized newsletters and member spaces.

UPSaclay member:
• Télécom ParisTech



ownpage.fr/index.en.html/

Harvestr

A platform for managing user feedback and engage users in building better products. Selected by Station F.

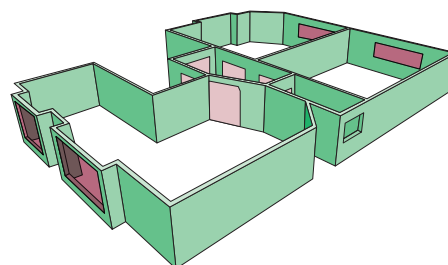
UPSaclay member:
• HEC

harvestr.io/

WiseBim

The quickest way to digitalize 2D drawings into 3D building information models (BIM).

UPSaclay member:
• CEA Paris-Saclay



wisebim.fr/index_en.html/

Titre

Soon on the Saclay plateau

The future of information



© Agence Beaudouin Architectes and MGM Arquitectos

As much a library as an exhibition center, Université Paris-Saclay's Learning Center intends to stand for the digital age of information access.

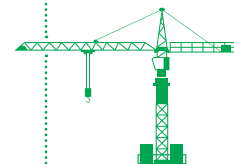
At the heart of the Moulon district, it will offer documentary resources, equipped ergonomic spaces and tools to work alone, in groups or using telepresence. Many activities will also be accessible to all students, researchers, entrepreneurs and residents: exhibitions, shows, training courses, conferences, debates, etc. Everyone will be able to organize the facilities as they see fit.

In this place dedicated to science outreach, documentation professionals will assist the public to find, publish or edit content, to learn new tools, to set up a technological surveillance or to share a discovery, etc. A flagship project for the territory, the Learning Center puts the spotlight on interdisciplinarity and the reaching out to the world and society that characterize UPSaclay members.

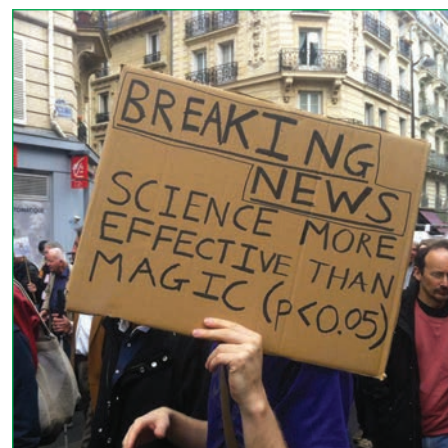
Designed by the Beaudouin Architectes agency, associated with MGM Arquitectos, the building will open in 2020.

universite-paris-saclay.fr/en/news/universite-paris-saclays-learning-center-project-gets-underway





We walked for science



© DR

“I walk so that science is recognized and respected for its role in society, and research is free and open to the world.” On April 22nd, Valérie Masson-Delmotte (LSCE, CEA Paris-Saclay/CNRS/UVSQ) took part in the March for Science in Paris, with many members of Université Paris-Saclay. More than 5,000 people gathered in Paris and more than 600 cities around the world participated in this event in favor of scientific research and against the rise of alternative facts.

marchforscience.com



© Élisabeth de Lavergne



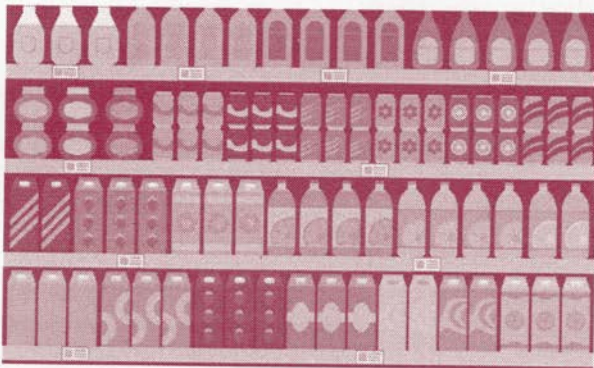
The University of Queensland

AEROSPACE LINKS WITH FRANCE LEAD TO AN AUSTRALIA-FIRST PARTNERSHIP

“France’s new Université Paris-Saclay mega-university will today (7 September, in Paris) partner with The University of Queensland in an Australian first that builds on aerospace research links.”

uq.edu.au/news/article/2016/09/aerospace-links-france-lead-australia-first-partnership-0

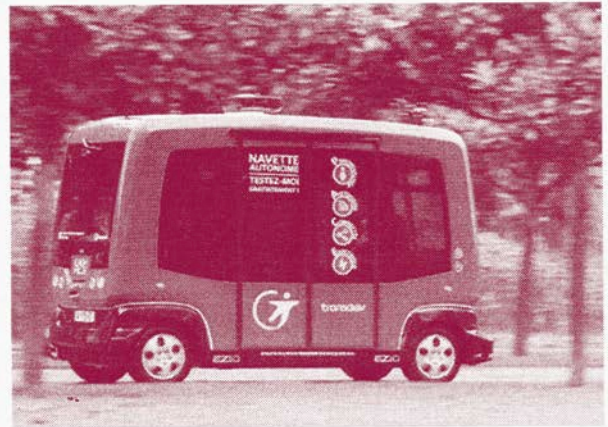
NEW FOOD



Food packaging rules misleading and potentially dangerous, new research confirms

“Food packaging is not tailored enough to contents, a team from Université Paris-Saclay has found, and could be causing the spread of chemicals. Scientists revealed that the contamination of aqueous food by aromatic compounds originating from

NyTeknik



FRANKRIKE TESTAR AUTONOM TAXIFLOTTA REDAN I ÅR

“Frankrike kommer redan i år berikas med en självkörande ‘taxiflotta’. Detta då Delphi Automotive lanserar autonom-taxis både i Paris och Normandie. Det framgår i ett pressmeddelande från företaget.”

<https://www.nyteknik.se/fordon/frankrike-testar-autonom-taxiflotta-redan-i-ar-6855006>

● INDEPENDENT

Working mothers suffer 3% pay penalty for each child they have, study finds

“Mothers are paid an average of 3 per cent less for every child they have compared to their female counterparts who do not have children, according to a French study, which also shows that fathers suffer no penalty at all.”

<http://www.independent.co.uk/news/business/news/working-mothers-pay-penalty-income-each-child-3-per-cent-french-study-fathers-gender-parents-a7677706.html>

IT HAPPENED

WORTH READING

Contributors to this issue

• **Régis Réau**, Senior Scientific Director R&D, Air Liquide • **Sophie Boudin**, Head of CENE, Télécom ParisTech • **Olivier Dulieu**, Researcher, CNRS • **Sandrine Charreire-Petit**, Researcher, Paris-Sud University • **Laurent Neyret**, Researcher, Université de Versailles-Saint-Quentin-en-Yvelines • **Xavier Crettiez**, Researcher, Université de Versailles-Saint-Quentin-en-Yvelines

• **Iolande Vingiano-Viricel**, Researcher, Institut VEDECOM • **Bertrand Carré**, Researcher, CEA Paris-Saclay • **Pascal d'Oliveira**, Researcher, CEA Paris-Saclay • **Aurélien Houard**, Researcher, ENSTA ParisTech • **Luc Barbier**, Researcher, CEA Paris-Saclay • **Pascal Monot**, Researcher, CEA Paris-Saclay • **Adrien Denoeud**, Researcher, CEA Paris-Saclay • **Édouard Audit**, Head of Maison de la Simulation (CEA Paris-Saclay, CNRS, INRIA, UPSud, UVSQ) • **Julien Dérouillat**, Engineer, Maison de la Simulation • **Michel Beaudouin-Lafon**, Researcher, Paris-Sud University • **Martial Mancip**, Engineer, Maison de la Simulation

• **Keitaro Nakatani**, Vice-President Research, ENS Paris-Saclay • **Pierre-Alain Boucard**, Researcher, ENS Paris-Saclay • **Adriana Tapus**, Researcher, ENSTA ParisTech • **Paul Labrogère**, "Autonomous Transport" Program Director, IRT SystemX • **Dominique Barth**, Researcher, Université de Versailles-Saint-Quentin-en-Yvelines • **François Bugeon**, Communication Officer, CEA Paris-Saclay • **Olivier Cappé**, Head of STIC department, Université Paris-Saclay

• **Julien Sempéré**, Learning Center Project Leader, Université Paris-Saclay

Researchers and entrepreneurs met at the first Tech Meetings of Université Paris-Saclay.



universite-paris-saclay.fr/en/news/universite-paris-saclays-first-tech-meetings

During the 10 year anniversary of the ERC program, we put the spotlight on our researchers who have received EU funding for their work.



universite-paris-saclay.fr/fr/les-laureats-dune-bourse-erc-programme-h2020

The 29th edition of TOSS, France's largest multi-sports student event, gathered 3,500 students.



bds-supelec.fr/toss
www.universite-paris-saclay.fr/en/event/29th-edition-of-toss-the-biggest-student-sports-championship-in-france

The annual conference and expo of NAFSA was held this year in Los Angeles from May 28th to June 2nd. It is the largest international conference for higher education.



universite-paris-saclay.fr/en/news/universite-paris-saclay-at-nafsa-conference-in-los-angeles

The Conversation

The PLATO mission: an investigation of planetary systems

Despite its proximity to the Earth, the Sun still poses many questions. But what do we know of other stars, located at immense distances on a human scale? How are they different from the Sun? Are they also hosting planets such as those that revolve around our Sun?

theconversation.com/the-plato-mission-an-investigation-of-planetary-systems-82850

Brexit and the long history of English property owners in France: will the passion endure?

Since the first decades of the 19th century, many British citizens have bought properties or built houses in France. Approximately 150,000 UK citizens currently live in France, second only to Spain. With Brexit on the horizon, many are uneasy, for the draw of life in France remains strong, and its roots are deep.

theconversation.com/brexit-and-the-long-history-of-english-property-owners-in-france-will-the-passion-endure-80298

IN ISSUE #6

Yves Meyer's Mathematics, Food & Cooking, Telecommunications, Language

Members of Université Paris-Saclay



BEST PHOTO AWARD



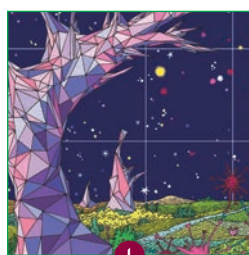
Julien Sempéré wins the Best Photo Award with *L'Édition* of Université Paris-Saclay. He gets his favorite “UPSaclay viewed by” illustration, as a scarf.

Do you want one?

Send us your best picture with this *Édition*. The most original will be printed in the next *Édition* and the photographer will receive their unique scarf.

Please send your picture to:

ledition@universite-paris-saclay.fr with your name and address, and number of your favorite illustration.



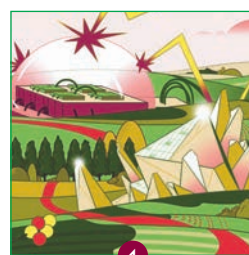
1



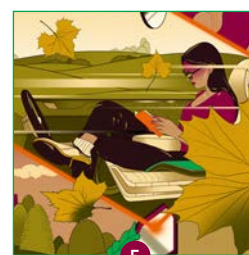
2



3

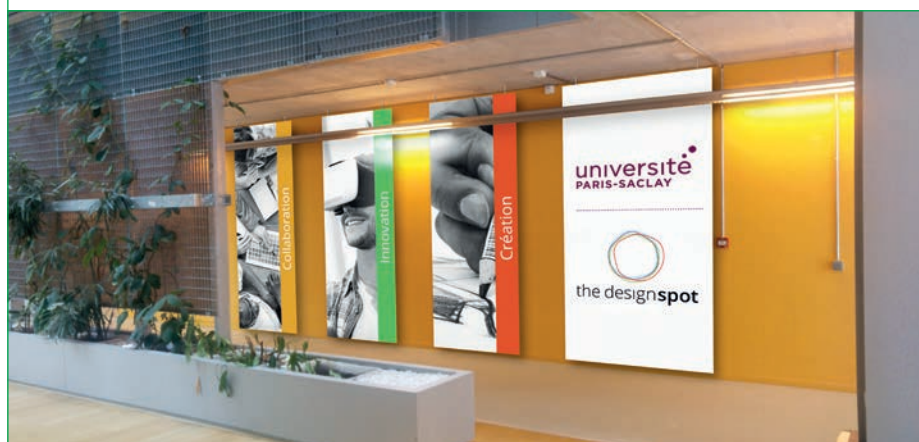


4



5

Heading for Design



The design center of Université Paris-Saclay, named “The Design Spot”, is taking shape. Design is an interdisciplinary subject and combines creativity and sensitivity with technology and economy, to improve our quality of life. The Design Spot thus aims to assist researchers, engineers, and innovators from Université Paris-Saclay in the development of better products, experiences or services for tomorrow’s society.