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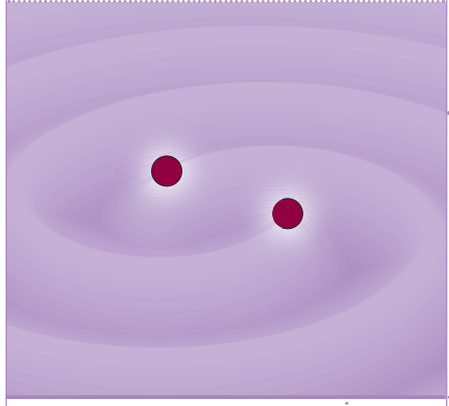

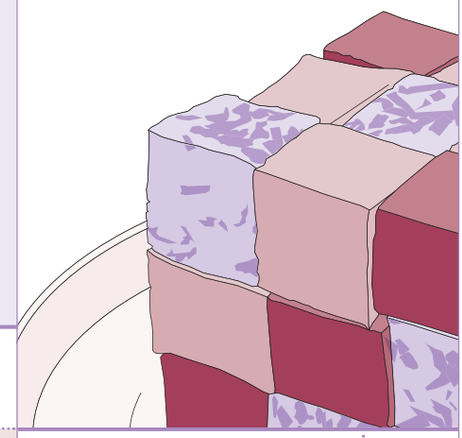

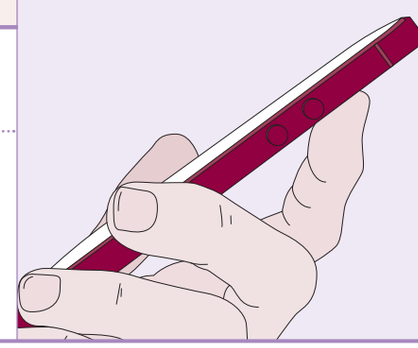

université PARIS-SACLAY

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Website: universite-paris-saclay.fr

TESTIMONY

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Lambert Trénoras
CEO and co-founder of Gyrolift
<gyrolift.fr/>

Gyrolift offers a new mobility solution that allows anyone, valid or with reduced mobility, to move in a seating position as well as in a standing position. This project was born following my thesis in robotics at UVSQ. I also followed the HEC Challenge + training and my startup benefited from the support of students from HEC's MBA Entrepreneurship (business plan, market research) and from the École polytechnique accelerator. The other two cofounders of Gyrolift are also from UVSQ. We are a pure Paris-Saclay product!

We also benefited from funding, by being chosen as a "proof of concept" project by FCS Campus Paris-Saclay (which will become UPSaclay) in 2013 and by winning the Young Researcher Innovation Award at the 2016 Handiversité symposium organized by UPSaclay. The Paris-Saclay ecosystem has given us a real boost to build our prototypes, establish our network, increase our visibility. Today, our startup is doing very well: we are taking part in CES 2018 in Las Vegas in January, and we will launch our product on the market later this year. We will also soon welcome a CIFRE* thesis in collaboration with UPSaclay. We hope the adventure will go on!

* a CIFRE agreement is a PhD thesis undertaken in partnership with a company, here Gyrolift.

QUESTION > ANSWER

The Orsay collision ring (ACO) is a global pioneer in particle accelerators. Active from 1965 to 1988, it allowed considerable advances in high energy physics. It is now registered in the additional inventory of listed historical monuments and is the centerpiece of Sciences ACO, the science museum of Faculty of Science in Orsay(UPSud). In 1965, putting it into service led to an unexpected problem, related to the physical constant "c". What happened?

A machine like the ACO stores electrons and anti-electrons traveling at a speed very close to the speed of light, for several hours in a vacuum chamber, which represents going round hundreds of billions of times. This had never been done before. For orbit calculations, researchers used a value of the speed "c" of light in a vacuum estimated in 1963. But this value was incorrect at the 5th decimal place! Enough to prevent this racing machine to start operating.

Roland Jolivot
He graduated of École polytechnique in 1960. He was a researcher at CEA Saclay until 1970 and was part of the ACO team at the Linear Accelerator Laboratory (UPSud) from 1962 to 1967.

Do you have a question? Our researchers can answer. Send your question to: ledition@universite-paris-saclay.fr

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EDITOR'S LETTER

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At the beginning of this year, I wish you all the best for 2018. This is a very important year for Paris-Saclay University. Thanks to the strong commitment of 14 of its founders, Université Paris-Saclay will provide France with a new model that will bring us into the world's top 20 and put an end to an institutional history that fragmented research missions, training and innovation. On the model of a humanistic, generalist and omnidisciplinary university, a melting pot of knowledge, reflection and critical thinking, Paris-Saclay University is leading its students towards professional integration, backed by a cluster of innovative companies. It balances three major missions within it:

– Producing excellent research, at the core and the interface of disciplines

– Educating students to meet their aspirations and labor market expectations

– Serving society through knowledge dissemination, support for innovation, and consideration of societal issues.

"A both ambitious and confident spirit to start the new year."

The objectives of international excellence, in terms of teaching, research, innovation and graduate employability, are subordinated to values that the founders of Université Paris-Saclay inherited from their respective traditions among which: an attachment to the public service of teaching and research, based on the transmission and advancement of knowledge; openness to the world and to cultural diversity; and the promotion of collective as well as individual successes.

In this spirit that is both ambitious and confident, we are starting this new chapter of our development to ensure that scientific progress and innovation serve society.

Gilles Bloch,
President of Université Paris-Saclay

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Thank you and happy reading!

first name ..... last name .....

address ..... city .....

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postal code ..... country .....

email .....

DON'T MISS OUT ON...

JANUARY

Description
The second edition of the Statistics/Learning at Paris-Saclay workshop
Date
19
Place
Le Bois-Marie, France
Host
CNRS, IHES, Inria, UPSud
Link
<indico.math.cnrs.fr/event/1799/>

Description
PHLOEME 2018: the first cereal innovation Biennales
Date
24-25
Place
Paris, France
Host
Inra
Link
<phloeme.com/>

FEBRUARY

Description
ResMO2018: all the states of organic matter
Date
4-7
Place
Trégastel, France
Host
AgroParisTech, Inra
Link
<resmo2018.sciencesconf.org/>

MARCH

Description
A conference to discuss biology "From Molecules and Cells to Human Health"
Date
5-9
Place
Bures-sur-Yvette, France
Host
CEA Paris-Saclay, CNRS, IHES, UPSud
Link
<indico.math.cnrs.fr event/2672/>

Description
The Student Entrepreneurship Day
Date
22
Place
Gif-sur-Yvette, France
Host
CentraleSupélec

FEBRUARY – MARCH

Description
The graduation ceremonies for our Master's students
Place
Paris-Saclay
Host
UPSaclay members

APRIL

Description
The second edition of Uni'Run, to support associations against childhood cancer
Date
7
Place
Jouy-en-Josas, France
Host
HEC

MAY

Description
Entropy 2018: From Physics to Information Sciences and Geometry
Date
14-16
Place
Spain
Host
CentraleSupélec, CNRS
Link
<sciforum.net/conference/Entropy2018-1>

Scholarships for first-time arrivals

For 5 years, Université Paris-Saclay has offered many scholarships for incoming mobility. Allocated each year according to criteria of academic excellence, these grants are for international students admitted to a Master's degree who are newcomers and have never studied in France before.

As part of these degrees, the Master's thesis is to be done in one of Université Paris-Saclay research laboratories or in a company on French territory. All disciplinary fields are concerned, except apprenticeship.

Université Paris-Saclay scholarships come to € 10,000 per year, plus a travel allowance. Coming from all over the world, fellows benefit from a large support and a Facebook group allows them to create a real community with a strong mutual assistance. This is a good way to discover the campus and France, and to be successful in one's studies: the success rate of these students in their Master's degree is higher than the rate of all French and foreign students and exceeds 95 %. One half of the students then pursues their studies with a PhD.

To do your Master's degree at UPSaclay in 2018-2019, apply now!
<universite-paris-saclay.fr/en/programme-de-bourses-internationales-de-master>

Who are our PhD. candidates?

Université Paris-Saclay is ranked first in France in the number of PhDs who graduate every year: 1,216 theses were defended there in 2016, that is 8.3% of the 14,565 doctors graduated in France that year. Who are these candidates?

58% of theses are written in French

37% of theses are written in English

<3 years and 4 month

54% of the PhD theses defended at UPSaclay started less than 3 years and 4 months ago. 5% last more than 6 years.

70% of theses are in open access (national ratio: 62%)

FIELDS

- **23.2%** Biology, medicine, health
- **20%** Engineering sciences
- **14.5%** Human and social sciences, and Humanities
- **13.3%** Information and communication sciences and technologies
- **12.3%** Physics
- **5.5%** Chemistry
- **5.4%** Mathematics and their interactions
- **4%** Agronomic and environmental sciences
- **1.9%** Earth and Space sciences

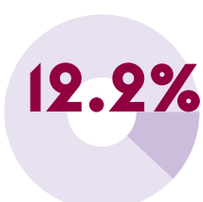
DEGREES

- **36.8%** Master's degree in France
- **19.25%** European Master's degree outside France
- **15.3%** Engineering degree
- **15.1%** Other
- **13.6%** Other foreign degree

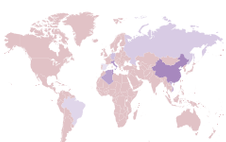
40.9% of women

58% of the women PhDs work in the Biology-Medicine-Health fields

59.1% of men



12.2% of doctoral candidates are doing a PhD in partnership with a company (CIFRE agreement)



41 % of doctoral candidates come from abroad. 80 nationalities.

China 7.6%, Tunisia 3.7%, Italy 3.2%, Algeria 2.7%, Vietnam 2.4%, Lebanon 2.2%, Germany 1.4%, Russia 1.3%, Brazil 1.2 %, Spain 1.2%

Let's discover the real world of work

An efficient and educational "systems" approach. The Institute for Technological Research (IRT) SystemX has implemented the "CRÉE projects" (as in Coopération – Recherche – Étudiant – Entreprise) to better train the engineers and scientists of tomorrow. While a student at UPSud, Kevin Pasini did his final year internship in this context: "We were three students with different but complementary skills to carry out a joint research project around a concrete industrial problem. Each student had a specific topic and their dedicated tutor: we were, at the same time, well guided and at liberty to approach the topic as we wished and explore different tracks." A real experience of working as a team: "We had to make an effort to understand the others' work to have an overall vision of the project". There was a great group dynamic and the students were able to go beyond the initial purpose of their internship on the regularization of transport networks: they provided not only a proof of concept of the visualization platform they had to create, but an almost workable tool using real data. A successful internship that launched Kevin's career: like another student hired as an engineer, he now works on a close subject as a PhD. student at IRT SystemX.

<irt-systemx.fr/valorisation/formation/les-projets-cree/>

AWARDS & PRIZES

• **François Hild** (ENS Paris-Saclay) received the 2017 Silver CNRS Medal.

• **Xavier Mariette** (Inserm) won the Guillaumat-Piel Award from the French Medical Research Foundation.

• **Clémence Franc** (HEC), **Antoine Noël** (HEC) and **Sidarth Radjou** (CentraleSupélec) are among the top 10 French entrepreneurs under 35 recognized by the MIT Technology Review.

© UVSQ

• **Nathalie Carrasco** (UVSQ) was conferred the rank of Knight of the French National Order of Merit.

• **Oualid Jouini** (CentraleSupélec) received an IBM Faculty Award.

• **Camille Cany** (CentraleSupélec) won the Paul Caseau Award from EDF and the National Academy of Technologies of France.

• The international Institute of Electrical and Electronics Engineers named **Marc Sciamanna** (CentraleSupélec) a "IEEE Photonics Distinguished Lecturer" for 2017-2018.

© Adel Razek

• **Adel Razek** (CentraleSupélec) received the 2017 IEEE Nikola Tesla Prize.

• **Caroline Robert** (Institut Gustave Roussy) received the Rose Lamarca Award from the French Medical Research Foundation.

• **Junior Supélec Strategie** (CentraleSupélec) was elected best French Junior Enterprise in 2017.

• The French Academy of agriculture rewarded 4 researchers from AgroParisTech-INRA: **François Léger** received a silver-gilt medal; **Lucie Michel**, **Kevin Morel** and **Ophélie Sauzet** won a silver medal.

© Cercle K2

• **Jill-Jênn Vie** (CentraleSupélec) won the 2017 Cercle K2 trophy in machine learning and data science.

• **Hugo Duminil-Copin** (IHES) was awarded the Loève Prize, and the Jacques Herbrand Prize from the French Academy of Sciences.

• Co-founded by Pierre Fillard (Inria Saclay), the **Therapixel** startup won the SFR/Medicen/SNITEM Prize.

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• **Laure Ciesla** (CNRS, CEA Paris-Saclay), **Lucie Jarrige** (CNRS), **Marijana Milicevic** (Paris-Sud University, CNRS), **Émilie Tisserond** (CNRS, Paris-Sud University) and **Muriel Tyrman** (CNRS, ENS Paris-Saclay) received a 2017 L'Oréal-UNESCO For Women in Science Award.

• **Dave Marcum** (Inria Saclay) received the 2017 International Meshing Roundtable Fellow Award.

• **Laurent Massoulié** (Inria Saclay) won the 2017 Grand Scientific Award from the Simone and Cino Del Duca Foundation, awarded by the French Academy of Sciences.

• The Runcorn-Florensky medal from the European Geosciences Union was given to **Yves Langevin** (UPSud).

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• The teaching staff of the Orsay **Magistère** (MA-level degree) **of fundamental physics** (UPSud) was awarded a PEPS Prize that rewards their "passion for teaching and educational skills in higher education".

• **Indira Mendez-David** (Inserm, UPSud) received a scholarship from the Pierre Deniker Foundation.

• **Mouad Alami** (CNRS, UPSud) received the 2017 Award from the French Cancer League.

• **Sofiane Si Salem**, **Chloé Vanhelle**, **Marina Carvalho** and **Florian Pedenaud**, students at UPSud, received the 2017 Educnum Grand Jury Prize.

• CNRS awarded a Silver Medal to **Philippe Ciais** (CEA Paris-Saclay) and a Gold Medal to **Thibault Damour** (IHES).

Illustrations on the right page and page 16: **Andrew Archer**

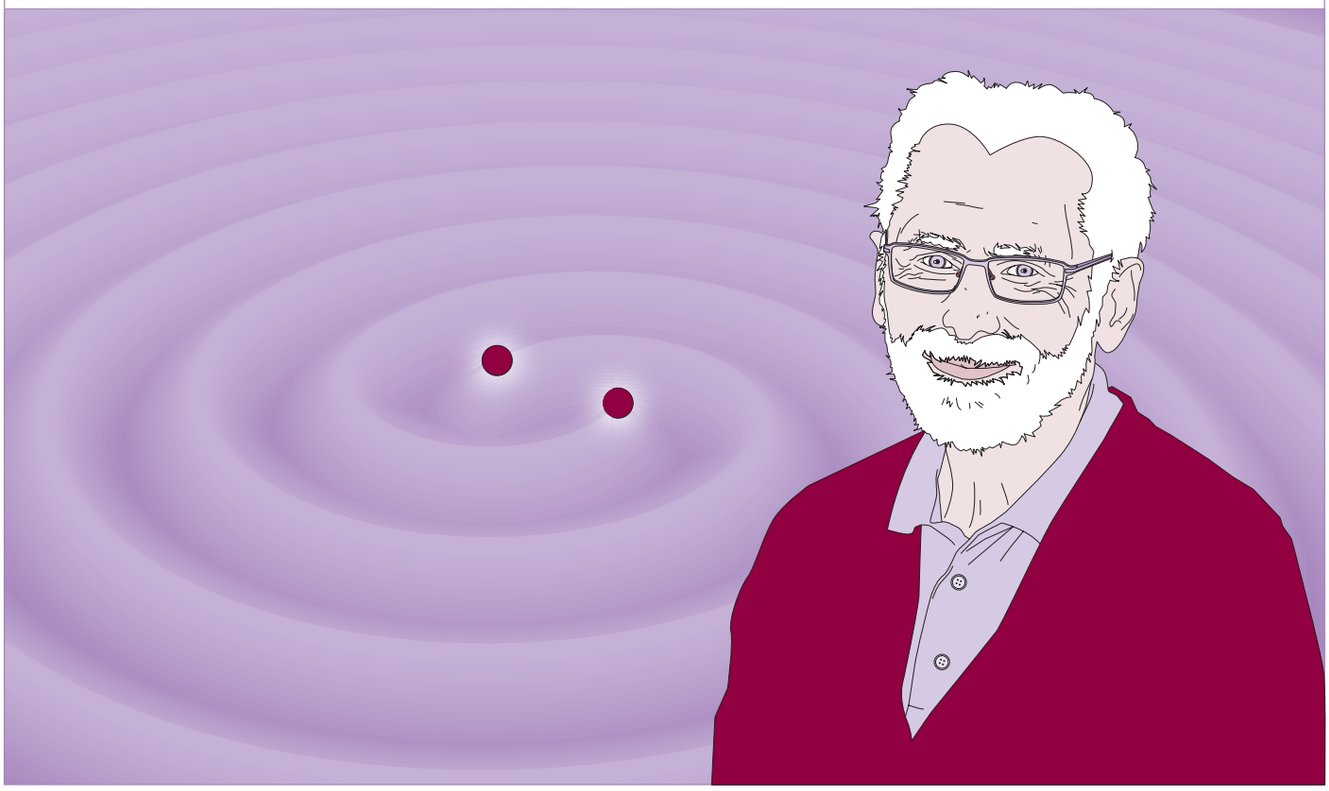
Keywords
Yves Meyer, Wavelet, Quasicristal, Noise, Operator

Institute
University of Evry-Val-d'Essonne

Expert
Pierre Gilles Lemarié-Rieusset

Title

A rich maths career that still inspires



Name
Pierre Gilles Lemarié-Rieusset

University of Evry-Val-d'Essonne

A professor at Laboratoire de Mathématiques et Modélisation of the University of Evry-Val-d'Essonne where he is in charge of the "Analysis and PDE" team, Pierre Gilles Lemarié-Rieusset is interested in partial differential equations (PDE), in particular the Navier-Stokes equations, and in the wavelet theory. He worked under the supervision of Yves Meyer for his PhD thesis at Paris-Sud University, where he also obtained his professorial thesis.

Yves Meyer was awarded the 2017 Abel Prize. Many of his students and colleagues from UPSaclay members are still working on different aspects of his outstanding research.

On September 14th, 2015, mankind detected for the first time the passage of a gravitational wave. But it was actually an algorithm which spotted this distortion of space-time geometry that propagates at the speed of light. Developed by Sergey Klimenko, from the University of Florida, this algorithm looks for a characteristic signal from a gravitational wave in the raw data from Ligo and Virgo detectors, a data that is 99.9% noise. An impressive performance! This ground-breaking algorithm is based on Yves Meyer's work on wavelet theory. A professor at École normale supérieure Paris-Saclay, Yves Meyer was awarded the 2017 Abel Prize, one of mathematicians' most prestigious awards. Multifaceted, his work started research on a wide range of subjects that are still being studied today by members of Université Paris-Saclay.

Yves Meyer's main research has been on wavelet theory. A wavelet is a brief wave-like oscillation, much as a music note, that can be used to extract information from a signal. The wavelet has a characteristic frequency and, when combined with a multi-frequency signal, it can indicate if and when this given frequency is used in the signal. This wavelet theory unified multiple theories used at the time in wave analysis, signal and image processing or approximation theory. It is now used in a variety of applications, from detecting gravitational waves to compressing data. The wavelet representation is indeed optimally sparse for signals containing spikes: keeping only relevant information in audio files or images, it serves to produce JPEG or MP3 formats.

Compressing data also means reducing noise, which can be useful in other domains, like fingerprint analysis, numerical simulations or medical imaging: teams from CEA Paris-Saclay, CentraleSupélec, CNRS and Inria use wavelet tools to make X-ray or functional magnetic resonance (fMRI) images clearer and easier to interpret.

The mathematician also applied wavelets to fluid mechanics and the study of turbulence. These topics involve Navier-Stokes equations, whose mathematical solution is one of the seven "Millennium Prize Problems" set by the Clay Mathematics Institute in 2000 (six of which are still unsolved). These partial differential equations (PDE) describe how gas

and most fluids behave under external forces, taking into account their viscosity. They can be used to model fluids in pipes, bridges under wind or high-velocity vehicles (like trains or planes). In the 1990s, Yves Meyer showed that oscillations were paramount in the stability of such Navier-Stokes equations' solutions.

Since then, mathematicians refined and developed his work. In particular, researchers from UEVE studied the role of the fluid's pressure in the equations' solutions, trying to weaken as much as possible the mathematical assumptions made on that pressure to get a solution.

> **"Since then, mathematicians refined and developed his work."**

They showed that a looser control over the pressure changed the time properties of the solutions, but not the spatial properties. One of these researchers, Pierre Gilles Lemarié-Rieusset, also developed a general framework to describe the solutions to a useful class of equations, including the Navier-Stokes equations. Together with another team from UEVE and partners, he also recently studied the 3D Navier-Stokes equations, including combined electric and magnetic effects. The researchers proved the existence and stability of time-periodic solutions to these challenging equations.

Still in the PDE domain, Yves Meyer also worked on the operator theory: he obtained important results on the continuity of a type of operator called "multilinear singular integral operator". An essential contribution that led to 30 years of significant results. Pascal Auscher's work (UPSud) on the square root of a subcategory of such operators (Kato's conjecture) falls in line with this theory.

Early in his career, the mathematician gave the mathematical theory and first examples of quasicrystals. Crystals, like snowflakes or diamonds, are solid materials whose atoms are arranged in a highly ordered structure called "lattice". A quasicrystal has similar macroscopic properties, with a microscopic structure that is ordered but non periodic. Researchers are still today studying the exciting chemical and electronic properties of these materials.

In all Yves Meyer's research throughout his rich career, numerous applications mixed with theoretical considerations. Today, this interdisciplinary scientist is still discovering new mathematical fields at ENS Paris-Saclay: he recently presented numerically explicit Poisson "summation formula", a key for X-ray crystallography which is for example used at Synchrotron SOLEIL in biology or pharmacology applications. These results are expected to make as many waves as the previous ones.

Publications

· D. Chamorro et al. The role of the pressure in the partial regularity theory for weak solutions of the Navier–Stokes equations. 2016. To be published in Archives for Rational Mechanics and Analysis

· P. G. Lemarié-Rieusset. Sobolev multipliers, maximal functions and parabolic equations with a quadratic nonlinearity. 2017. To be published in Journal of Functional Analysis

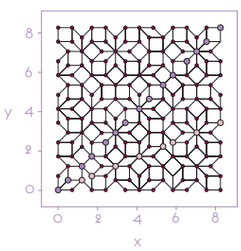
· S. Ibrahim et al. Time-periodic forcing and asymptotic stability for the Navier Stokes Maxwell equations. 2016. To be published in Communications in Pure and Applied Mathematics.

· L. Wang at al. Bayesian method with sparsity enforcing prior of dual-tree complex wavelet transform coefficients for X-ray CT image reconstruction. The 25th European Signal Processing Conference (EUSIPCO), Aug 2017, Kos island, Greece.

· P. Ciuciu et al. Spatially regularized multifractal analysis for fMRI Data. EMBC' 17 – 39th International Conference of the IEEE Engineering in Medicine and Biology Society , Jul 2017, Jeju, South Korea. pp.4, 2017.

» focus

Exact solutions for electronic tilings



Even the simplest models of two- and three-dimensional quasicrystals, crystals with nonperiodic yet long-range ordered arrangement of atoms, have resisted theoretical investigations until now. Considering the similarities between electrons hopping from atoms to atoms in a quasicrystal and tilings, like Penrose tiling, researchers from CNRS and UPSud found exact mathematical solutions describing the electrons' behavior on one- and two-dimensional quasicrystals. This confirms a long-held surmise based on numerical calculations.

Publication · N. Macé et al. Critical eigenstates and their properties in one- and two-dimensional quasicrystals. Phys. Rev. B 96, 045138

» focus

Clearer fingerprints

Binary images, such as scanned fingerprints, present strong aliasing effects on slanted lines, making minutiae detection difficult. To solve this, researchers from ENS Paris-Saclay devised an "image curvature microscope". This complex parametrized visualization tool computes accurate image curvatures at subpixel resolution, and yields a curvature map matching our visual perception. Fingerprints will soon reveal all their secrets, and yours.

Publication · A. Ciomaga et al. The Image Curvature Microscope: Accurate Curvature Computation at Subpixel Resolution. Image Processing On Line, IPOL – Image Processing on Line, 2017, 7, pp.197-217

» focus

Boundary issues

A team from CNRS and UPSud, together with a researcher from Uppsala University, made a breakthrough on a long-standing mathematical problem named "Kato's conjecture", posed in 1953, in the case of parabolic equations. The researchers identified the domain of the square root of parabolic operators with much less restrictive conditions than before. They use this to study boundary value problems, which are differential equations with constraints, called the boundary conditions.

Publication · P. Auscher, M. Egert, K. Nyström. L^2 well-posedness of boundary value problems for parabolic systems with measurable coefficients, Submitted to Journal of European Mathematical Society.

Keywords
Language,
Speech recognition, LSF

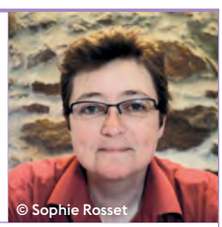
Institute
National Center of Scientific Research

Expert
Sophie Rosset

Title

The end of the tower of Babel

Name
Sophie Rosset


© Sophie Rosset

National Center for Scientific Research

Sophie Rosset's research focuses on dialogue systems, especially between humans and machines, and on the analysis of written and spoken language. She obtained her PhD in computer science and her professorial thesis at Paris-Sud University and is now a CNRS Senior Researcher at the Computer Science Laboratory for Mechanics and Engineering Sciences (Limsi).

The language barrier has become one of the key challenges of globalization. AI and translation machine will certainly help, provided they master some of the subtleties of humans' many languages.

Life is a box of chocolates… We humans all understand what I meant there. At least, English readers do. To express this idea in another language, you may need to use a translation machine. But translation is more difficult for machine than it seems.

Analogical reasoning is a fundamental ability of the human mind: establishing a mapping between two domains based on common qualities is a natural task for us. But transferring this ability to computers remains a challenge, whether for detecting, understanding, evaluating or producing analogies. It demands complex modeling and huge computing power. But it is absolutely necessary to produce robots that can find their place into human life, or to make texts translated by machines feel less artificial.

Researchers from Inra, AgroParisTech and Télécom ParisTech, Université Paris-Saclay, proposed the principles for a new language which can be used to describe analogical problems. They considered a description of the process generating analogies rather than a description of the analogies themselves. They proposed basic rules defining a small language adapted to a particular kind of analogies, called "Hofstadter's analogies". Based on a relevance measure to disqualify common properties of little interest between two objects, the prototype language is designed to produce and solve analogies, in a way similar to what humans can do: the computer gives a solution that corresponds in most cases to the most frequent solution given by human beings. A team from CNRS and Paris-Sud University also used formal analogical reasoning to translate a question expressed in natural language into computer language.

> **"Understanding and reenacting grammar specificities can be challenging."**

If making sense of human idioms is still difficult for machines, understanding and reenacting grammar specificities can also be

challenging, especially speech-like texts. For example, a researcher from CNRS and Paris-Sud University took an interest in English tag questions (e.g. “it is, isn’t it?”). A high quality translation must be able to identify the many stylistic aspects of speech that pose a problem for current machine translation techniques: tag questions are indeed related to contextual cues, such as speaker attitude and style, the relationship between dialogue participants and dialogue flow. They do not always appear at the end of a question. Moreover, the overall grammaticality of a sentence is determined by the correct choice of tag, which is grammatically dependent on the rest of the translation: “She’s still alive, isn’t she?” has a different tag question than “She still lives, doesn’t she?”, but both translations might come from the same sentence in a foreign language (“Elle est encore en vie ?”).

The scientist proposed a solution: the prediction of the appropriate question tag to use in the English translation (if any) is used to post-edit the machine translation outputs. First, the machine chooses how to translate the sentence, using state-of-the-art tools, and only then does it decide if there will be a tag question (and which one). When translating from Czech, French and German into English, significant improvements are displayed, compared to a one-step system. The new method improves the fluidity, naturalness, grammatical correctness and pragmatic coherence of machine translations.

Translating English into morphologically rich languages, like Czech and Latvian, also poses problems for neural machines. These languages express multiple levels of information (grammatical function of the word in the sentence, its grammatical relations to other words) at the word level. Instead of using word order and adjacency like French or English do, they produce word-form variations. This complicates lexical acquisition: translation into such a language requires a large output vocabulary to model various morphological phenomena, which is a challenge for neural machine translation architectures, usually based on small-sized corpora. Word forms unseen in training occur in texts, which may also require the translation machine to generate novel target word forms.

Using machine learning, a team from CNRS and Paris-Sud University managed to achieve the right balance between a limited training vocabulary size and an ability to translate a fully open vocabulary. As for the previously mentioned work, researchers predicted the target form in two simpler tasks: generating the lexical unit first and then the morphological grammatical information. They supplied target-side (Czech or Latvian) linguistic information, in order to help the system generate correct target word forms. In particular, the lexical unit is used to constrain the set of possible values of the morphological unit. Explicitly modeling morpho-syntactic information thus proved beneficial, enabling a better correspondence of both units’ predictions.

These research results from Université Paris-Saclay members show that progress has been made to render machines better able to speak like humans do. A perfectly fluent translation machine may soon be able to help you meet new friends around the world, as you ask them: “Life is a box of chocolates, isn’t it?”

Publications

· P. A. Murena et al. A complexity based approach for solving Hofstadter’s analogies. The Twenty-Fifth International Conference on Case-Based Reasoning (ICCBR 2017) Workshop Proceedings, 2017

· V. Letard et al. NELIDA: assistant opérationnel générique apprenant incrémentalement par l’interaction. Conférence Nationale sur les Applications Pratiques de l’Intelligence Artificielle, Jul 2017, Caen, France.

· R.Bawden. Machine Translation, it’s a question of style, innit? The case of English tag questions. Proceedings of the 2017 Conference on Empirical Methods in Natural Language Processing, pp.2497-2502

· F. Burlot et al. Word Representations in Factored Neural Machine Translation. Proceedings of the 2017 Conference on Empirical Methods in Natural Language Processing, pp.43-55

» focus

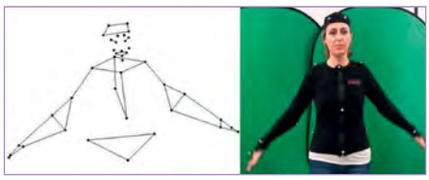
Who’s speaking?

For speech recognition tools, knowing who is speaking at any given time (“diarization”) remains complex. A team from CNRS and UPSud implemented an algorithm for real-time diarization of audio files. Tested on French TV shows, this new tool continuously detects new and recurring speakers, eliminating the need to play the band several times or to have prior biometric patterns. Applications in security, biometrics, forensics or multimedia archiving are considered.

Publication · G. Wisniewksi et al. “Combining speaker turn embedding and incremental structure prediction for low-latency speaker diarization.” (2017)

» focus

Hands & eyes



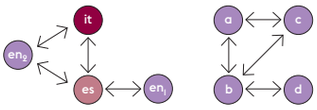
© M. Benchiheub, B. Berret, A. Braffort

French Sign Language (LSF) is practiced by the French deaf population. This complex way of communicating uses hands, eyes, torso, facial expressions, etc. and does not have a standard transcription system that takes into account the simultaneity of these elements and its use of space. Annelies Braffort (CNRS) designed a video and motion capture corpus of LSF and developed methods to analyze it. Her approach makes it possible to study the concomitance of hand movements and gaze. It could lead to an automatic processing of LSF videos.

Publication · A. Braffort. Le regard et les mains: Annotation et analyse multipistes d’un corpus de LSF. Journées Internationales de la Linguistique de Corpus, Jul 2017, Grenoble, France

» focus

An automatic correction of Wikipedia



© N. Bennacer et al. 2017

Sometimes, cross-language links on Wikipedia are faulty: they connect articles that do not cover the same topic. A team from CentraleSupélec and UPSud proposed a new approach to automatically eliminate these incorrect links. Based on a correctness score and seeing links as a connection graph, the algorithm removes the links with the lowest score. The results on a Wikipedia sample in 8 languages show quantitative promise.

Publication · N. Bennacer et al. Eliminating Incorrect Cross-Language Links in Wikipedia. International Conference on Web Information Systems Engineering (WISE), Oct 2017, Puschino-Moscow, Russia. 10570 (109-116), 2017, Lecture Notes in Computer Science

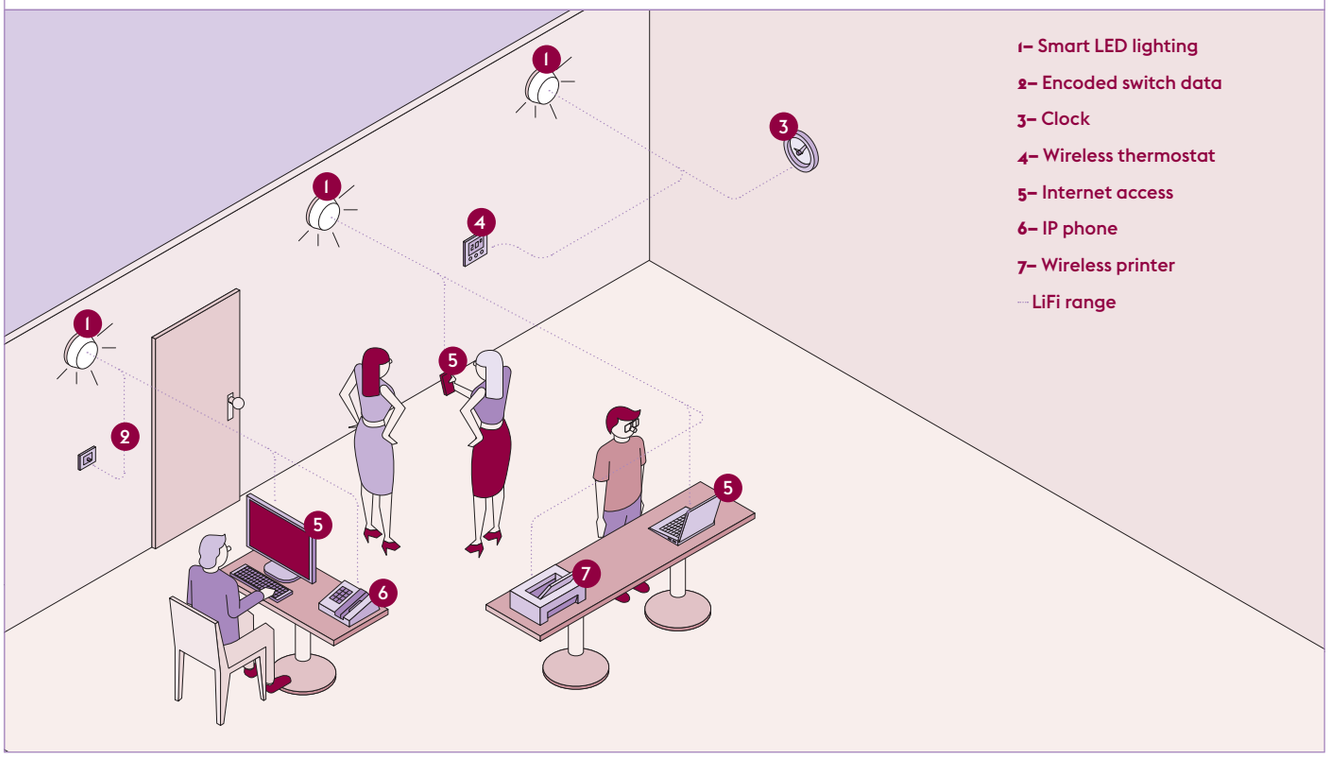
Keywords
Telecommunications, Li-Fi, 5G, Bitcoin

Institute
University of Versailles Saint-Quentin-en-Yvelines

Expert
Luc Chassagne

Title

Li-Fi has a bright future



Name
Luc Chassagne

University of Versailles Saint-Quentin-en-Yvelines

A professor at the Université de Versailles Saint-Quentin-en-Yvelines, Luc Chassagne specializes in instrumentation, sensors, metrology, and Li-Fi telecommunications. He is the Head of the Versailles Engineering Systems Laboratory (LISV), which focuses on robotics and issues around disability and mobility.

As with Wi-Fi formerly, a new wireless communication technology is starting to revolutionize how we share data and information. Li-Fi uses a well-known medium: light.

Warning or traffic lights, lighthouses, torches… Using light to deliver specific information is still largely commonplace. But for longer or more complex messages, or for long-distance communication, we tend nowadays to use the Internet, mainly Wi-Fi wireless technology. As a consequence, this "wireless fidelity" system is confronted to a more and more pressing problem: bandwidth limitation. To solve this problem, scientists came up with Li-Fi, a kind of Wi-Fi made "visible", which turned out to have a lot of other advantages.

In contrast to Wi-Fi that uses controversial radio waves, Li-Fi is a wireless visible light communication system that mainly utilizes light-emitting diodes (LEDs), and sometimes lasers, to transmit data. These LEDs spread a very fast adjustable light signal, the changes in intensity being too fast for the human eye to see. This signal is processed by a photoreceptor linked to a computer or integrated into a mobile phone, and transformed into a binary message that any digital device can comprehend. For the uplink from user to network, most of the recent devices use an infrared beam to reach the optical access point installed close to the emitting LED. Li-Fi uses everyday light bulbs, as long as they are connected to a network and switched on, so it can take advantage of already in place (slightly modified) infrastructures. Since it does not compete with other systems and light waves have high frequencies, there is no bandwidth limitation nowadays. Laboratory tests have shown speeds up to 224 Gigabit per second, which is 100 times faster than with standard Wi-Fi.

With Li-Fi, street lamps could serve as internet hotspots in the street. The system may also be used on the road. Researchers from Vedecom and UVSQ work on vehicle-to-vehicle transmission through headlights or vehicle-to-road infrastructure. In particular, they studied highway platooning: a leading vehicle is followed by one or several following vehicles able to automatically adjust their trajectory. This method of transportation could limit traffic congestion and reduce fuel consumption. But reliable vehicle-to-vehicle communication then becomes a vital function to ensure a dependable trajectory control. The team produced a prototype based on off-the-shelf light-emitting diodes. The challenge was

synchronizing the moving vehicles in real-case scenarios (depending on weather conditions, etc.). Simple to implement, the system the scientists came up with provides a good mobility.

> **“Visible light communication is useful in the street, on the road and indoors.”**

Visible light communication can also be useful indoors, especially if we consider LEDs replacing all other kinds of lighting (since they are cheaper to produce and more environmentally-friendly). LED-based lamps could then be converted into beacons and smartphones would be used as indoor geolocation instruments. A team from UVSQ, with industrial partners, adapted some smartphones to Li-Fi geolocation: researchers achieved the detection and identification of LEDs’ signals using the phone’s ambient light sensor. Their method takes a few seconds to correctly identify the emitter lamp but could be made faster. This could ensure a real-time detection of indoor positions, for example in museums, subway stations or supermarkets.

The non-interference of light, contrary to radio waves, is also a clear advantage for planes or hospitals. One of the previous team’s researchers actually launched a startup called Oledcomm, which brings the Internet “wherever there is light”. Born in UVSQ’s labs, it recently equipped a Parisian subway station: directions sent to the visually impaired’s phones help them find their way in the station. Along with Biolume and LiD, the successful startup also launched the first Li-Fi lamp specially designed for hospitals and clinics: LiFiCare plugs directly into the bed head panel and connects the medical equipment to the Internet or local network to ease information sharing among hospital staff. Now on the market, this kind of Li-Fi communications could well be part of next-generation building automation systems.

Of course, Li-Fi has some limitations. Light cannot travel through walls, so equipment will have to be installed in every room. Also, you will have to avoid shadows. But both these constraints can be beneficial for cybersecurity. Anyone wanting to eavesdrop on your data will have to be in the same spotlight as you, and can’t hide next door. Li-Fi also remains unimpeded by radio interference.

Li-Fi is still limited in terms of the distance between transmitter and receiver, even if the latest developments on this show an ever greater range, up to a few meters. In any case, visible light communications will not replace Wi-Fi but can be a good supplement. It has certainly proved its worth.

oledcomm.com

The first ever world congress on Li-Fi will be held on February, 8-9, 2018 in Paris:

lificongress.com

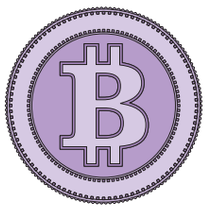
Publications

· J. Green et al. VLC-beacon detection with an under-sampled ambient light sensor, In Optics Communications, Volume 397, 2017, Pages 122-128, ISSN 0030-4018

· B. Béchadergue et al. Experimental comparison of pulse-amplitude and spatial modulations for vehicle-to-vehicle visible light communication in platoon configurations. Optics Express, Optical Society of America, 2017, 25 (20), pp.24790-24802

» focus

Identity management



A new model of decentralized public register, Bitcoin is used to write any data in a consistent and definitive way. With the world leader of trusted identities OT-Morpho (now IDEMIA), a joint team from Inria and École polytechnique developed an identity management scheme built into the Bitcoin blockchain. Shared control strikes a more equitable balance between the rights and responsibilities of users and identity issuers. Anonymous credentials then provide a way for users to disclose all or parts of their identity depending on the authentication need.

Publication · D. Augot et al. A User-Centric System for Verified Identities on the Bitcoin Blockchain. International Workshop on Cryptocurrencies and Blockchain Technology – CBT’17, Sep 2017, Oslo, Norway

» focus

To 5G... and beyond!

Video, data, mobility, Internet of things... The fifth generation of cellular networks is to meet the communication needs of 2020 and other generations will come next. The 5G Chair (CentraleSupélec) brings together industrial and academic partners to contribute to the creation of this new standard. In parallel, the Institute for 5G and beyond (B5GI) is taking shape, with 150 researchers from 9 institutions, including CEA Paris-Saclay, CentraleSupélec, CNRS, Inria, UPSud and UVSQ. This Institute will goes further: it designs, develops and evaluates the algorithms, technologies and architectures of the future wireless communication networks.

<tclchair.wordpress.com/>

» focus

At the gates of quantum computing

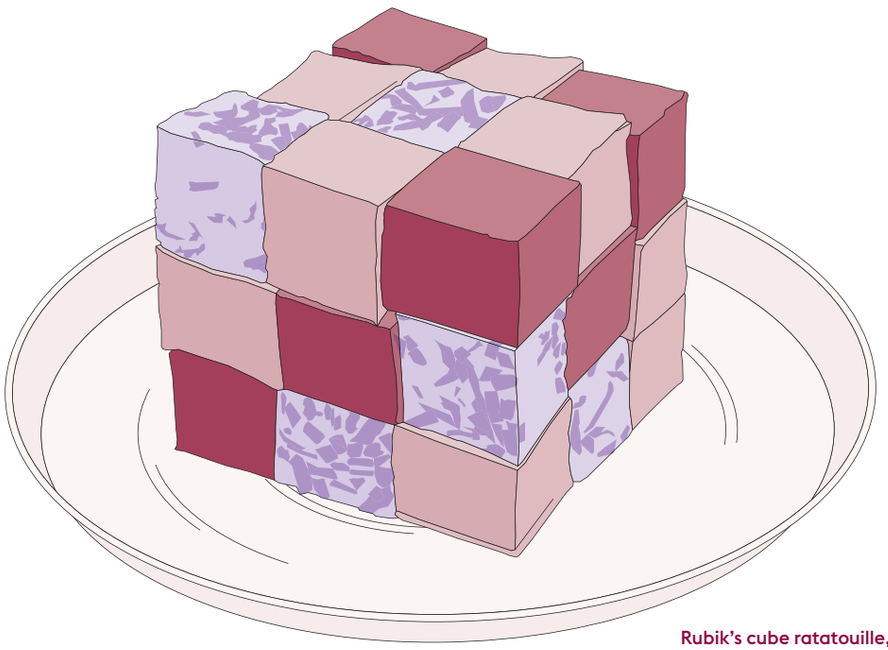
Quantum calculation methods are becoming a strategic issue for emerging technologies such as quantum computing. To build an optimal quantum circuit, much of the effort focuses on decomposition methods of logical gates, the basic operators of logical functions (disjunction “or”, conjunction “and”, negation “not”). A team from CentraleSupélec, CNRS and UPSud presented a new general method to design such binary and multivalued quantum gates. Their technique shows a correspondence between quantum control logic and ordinary propositional logic.

Publication · Z. Toffano, F. Dubois. Interpolation Methods for Binary and Multivalued Logical Quantum Gate Synthesis. TQC2017 - Theory of Quantum Computation, Communication and Cryptography, Jun 2017, Paris, France

Keywords	Institute	Expert
Food, Society, Chronic illness	Paris-Sud University	Raphaël Haumont

Title

Where food meets science



Rubik's cube ratatouille, inspired by
© Dunod, Paris, 2016 – Léandre Chéron

Name

Raphaël Haumont

Paris-Sud University

- 2004 PhD in physics and chemistry at École Centrale de Paris (now CentraleSupélec)
- 2012 Co-found the French Culinary Innovation Center (CFIC) with Thierry Marx
- 2013 Starts the «Cooking of the Future» Chair
- 2014 Professorial thesis
2015 Is awarded the Centrale's Félix Innovation Prize
- Since 2016 Chronicler for Les carnets de Julie (France 3) and the Magazine de la santé (France 5)

Cooking means playing along with flavors, scents, textures. Raphaël Haumont addresses this age-old art with a scientific approach, constantly fed by rich and varied meetings.

He knows how to relate to people. Raphaël Haumont talks with his hands when he mentions the many encounters that have shaped his career and paved the way for his research in molecular cuisine.

Now a researcher in physical chemistry of materials at the Institute of molecular chemistry and materials (UPSud), Raphaël Haumont long fluctuated between chemistry and physics while studying, but has always kept a personal interest in cooking. He finally chose to combine both his passions, science and pans, thanks to an internship with Hervé This, the father of molecular cuisine. The scientist continued his momentum with a PhD thesis at École centrale de Paris, now CentraleSupélec, establishing the links between the structures and chemical properties of some crystals. Today, he carries on this work.

With Chinese colleagues, he has recently designed a new method to reveal the interactions between the distortions of crystal structure and the magnetic properties of a ceramic material. In the face of electronic systems' miniaturization, he also imagined a mechanism that would allow the properties of multiferroic materials to be changed on demand. These materials could replace the current magnetic memories. But today the researcher especially uses this innovative approach on "food materials".

He who creates recipes from "laboratory exploration" creates a permanent dialogue between science and cooking. "Innovation comes from interfaces," he repeats. So, at age 39, Raphaël Haumont builds bridges between chemists, physicists and starred chefs like Thierry Marx, with whom he founded the French Culinary Innovation Center (CFIC). The two inventors share the same vocabulary, the same language and the same willingness to deconstruct in order to understand the chemical process behind any recipe. Understanding is key to master and then innovate, to "find a new way": for example, to make a chocolate mousse with a siphon, to freeze foods with liquid nitrogen or to "bake" cold scrambled eggs with just alcohol (the egg's proteins are reordered by the presence of alcohol, so that the structure gets close to a cooked egg's). In his lab, beakers stand alongside stoves... and

paintings. The researcher paints as he cooks: with the desire to transform matter.

> **“He puts chemistry at the service of culinary creativity and good food.”**

Surrounded by a family who “likes to eat well”, with a beekeeper and a butcher as grandfathers, an uncle who is a chocolatier-pâtissier and a sister working on food flavourings, the scientist never denies himself the pleasure of cooking. He puts chemistry at the service of culinary creativity and good food. Mint caviar, ratatouille Rubik’s cube, colorless chocolate, scented beads: the new gestures, new tools and new ingredients invented in his unusual kitchen meet to create unprecedented emotions.

From his parents who were teachers, Raphaël Haumont also received the desire to transmit scientific culture, to connect with the general public. An author of successful books, he takes part in several popular science TV shows and in the activities of Université Paris-Saclay Maison d’initiation et de sensibilisation aux sciences (Science awareness and initiation house).

Lately, the scientist has tried a new kind of conference with a “double voice”. Designed once again thanks to a meeting, this time with astrophysicist Hervé Dole (UPSud), (G)astronomie makes the public aware of the similarities between the study of cooking and of space. The specialist of the Universe’s large structures likes to cook, the molecular chemist is passionate about space, a rich conversation ensues. This interest for the stars and for the freedom of weightlessness can also be found in Raphaël Haumont’s paintings and pushed him to try a parabolic “zero G” flight. An amazing indescribable experience the researcher still recalls with shining eyes, and one that opened many doors to him, especially those of the French National Centre for Space Studies (CNES).

As a matter of fact, at the 2016 Saclay TedX, the scientist presented a biodegradable can, with consumable content and container: easy to use and store, this revolutionary beverage could accompany sailors and astronauts. Raphaël Haumont designs the cooking of the future. The Chair he leads plans the 2050 cooking: what new ingredients? for what new dish? with what advanced techniques and innovative tools? As part of this Chair, Thierry Marx and Raphaël Haumont invented tomorrow’s oven that is less energy-intensive and based on pressure changes. They also created a chocolate mousse with only water and chocolate, nothing else! Without sugar and without waste, but with taste. A sustainable way of cooking, like this orange jam without any food wastage, which combines pleasure and well-being, as well as innovations. To create links, from the Earth to the stars, through the kitchen.

raphaelhaumont.wordpress.com

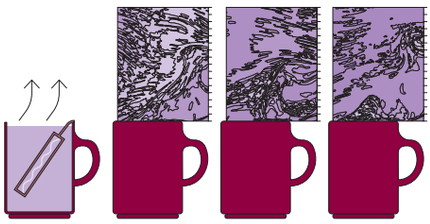
Publications

· J. Wei et al. Structural Distortion, Spin-Phonon Coupling, Interband Electronic Transition, and Enhanced Magnetization in Rare-Earth-Substituted Bismuth Ferrite. Inorganic Chemistry 2017 56 (15), 8964-8974

· H. Yokota et al. Polar nature of stress-induced twin walls in ferroelastic CaTiO3. AIP Advances 2017 7:8

» focus

Drinks are a hot topic

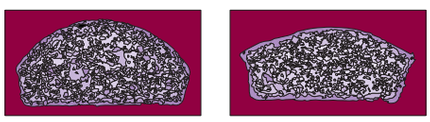


Why does your tea or coffee smell so good? A collaboration between Irstea, AgroParisTech and Inra experimentally characterized the air and vapor plumes above a cup of hot drink. The authors showed that the fluid flow is complex with unsteady plumes detachment and vortex formation. The combined free convection and evaporation lead to an upward airflow which becomes significant for drink temperature above 55°C. This work could highlight how volatile aromas are released from a hot drink and lead to even better smelling beverages.

Publication · O. Laguerre et al. Experimental study of airflow and heat transfer above a hot liquid surface simulating a cup of drink. Journal of Food Engineering, Volume 197, 2017, Pages 24-33

» focus

How to cook better pastry



To make a perfect sponge cake, use freshly purchased flour. This is one of the results a team from Inra and AgroParisTech showed using new fast and automated tools. They studied the effects of ingredients (flour composition, emulsifier, etc.) or of process on the crumb structure and thus cake softness. Increasing the flour aging time before use leads to the production of firmer crumbs with coarser and inhomogeneous cellular structures. Thus, to optimize the softness of cakes in pastry, it is advisable to use your flour quickly.

Publication · M. Dewaest et al. Effect of crumb cellular structure characterized by image analysis on cake softness. J Texture Studies 2017;00:1–11

» focus

Customizable nutrition

Chronic diseases, such as type 2 diabetes, are a public health issue. Relying on research conducted within AgroParisTech, CEA, CNRS, Inserm, Inra and Inria, the Nutriperso Initiative of Strategic Research (IRS) combines microbiology, nutrition, epidemiology, sensory analysis, food science, economy, sociology and big data to develop more personalized approaches. With two purposes: identifying the risk factors and producing easy-to-adopt recommendations for consumers.

<inra.fr/nutriperso>
<universite-paris-saclay.fr/en/news/human-sciences-facing-chronic-diseases>


你好
HOLA
GUTEN TAG

Keywords
Exhibition, TEDx, Opera

TEDxSaclay: life in the spotlight

© Appriou

"A sense of sharing, warmth and an open mind about new ideas". This is how Anca Petre (UPSud) will remember the 2017 TEDxSaclay at CentraleSupélec. Presenting the use of blockchain technology in the health sector, the PhD student is thrilled she managed to "convey her message": "I felt the enthusiasm of the public, it was great!", she said a few minutes after her appearance, her eyes still shining. For the third year, thirteen exceptional speakers revealed their stories and ideas "worth sharing" on design, artificial intelligence, algorithms, gaming, 3D printing or the art of storytelling... The varied topics had a common theme: innovation serving living beings.

<tedxsaclay.com/programme/lang:en>

Urban sprawl: a co-built spectre

© Anaïs Tondeur, 2017

Université Paris-Saclay is developing on the Saclay plateau, which has a long agricultural tradition. This is an opportunity for the geographer and agronomist Caroline Petit (Inra, AgroParisTech), the anthropologist Germain Meulemans (University of Liège, University of Aberdeen) and the visual artist Anaïs Tondeur to interview researchers, farmers, inhabitants and elected officials – actors and witnesses of urban changes.

What is your project?
Anaïs Tondeur: We are conducting an investigation on the Saclay plateau with the people who live and work there, or develop and build this territory. Without taking sides, we are following in the footsteps of two identity changes of the territory, at the end of the 17th century with the drying up of the old marshes, and at this very moment with the construction of UPSaclay. Our investigation thus questions the issues related to urban sprawl.

How will you share your investigation?
Germain Meulemans: The eyes we bring and our fields of observation, analysis and creation come together to form a story. Our installation is built around a video of the plateau landscapes at dawn, when the mist rises. For us, it is the spectre of the old, disturbing and not very penetrable marshes, coming back to us. On the ceiling, in front of the video, there is a suspension of plants picked on the plateau, which dry like at a herbalist's. It is a nod to the shepherds who lived on the plateau and were said to be some kind of wizards by people living in the valley. We also show a series of photos and interviews from our investigation. In addition, an exploration of the plateau was organized in collaboration with the urbanist Tibo Labat, a specialist of this format. It is a sort of walk with a debate, whose path and themes are co-built between the public, the host, and us.

How did you set up this project?
Anaïs Tondeur: We took advantage of our respective networks, this project being very interdisciplinary. But the "Spectre of the Urban Sprawl", as it is called, could not have been done without the Diagonale Paris-Saclay, the UPSaclay Science & Society service, which allowed us to meet and supported us financially.

The exhibition was presented for the first time at the "Science of Art" festival in November and December 2017.

Science at the Opera

The S[cube] association celebrated its 10th anniversary at the Opéra de Massy with three days of discovery for children and adults. This association for the diffusion of scientific and technical culture in the South of Île-de-France is supported by CEA Paris-Saclay, CNRS, Inra, Inria, ONERA, UPSud and UVSQ. Curious people, pupils and students, enthusiasts and experts enjoyed learning about science & art or citizen science projects, and the research conducted by UPSaclay members. The multiple demonstrations followed a debate moderated by Hervé Dole (UPSud) between astrophysicist Emeline Bolmont (CEA Paris-Saclay), French astronaut Jean-François Clervoy and physicist Jean-Pierre Bibring (UPSud) about life in space. Aliens may or may not exist, but the packed auditorium enjoyed the exhibitions, shows, meetings and conferences. A great success for an organization that has many other projects for the next 10 years!

<de-la-science-a-l-opera.partageonslessciences.com/>

Keywords
Design, Medicine,
3D camera

Title

The Design Spot

Experimental and innovative, the Université Paris-Saclay Design Spot connects design to the scientific, technological and entrepreneurial fabric of the territory.

the designspot

© Didier Touzeau

Research

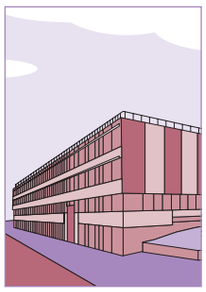
The design centre will have a reflexive mission: it will host research activities on the discipline itself.

Raise awareness

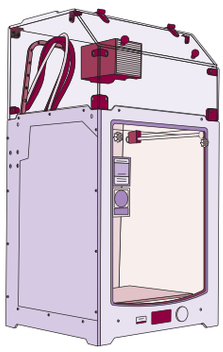
With all of its projects, the design centre encourages students from Université Paris-Saclay to learn about this discipline and promotes the integration of design in students' output.

Guide

The centre provides resources to laboratories, researchers and engineers to connect, by design, research projects to uses and markets.



160 m²
of adjustable shared space



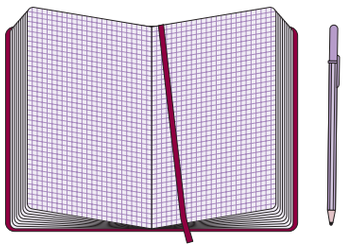
The CoFab

is a collaborative workshop for prototype design

7 Master's degrees, including 2 fully English-spoken Masters:

- M2 Food Innovation and Product Design – Erasmus Mundus (FIPDes)
- M2 Interaction – Human Computer Interaction
- M2 Recherche en design
- M2 Formation des enseignants du supérieur en design (FESup)
- M2 Ingénierie de la conception (IC)
- M2 Projet Innovation Conception
- M2 Théories et démarches du projet de paysage

The designer-interpreter



Design combines creativity, sensitivity, technology and economy to improve our quality of life through better products, experiences or services. This multi-faceted job links technicians, engineers, marketing and distribution services, etc. A designer must thus know how to speak all these languages. The Design Spot of UPSaclay puts the role of interpreter at the heart of its operation. A project, an idea? Contact the team!

designspot@universite-paris-saclay.fr

A joint effort

Personalities from the design world came together on November, 28th at the Design Spot to share their idea of design. This thinking among professionals from Alstom, Dassault Systèmes, Toyota, RATP, Orange and many other French design leading figures brought to light their beliefs on the stance the Design Spot should adopt. Valérie Pécresse, President of the Île-de-France region, also demonstrated the region's interest in this original initiative. Inaugurated on December, 5th, the Design Spot had a spectacular start and will give prominence to cooperation and collective thinking.

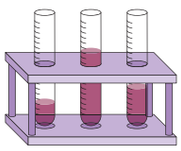
503: the one number for innovation at IOGS

The Institut d'Optique Graduate School Entrepreneurial Center, nicknamed "503", after the address of the building hosting it, was born with an ambitious project: to bring together the students of the IOGS' entrepreneurship programme (Filière Innovation-Entrepreneurs FIE) and companies dedicated to innovative technologies.

503 provides support to students with their projects and startups. They have free access to a FabLab and all the advice they need to achieve a prototype and/or a proof of concept. The system has been duplicated on other Institut d'Optique sites, at Bordeaux and Saint-Etienne.

The 503 has also developed strong partnerships with other institutions, research centers and companies in the territory of Université Paris-Saclay. It has built an ecosystem for innovation and collaborative research. So far a shining success!

Active for 10 years

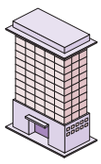


57 laboratories and workshops

10 000 m²

6 launched startups

103 national and international prizes



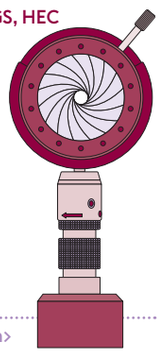
26 hosted startups today

Some startups involving the IOGS:

Damae Medical

A new in vivo imaging procedure able to detect skin pathologies (as a cancer) early and without the need for skin tissue sampling.

UPSaclay members:
· IOGS, HEC

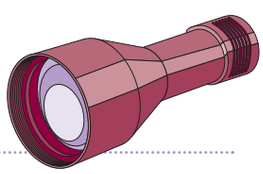


‹damaemedical.fr/w/?lang=en›

Effilux

Powerful LED lighting systems for machine vision, quality control, scientific imaging or biomedical applications

UPSaclay member:
· IOGS

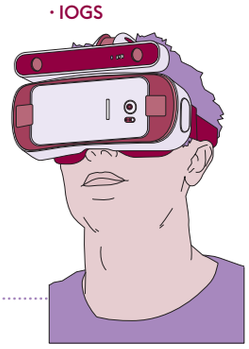


‹effilux.fr/en/›

StereoLabs

A unique 3D camera for depth sensing and motion tracking, using advanced technology based on human stereo vision

UPSaclay member:
· IOGS



‹stereolabs.com/›

Keywords
Multidisciplinarity,
Languages

Titre

Soon on the Saclay plateau

The Pascal Institute, a meeting point for research

A place of science for ideas and creation, the Pascal Institute will open by the end of 2018. Dozens of researchers from around the world will gather there to work, explore new ideas together and initiate future collaborations. Located in the heart of UPSaclay, in a district dedicated to research, this meeting point will have offices organized around broad discussion areas, two auditoriums and common living areas.

Before it opens, the Pascal Institute is working "outside the walls" through the PSI2 thematic programs focused on physics and its interfaces. High-level researchers are welcomed for 2 to 3 weeks by different UPSaclay members (CEA Paris-Saclay, UPSud). This is a stimulating environment to train young researchers and encourage the emergence of large-scale scientific projects.

<universite-paris-saclay.fr/en/institut-pascal>

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The Language Centre

© OMA

Opened in September 2017 within the Gustave Eiffel building of CentraleSupélec, the Language Centre allows to share some of the language courses of UPSud, CentraleSupélec and ENS Paris-Saclay. It has audio and video equipment, rehearsal booths, an amphitheater and a resource centre. Enough to prepare the students and researchers to an increasingly international campus: there, they will be able to attend in particular courses of French as a Foreign Language, of "Less Spoken and Less Taught" languages or of advanced scientific English.

The Centre will also host original activities: tandems allowing two students from different countries to exchange, conversation sessions by student tutors in their native language, preparation lessons to go abroad, cultural activities such as debates, theater and movies, etc. Its central location will allow to assist students at their arrival on the Saclay plateau. It will become a lively integration place.

<actu.u-psud.fr/fr/etablissement/actualites-2016/un-centre-de-langues-sur-le-plateau-du-moulon.html>

ResponseSource

300 laboratories and cutting edge platforms make research available to businesses for first time

"For the first-time, research from Université Paris-Saclay is being made instantly available for businesses to utilise. This is a monumental project as the institution produces 15% of all French academic research."

https://pressreleases.responsesource.com/news/94189/laboratories-and-cutting-edge-platforms-make-research-available-to-businesses/

Diari de Girona

Apareix una nova cambra a la piràmide de Kheops

"Un estudi realitzat amb una tècnica basada en la física de partícules ha permès detectar un misteriós espai sense necessitat de penetrar a l'interior."

http://www.diaridegirona.cat/fets-gent/2017/11/03/apareix-nova-cambra-piramide-kheops/877152.html

LaserFocusWorld

Ultrashort light pulse speed in vacuum can be controlled, simulation says

"Physicists at Université Paris-Saclay (Gif-sur-Yvette, France) have theoretically determined that ultrafast laser pulses can, when focused, be made to travel at different velocities when propagating in a vacuum."

http://www.laserfocusworld.com/articles/print/volume-53/issue-10/newsbreaks/ultrashor... speed-in-vacuum-can-be-controlled-simula... html

THE WORLD UNIVERSITY RANKINGS

Paris university launches new app for international students

"The University of Paris-Saclay has launched a smartphone app to help incoming international students and researchers create a personalised plan to navigate the bureaucratic red tape involved in moving to France."

...education.com/student/...v-app-international-

RUSBASE

Франция становится новой Кремниевой долиной

"В прошлом году один друг попросил меня помочь с запуском бизнеса во Франции, потому что

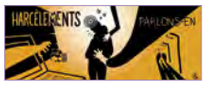
université
PARIS-SACLAY

IT HAPPENED

Université Paris-Saclay was a partner to the "PhD Talent Career Fair", the biggest event dedicated to PhDs in Europe. More than 100 companies met PhD students and PhDs on October, 20th in Paris.

<phdtalent.org/index.php>

The members of Université Paris-Saclay are committed to saying "Stop the harassment!" with several projects in November 20-24 and a long-term prevention policy.



<universite-paris-saclay.fr/fr/evenement/harcelements-parlons-en>

At the European Big Data Value Forum on November 21-23, industry professionals, business developers, researchers, and policy makers discussed the challenges and opportunities of "trusted AI in smart industry".

<european-big-data-value-forum.eu/>

On November 23-24, the first international Momentom Congress brought together the large international and Université Paris-Saclay scientific communities involved in the area of renewables energies to catalyze academic and industrial collaborations.

<universite-paris-saclay.fr/fr/evenement/1st-international-momentom-congress#presentation-3935>

WORTH READING

The Conversation

When sharing, rather than consuming, helps overcome loneliness

Loneliness and materialism are linked: the loneliest people tend to consider purchasing as an entertainment, at the expense of social interactions. And as consuming is considered negative, consuming more to compensate loneliness can encourage risky behaviors or illegal activities.

<universite-paris-saclay.fr/en/news/when-sharing-rather-than-consuming-helps-overcome-loneliness>

Vegetarian diets and health: the voice of science needs to be heard

Are vegetarian diets the key to healthy aging, or could they be a health risk? These questions are a source of confusion for the general public, and for many scientists too. Why? Nutrition is a complex discipline and it struggles to provide simple answers to issues as broad as the relationships between a range of dietary practices and health outcomes. Are vegetarian diets good or bad? Can we tweet the answer in 140 characters or less?

<theconversation.com/vegetarian-diets-and-health-the-voice-of-science-needs-to-be-heard-87222>

IN ISSUE #7

Internet of things
French heritage
Aeronautics
Extreme phenomena

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Members of Université Paris-Saclay

LABEX LMH

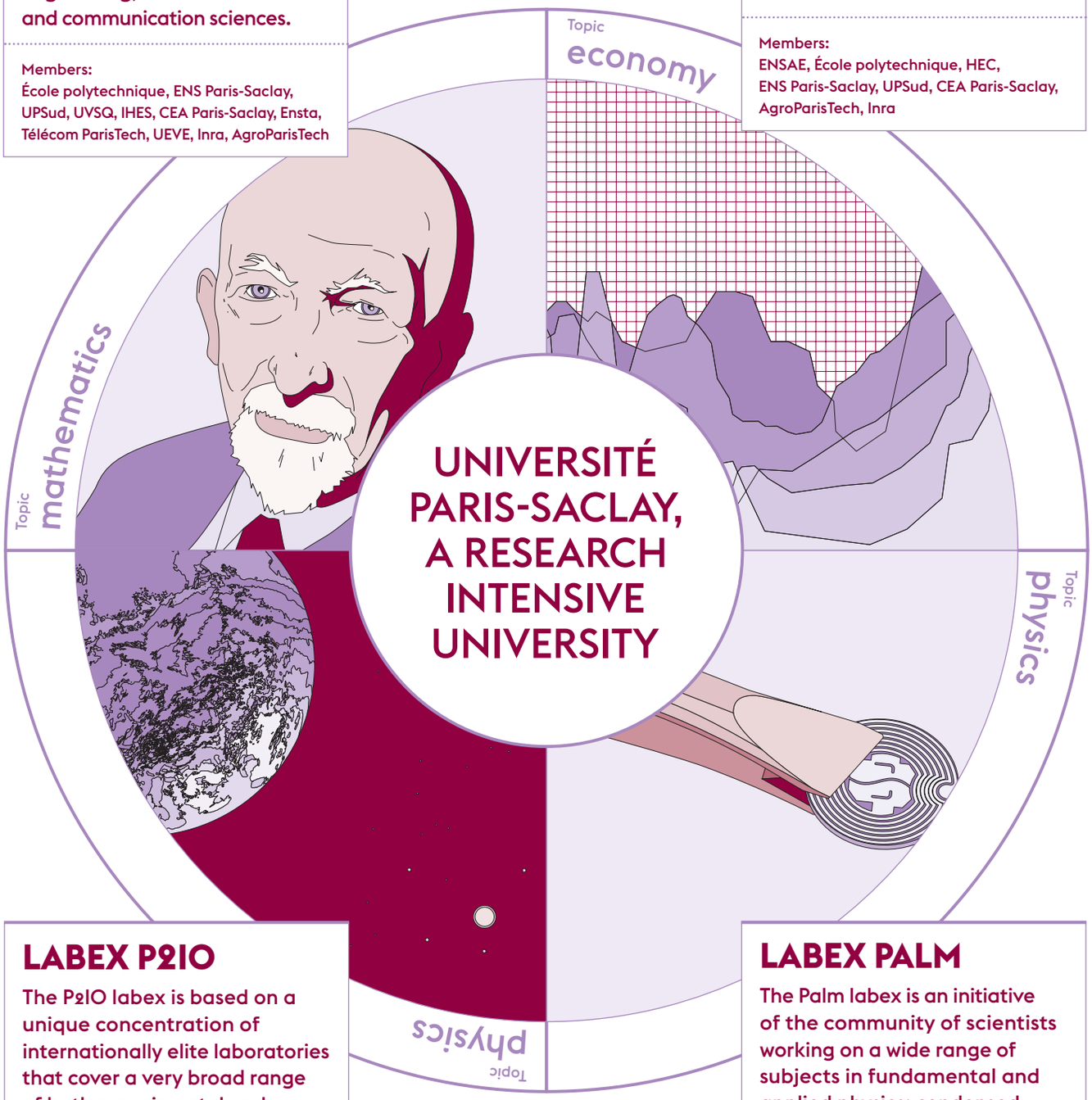
The Hadamard Mathematics labex and its partners propose to develop four scientific programs with interfaces between mathematics and other disciplines: fundamental physics, life sciences, engineering, and information and communication sciences.

Members:
École polytechnique, ENS Paris-Saclay, UPSud, UVSQ, IHES, CEA Paris-Saclay, Ensta, Télécom ParisTech, UEVE, Inra, AgroParisTech

LABEX ECODEC

Dedicated to regulating the economy for the benefit of society, the ECODEC labex is a founding member of UPSaclay's major international economics, management and social sciences centre.

Members:
ENSAE, École polytechnique, HEC, ENS Paris-Saclay, UPSud, CEA Paris-Saclay, AgroParisTech, Inra



LABEX P2IO

The P2IO labex is based on a unique concentration of internationally elite laboratories that cover a very broad range of both experimental and theoretical disciplines: particle physics, nuclear physics, astrophysics, accelerator science, instrumentation, etc.

Members:
CEA Paris-Saclay, CNRS, École polytechnique, UPSud

LABEX PALM

The Palm labex is an initiative of the community of scientists working on a wide range of subjects in fundamental and applied physics: condensed matter, atomic and molecular physics, optics, lasers and extreme light, etc.

Members:
UPSud, École polytechnique, IOGS, ENS Paris-Saclay

The laboratories of excellence are the result of the creativity and collective dynamics of all the researchers and lecturers who create excellence in their research on a daily basis.

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