

BOIS-MARIE

IHES Annual Newsletter | Issue 22 | 2026

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IHES, a founding member of **université PARIS-SACLAY**

Editorial

The National Institute for Mathematical Sciences and their Interactions is the body within the French National Centre for Scientific Research (CNRS) entrusted by the French government with fostering and coordinating mathematical research. It brings together the entire French mathematical community, encompassing both CNRS researchers and university faculty members working in CNRS research units.

Within this landscape, the Alexander Grothendieck Laboratory, a joint venture between the CNRS and the Institut des Hautes Études Scientifiques (IHES), occupies a unique position. As a private foundation recognized as being in the public interest, IHES does not fit neatly within the traditional framework of French research organizations. Yet the ties between the CNRS and the Institute are longstanding, multifaceted, and fruitful: for decades, CNRS researchers have found at IHES an exceptional environment in which to pursue their work. The Alexander Grothendieck Laboratory was created in 2015 to formalize this relationship and ensure its continuity, initially as a CNRS-labeled research group and, since 2020, as a Joint Research Unit. For both CNRS and IHES, the conviction is the same: high-level fundamental research requires time, freedom, and close interaction with ambitious and demanding minds.

The latest evaluation report published by the High Council for the Evaluation of Research and Higher Education leaves little room for doubt: the scientific output of the Alexander Grothendieck Laboratory is described as impressive, both in volume and quality. Its members have received some of the most prestigious distinctions in their fields, and their collective excellence has established the Laboratory as one of the world's leading centers for mathematical research.

Among its members, Hong Wang, the second woman to hold a permanent professorship at IHES, has recently received the Ostrowski Prize, the Salem Prize, the Clay Research Award, and the New Horizons in Mathematics

Prize for her work in harmonic analysis, particularly on the Keakey conjecture. On July 23, at the International Congress of Mathematicians in Philadelphia, she was awarded the Fields Medal, becoming the ninth IHES mathematician to receive this distinction. A graduate of École polytechnique and Université Paris-Saclay, she embodies not only the excellence of IHES, but also that of the French mathematical community as a whole.

Today, we seek to strengthen the fruitful relationship between IHES and CNRS and extend its benefits to the broader mathematical community. In particular, researchers and faculty members from across France can now more easily undertake research stays at the Institute through the IHES–CNRS Delegation Program. We strongly encourage our colleagues throughout France to take advantage of this unique opportunity and experience firsthand the exceptional research environment that IHES has to offer.



Christophe Besse

Director of the National Institute for Mathematical Sciences and their Interactions (INSMI)

French National Centre for Scientific Research (CNRS)

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On the Other Side of the Blackboard

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The Alexander Grothendieck Laboratory at IHES

Léon Motchane, a Russian-born entrepreneur with a passion for mathematics, founded IHES in 1958, inspired by the Institute for Advanced Study in Princeton. He received the support of its director, Robert Oppenheimer, who joined the IHES Scientific Council and remained a member until his death.

IHES began in modest circumstances: two rooms made available by the Fondation Thiers in Paris, with Annie Rolland overseeing the administration, and two faculty members, the mathematicians Jean Dieudonné and Alexander Grothendieck. From this initial nucleus, IHES gradually grew before moving, in 1962, to the Le Bois-Marie estate in Bures-sur-Yvette.

Alexander Grothendieck played a central role in the Institute's history. It was at Le Bois-Marie that he carried out his groundbreaking work reshaping algebraic geometry, work that would leave a lasting mark on modern mathematics. Naming the joint CNRS–IHES laboratory after him was therefore a natural choice.

Activities & Missions

For decades, CNRS researchers worked at IHES without this longstanding relationship being formally recognized. The creation of the Alexander Grothendieck Laboratory in 2015, followed by its establishment as a Joint Research Unit in 2020, gave the collaboration between IHES and the CNRS a lasting institutional framework.

Membership in the Alexander Grothendieck Laboratory provides researchers with an affiliation with the CNRS while allowing them to work within the exceptional environment of IHES, with complete freedom to pursue their research, no teaching responsibilities, and the opportunity to interact with researchers from around the world.

This year, Danylo Radchenko, a CNRS Research Scientist, joined the Alexander Grothendieck Laboratory. His work brings together analysis, number theory, and geometry around questions of energy minimization and Fourier analysis, reflecting the breadth of expertise that the Laboratory seeks to bring together.

The appointment of Thierry Bodineau as Director of the Laboratory is part of this same dynamic. A distinguished mathematician, he is a CNRS Research Director and has been a member of the IHES faculty since 2022. His familiarity with both the CNRS and IHES makes him a natural bridge between our two institutions.

Emmanuel Ullmo

Director of IHES



**The spelling of the first name has varied over time.*

Motchane's vision was to provide leading researchers with an environment of intellectual freedom, free from administrative and teaching obligations. This remains a core principle of IHES today and also guides the Alexander Grothendieck Laboratory: a place where fundamental research can be pursued over the long term, with the freedom necessary for new ideas to emerge.



IHES can sometimes seem like a world apart, somewhat inaccessible to those working in French higher education and research. The report of the High Council for the Evaluation of Research and Higher Education notes that too few researchers working in French institutions seek to spend time at IHES, due to a lack of visibility for some and a form of self-censorship for others.

For me, taking on the leadership of the Alexander Grothendieck Laboratory is an opportunity to help bridge that gap. The delegation program between IHES and the CNRS is already in place, works well, and offers particularly favorable conditions for CNRS researchers wishing to spend time at IHES. Part of my responsibility is to make this opportunity better known and to encourage colleagues who might not otherwise have considered coming to IHES to take that first step.

The Alexander Grothendieck Laboratory is fortunate to bring together mathematicians and theoretical physicists whose work spans a remarkably broad spectrum. This diversity is a major asset, and I intend to build on it to strengthen our ties with the French academic community and open the Institute more widely to researchers throughout France.

Thierry Bodineau

Director of the Alexander Grothendieck Laboratory

International Recognition

Two ERC Grant Recipients: Europe Supports Fundamental Research



JULIO PARRA-MARTINEZ RECEIVES AN ERC STARTING GRANT TO EXPLORE EXTREME GRAVITATIONAL WAVES

The ERC Starting Grant will help me launch "The Gravitational S-matrix: from theory to experiment (GravitaS)" research program, devoted to the study of gravitational waves at the interface between general relativity and quantum field theory.

The project focuses on Extreme-Mass-Ratio Inspirals (EMRIs), systems in which a compact object spirals toward a supermassive black hole. These systems are among the main targets of the future *Laser Interferometer Space Antenna* space mission and provide a unique opportunity for testing gravity in its most extreme regimes. GravitaS will adapt techniques developed in particle physics to improve the theoretical description of these systems to produce more systematic and precise predictions.

Beyond EMRIs, the project aims to deepen the connections between quantum field theory and nonlinear gravity. This funding will make it possible to build a research group, support and mentor young researchers, strengthen international collaborations, and foster scientific exchange through workshops and conferences at IHES.

Julio Parra-Martinez

Permanent Professor of Physics at IHES



DALIMIL MAZÁČ RECEIVES AN ERC CONSOLIDATOR GRANT FOR RESEARCH IN MATHEMATICAL PHYSICS

Receiving an ERC Consolidator Grant allows me to pursue a research program at the interface of theoretical physics and mathematics, where quantum field theory, harmonic analysis, and number theory come together. My work focuses on the conformal bootstrap and the analytic functional method, which provide rigorous constraints on conformal theories while revealing unexpected connections with classical problems: sphere packing in dimensions 8 and 24, spectral bounds on hyperbolic manifolds, and subconvexity estimates for certain L-functions.

The goal is to continue bringing physics and mathematics into dialogue by seeking more structural formulations. This funding will allow us to host young researchers and organize regular meetings bringing together the two communities.

Dalimil Mazáč

CEA Research Director at IHES

The 2025 ERC Consolidator Grants were among the most competitive ever awarded, with a record number of more than 3,000 proposals and a success rate of just 11.2%. The 2025 Starting Grants were no less competitive. Being awarded one of these grants is an unequivocal recognition of the quality and originality of the proposed research project. These two criteria, which I consistently emphasized during my time leading the ERC, are the ones that truly matter when it comes to advancing science at the highest level.

What strikes me most is that these two recognized projects are remarkable examples of what IHES has always done best: giving creative researchers the freedom to work at the frontiers of mathematics and theoretical physics, where disciplines meet and enrich one another. It is this rare and immensely valuable freedom that enables our Institute to attract and nurture such talent. In

many ways, this recognition at the European level reflects the very values on which IHES was founded.

These grants will also have a tangible and lasting impact on the Institute's scientific life: they will enable each of the two awardees to recruit young researchers, welcome visitors from diverse backgrounds, and strengthen our international collaborations. This is how new generations are fostered at IHES, and how its pioneering spirit is carried forward.

Jean-Pierre Bourguignon

Former Director of IHES (1994–2013), former President of the European Research Council (2014–2019), and Acting President (July 2020–August 2021), holder of the Nicolaas Kuiper Chair as Honorary Professor at IHES.

IHES in the Spotlight

Grants, Nominations and Prizes for our Researchers



Jean-Pierre Bourguignon

MEMBER OF THE ROYAL SOCIETY



Thibault Damour

OFFICER OF THE LEGION OF HONOR



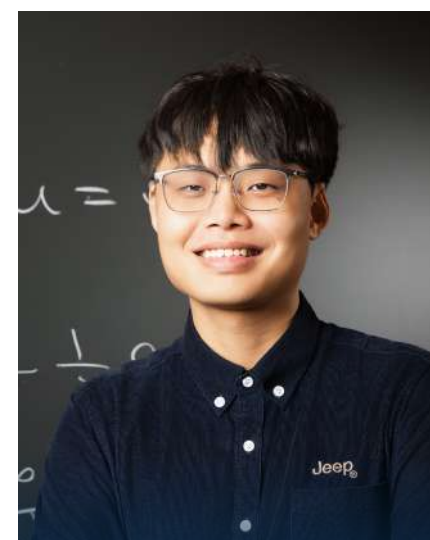
Frank Merle

BREAKTHROUGH PRIZE IN MATHEMATICS



Slava Rychkov

HUMBOLDT RESEARCH AWARD



Zhongkai Tao

CHOOSE FRANCE PROGRAM LAUREATE



Hong Wang

FIELDS MEDAL



Hong Wang

Fields Medalist

2022

**MARYAM MIRZAKHANI
NEW FRONTIERS PRIZE**

Breakthrough Prize Foundation

2025

SALEM PRIZE

Institute for Advanced Study

**GOLD MEDAL OF THE
INTERNATIONAL CONGRESS
OF CHINESE MATHEMATICIANS**

International Congress of Chinese
Mathematicians

**ANTONIO AMBROSETTI
MEDAL**

Scuola Internazionale Superiore di Studi
Avanzati

OSTROWSKI PRIZE

Fondation Ostrowski

2026

SADOSKY PRIZE

Association for Women in Mathematics

CLAY RESEARCH AWARD

Clay Mathematics Institute

**NEW HORIZONS IN
MATHEMATICS PRIZE**

Breakthrough Prize Foundation

FIELDS MEDAL

International Mathematical Union



Hong Wang
Fields Medalist

IHES at the International Congress of Mathematicians

Math in France

IHES took part in the 2026 International Congress of Mathematicians under the Math in France banner, alongside the French National Centre for Scientific Research, the Institut Henri Poincaré, the Centre international de rencontres mathématiques, Mathdoc, and the International Centre for Pure and Applied Mathematics.

The Institute thanks Qube Research & Technologies, BNP Paribas, and Capital Fund Management for their support of Math in France, which helped showcase French mathematics at the ICM.



2026 Fields Medals

Hong Wang, Permanent Professor of Mathematics at IHES and Silver Professor of Mathematics at New York University, has been awarded the Fields Medal.

Considered the most prestigious distinction in mathematics, the Fields Medal recognizes her body of work in harmonic analysis, including research conducted with Joshua Zahl on the Kakeya conjecture in three dimensions.

Three other mathematicians were honored at the ICM: Yu Deng, Professor of Mathematics at the University of Chicago and a regular visitor to IHES; John Pardon, Professor at the Simons Center for Geometry and Physics at Stony Brook University and a former visitor to IHES; and Jacob Tsimerman, Professor of Mathematics at the University of Toronto.



Reception at the Rodin Museum in Philadelphia

On July 27, Math in France brought together representatives of the French mathematics community at the Rodin Museum in Philadelphia, under the high patronage of His Excellency Laurent Bili, Ambassador of France to the United States, and in the presence of Caroline Monvoisin, Consul General of France in Washington.

The evening brought together Marilyn Simons, Chair of Friends of IHES, newly awarded Fields Medalists Hong Wang and Yu Deng, as well as Pierre Deligne, former Permanent Professor at IHES; Yuri Tschinkel, Executive Vice President for Mathematics and Physics at the Simons Foundation; and Friends of IHES Board members Mike Douglas and Daniel Totouom-Tangho.



Research News

HADAMARD LECTURES 2026

As part of the Hadamard Lectures organized by the Jacques Hadamard Mathematical Foundation (FMJH), Sam Raskin, Professor of Mathematics at Yale University, gave a series of lectures titled *Some Aspects of the Geometric Landgals Program*.

The first lecture was held at the Orsay Institute of Mathematics, followed by five lectures at the Marilyn and James Simons Conference Center at IHES.

These public lectures are particularly aimed at PhD students and postdoctoral researchers at Université Paris-Saclay and Institut Polytechnique de Paris. Their goal is to provide an overview of a rapidly developing field and foster exchanges among early-career researchers.

Recordings of all lectures are available on the Jacques Hadamard Mathematical Foundation's YouTube channel and on carmin.tv.



WEIL ANIMA

This Cours de l'IHES by Dustin Clausen, Permanent Professor of Mathematics at IHES, held from February 10 to 20, 2026, focused on refinements of the absolute Galois group of the field of rational numbers, a central object in number theory. After recalling the original construction of the Weil group as a topological extension of the Galois group, providing a closer connection with automorphic forms, Dustin Clausen discussed some of its persistent shortcomings and presented a new refinement of homotopical nature, motivated by cohomological considerations.



UNION OF TUBES AND KAKEYA SETS

This course, taught by Hong Wang, Permanent Professor of Mathematics at IHES, was held from November 24 to 26, 2025. It focused on the mathematical techniques, including the Córdoba argument and projection theory, used to establish bounds on the volume of unions of tubes in $\mathbb{R}^2$ and $\mathbb{R}^3$. These techniques ultimately contributed to the solution of the Kakeya conjecture in dimension three.



2026 IHES SUMMER SCHOOL: COSMOLOGICAL CORRELATORS

This summer school, organized by Daniel Baumann (Amsterdam and National Taiwan University), Daniel Green (UC San Diego), Austin Joyce (University of Chicago), and Guilherme Pimentel (SNS Pisa), was held from July 6 to 17, 2026, at the Institute's Marilyn and James Simons Conference Center. It brought together PhD students, postdoctoral researchers, and scientists to explore cosmological correlators, EFT and bootstrap methods, and the interfaces between particle theory and cosmology.



PUBLICATIONS MATHÉMATIQUES DE L'IHES

Since January 2026, *Publications mathématiques de l'IHES* has been published as a diamond open-access journal by Centre Mersenne. *Publications mathématiques* is an international peer-reviewed journal publishing cutting-edge research across all areas of mathematics.

Centre Mersenne, developed by Mathdoc with the support of the CNRS and Université Grenoble Alpes, promotes open-access scholarly publishing. The partnership between IHES and Centre Mersenne for *Publications mathématiques* is built on shared commitments to open access, independent peer review, and the long-term accessibility and preservation of scientific research.

All issues are freely available on the Centre Mersenne website. The print edition continues to be published as well. This transition completes a project initiated by Nicolas Bergeron, the journal's previous Editor-in-Chief.

Sébastien Boucksom

Editor-in-Chief of *Publications mathématiques de l'IHES*

Outreach

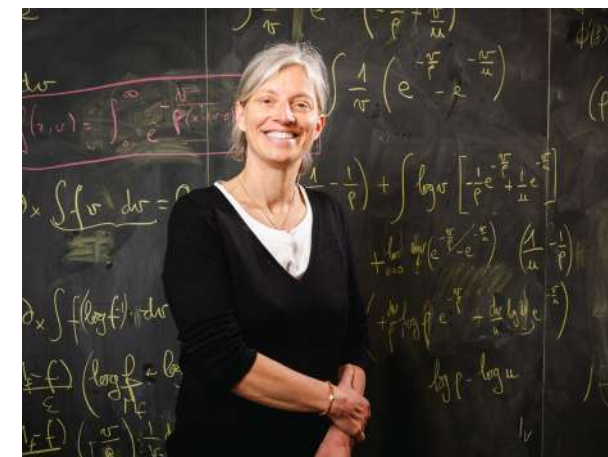
The "L'École dont nous rêvons" Project

Since spring 2024, Laure Saint-Raymond, a former Permanent Professor at IHES, has been leading an initiative group at the Académie des sciences titled *L'École dont nous rêvons* ("The School We Dream Of"). Supported by IHES, the initiative aims to develop, together with all stakeholders in the education system, proposals for structural reforms designed to bring about far-reaching changes to compulsory education and science teaching.

Building on this momentum, the initiative has taken on a new dimension with the launch of an expanded program, *L'École, un héritage à transformer* ("School: An Inheritance to Transform") jointly supported by six institutional partners: the Académie des sciences, ENS-PSL, ENS de Lyon, ENS de Rennes, CNESCO-CNAM, and IHES.

The ambition is to make the school system more agile so that it can fully deliver on its promise: helping every young person to grow, both individually and together with others. To this end, public consultations across France, institutional hearings, and the development of possible scenarios for transformation will inform a report intended for broad dissemination ahead of the 2027 French presidential election.

The *L'École dont nous rêvons* initiative is organized around five priorities: recognizing each person's individuality, restoring people's capacity to act, fostering the emergence of communities, diversifying skills, and easing time constraints.



Five thematic committees are overseeing the work, focusing respectively on school organization, the teaching professions, student pathways, inclusion, and social diversity.

Laure Saint-Raymond joined the Collège de France on October 1, 2026, to resume and further develop her research in oceanography and to work alongside colleagues from other disciplines, particularly in the humanities and social sciences. This proximity is also intended to enrich her thinking on education building on the *L'École dont nous rêvons* project, led by the Académie des sciences and supported by IHES for the past two years.

Women, Science, and Imagination: How Can Literature Inspire Scientific Vocations?

On April 2, IHES had the pleasure of welcoming nearly 130 participants, including around forty students from Rosa Parks High School in Montgeron, for a public roundtable discussion. The event was followed by a cocktail reception, a book sale organized by Librairie Liragif, and a signing session.

Opened by Claire Lenz, the Institute's Secretary General, and moderated by Sylvain Allemand, the evening took the form of a roundtable featuring Élise Colin, Roland Lehoucq, and Sylvie Poulain. Together, they explored a central question: how can literature inspire scientific vocations, particularly among young women?

The discussion unfolded in three parts: an exploration of the works *Confluence* and *Échos d'en haut*, aimed at understanding their authors' intentions: to fuel the imagination, inspire, and open up new possibilities. The discussion also examined the role of female characters in science fiction, in relation to the evolution of the genre and events such as *Utopiales*, with a brief look at cinema as well; sharing of the speakers'

personal experiences with literary and cinematic works that, conversely, helped shape and inspire their own career paths; and finally, a reflection on the richness of hybrid careers: being a scientist or engineer while also nurturing an artistic sensibility.

This evening served as a reminder of just how powerful imagination can be in sparking vocations and broadening horizons, especially among young people.



Liberté, I Write Your Name

IHES's 4th Fundraising Campaign

The Institut des Hautes Études Scientifiques has launched its fourth major fundraising campaign, *Liberté, I Write Your Name*, with an unprecedented goal of raising €70 million to mark the Institute's 70th anniversary in 2028. Written in 1942, Paul Éluard's *Liberté* is a universal poem born out of resistance to oppression.

In a world where thought is often expected to move at ever-increasing speed, IHES has made it the signature of its campaign, a poetic tribute to the beauty of the mathematical world and to the essential yet fragile freedom without which research can neither be written nor illuminate the future.

Official Launch of the Fundraising Campaign



EVENT AT THE FONDATION LOUIS VUITTON

On Wednesday, June 24, 2026, IHES brought together its friends, partners, and supporters at the Fondation Louis Vuitton in Paris.

Following an introduction by Jean-Paul Claverie, Advisor to the Chairman of Louis Vuitton Moët Hennessy, Stanislas Dehaene, Professor at the Collège de France and Chair of the French National Education Scientific Council, delivered a lecture titled *The Origins of Mathematics: A Neuroscience Perspective*.

Following the lecture, guests were invited to explore the exhibition *Calder. Rêver en équilibre*, accompanied by the Fondation Louis Vuitton's guides.



On December 2, 2025, IHES officially launched its fourth major fundraising campaign at AXA's headquarters in Paris, in the presence of more than 100 guests.

The evening featured a lecture on mathematical creativity by Hugo Duminil-Copin, Permanent Professor at IHES and Fields Medal laureate. Jean-Laurent Bonnafé, Chairman and CEO of BNP Paribas, and Henri Seydoux, Founder and CEO of Parrot and Chair of the Campaign, delivered remarks before the Campaign Committee was officially unveiled.

Marwan Lahoud, Chairman of IHES, closed the evening by thanking all participants and donors for their continued commitment and support.

IHES IN HONG KONG

In early February, IHES organized a week of events in Hong Kong, highlighting the Institute's international community and reach.

The week opened with a fundraising event hosted by Qube Research & Technologies, which reaffirmed its support for the *Liberté, I Write Your Name* campaign. The event featured a lecture on algorithmic collusion by Nan Chen, Professor and Vice-Chairman of the Department of Systems Engineering and Engineering Management at the City University of Hong Kong.

This was followed by a scientific breakfast co-organized with Campus France Hong Kong, the Consulate General of France, and the Croucher Foundation, featuring Yijun Wan, a Quantitative Researcher at QRT. Emmanuel Ullmo then delivered a lecture at the University of Hong Kong.

A reception at the Consulate General subsequently highlighted two recent appointments at IHES: Hong Wang as Permanent Professor of Mathematics and Zhongkai Tao as Junior Professor of Mathematics. The week concluded with a private visit to Antoine de Saint-Vaury's exhibition *Home Is a Map* at Boogie Woogie Photography.

An International Campaign



2025 FRIENDS OF IHES GALA: CINEMA & MATHEMATICS

The 2025 Friends of IHES Gala was held on October 28 at The Plaza Hotel in New York, under the theme *Cinema & Mathematics*.

Hosted by Brian Greene and Tracy Day, co-founders of the *World Science Festival*, the evening honored Matthew Brown, director of the biopic *The Man Who Knew Infinity*, Hugo Duminil-Copin, Permanent Professor at IHES and Fields Medal laureate, and Kip Thorne, Nobel laureate in Physics and scientific advisor and executive producer of the film *Interstellar*.

The evening featured a gourmet dinner, a charity auction conducted by Caroline Robinson of Bonhams, and opportunities to meet leading figures from the worlds of science and cinema. The event was held under the high patronage of the Ambassador of France to the United States and in the presence of Cédrik Fouriscot, Consul General of France in New York.

IHES wishes to express its deepest gratitude to the event underwriter, the Simons Foundation, Premier Sponsor BNP Paribas, and all the sponsors whose generous support contributed to the phenomenal success of the evening, with over \$1.3M raised for the Institute's mission.

IHES IN NEW YORK AND CALIFORNIA

Last April, IHES embarked on a U.S. tour from New York to Los Angeles, featuring a series of scientific events and gatherings: a Friends of IHES Public Lecture in New York by Helmut Hofer on Andreas Floer and his work, an evening with Steve Quake on AI and biology in Menlo Park, discussions on the future of mathematics in San Francisco, and, finally, a scientific luncheon with Terence Tao in Los Angeles.

The tour culminated in a double recognition at the 2025 Breakthrough Prize ceremony: Frank Merle was honored for his work on partial differential equations, while Hong Wang was recognized for her work on the Kakeya conjecture.



"HEARING THE UNIVERSE USING PARTICLE PHYSICS" WITH JULIO PARRA-MARTINEZ

On March 16, 2026, the Winton Group in London hosted a scientific evening co-organized by IHES Trust UK and IHES, with the support of the David and Claudia Harding Foundation. Julio Parra-Martinez, Permanent Professor of Physics at IHES, presented his research on gravitational waves and how we can now "listen" to the Universe through signals emitted by merging neutron stars and black holes.

The lecture was followed by a discussion with the researcher and provided an opportunity to highlight the importance of philanthropy in supporting fundamental research.

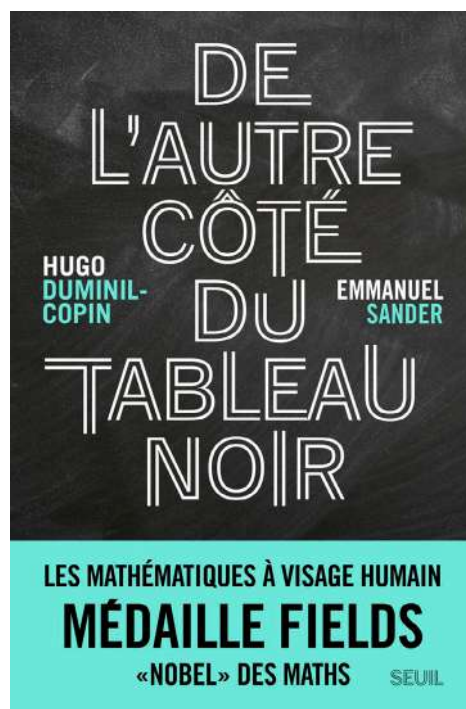
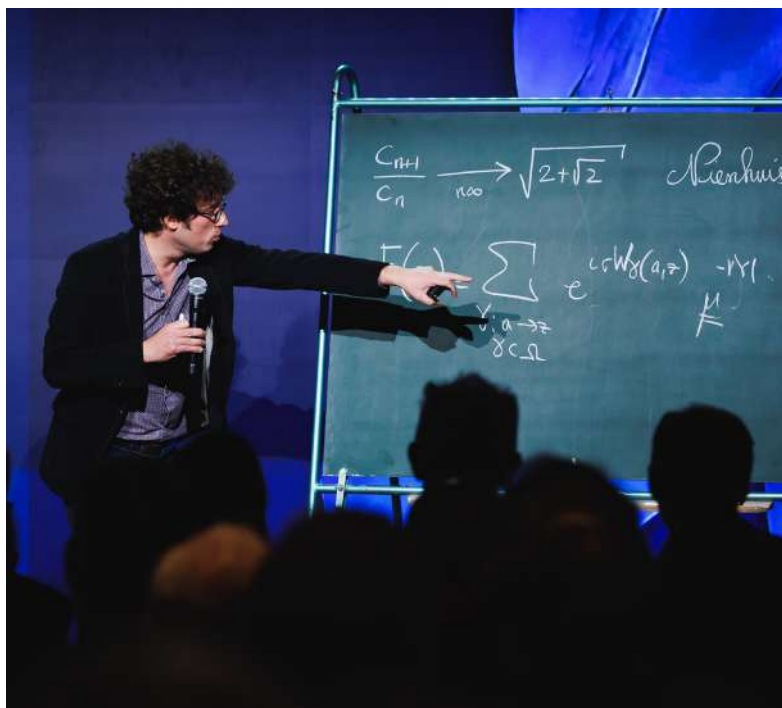


IHES TRUST UK GALA 2026: FROM TURING TO ARTIFICIAL INTELLIGENCE

IHES Trust UK will hold its first Gala Dinner on Thursday, November 26, 2026, at 116 Pall Mall in London.

Celebrating intelligence, both human and artificial, the evening will pay tribute to the legacy of Alan Turing, whose work resonates more than ever in the age of generative AI. The Gala will bring together science, history, and conviviality in the heart of London.

For more information about the evening's program, scan the QR code to visit the event website.



On the Other Side of the Blackboard

Mathematics can be intimidating. Many people remember it from school as an abstract subject for a gifted few, leaving them feeling excluded from an early age. It is this misconception that Hugo Duminil-Copin, a Permanent Professor at IHES and 2022 Fields Medalist, and psychologist Emmanuel Sander, a specialist in learning, set out to dispel.

Their book presents mathematics as it is actually practiced: with mistakes, dead ends, and insights that can sometimes take years to formalize and verify. It reveals a discipline that owes little to solitary genius and much to collective effort,

one in which sensitivity and imagination matter just as much as rigor.

The authors also explore how mathematics is taught, and what this approach to teaching enables or prevents. Their conviction is that mathematics is not inherently inaccessible and that everyone can find in it tools for better understanding the world.

The result is a compelling invitation to look at mathematics differently: one that may help many readers finally make peace with the blackboard.

**Your support is crucial.
Give now.**

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ÉTUDES SCIENTIFIQUES**

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