



**RULES GOVERNING THE AWARD OF  
THE FERMAT PRIZE FOR RESEARCH IN MATHEMATICS**

**Abriged English version**

**2025 AWARD**

## **Article I**

Agreement was reached to institute a **Fermat Prize for Mathematical Research**, created by Paul Sabatier University (University of Toulouse III, France). The amount of the Fermat Prize in 2025 is of 20,000 Euros.

## **Article II - Purpose**

The Fermat Prize rewards the research work of one or several mathematicians in fields where the contributions of Pierre de Fermat have been decisive:

- \* **Statements of Variational Principles, or more generally partial differential equations,**
- \* **Foundations of Probability and Analytical Geometry,**
- \* **Number theory.**

The prize rewards research results within these fields accessible to a large number of professional mathematicians. Therefore a brilliant result which could only be understood, interesting or useful to a limited number of specialized mathematicians cannot be considered.

The jury will consider young mathematicians only (no older than 45 at the time of the submission of their application) and will prefer recent research results (obtained during the last five years).

The Fermat Prize is not awarded to research groups, institutions or laboratories.

## **Article III - Organization**

The Fermat Prize started in 1989 and is awarded once every two years in Toulouse; the nineteenth award will be announced in 2025.

The prize ceremony will include:

- a lecture delivered by the winner(s) at the Toulouse Institute of Mathematics;
- a prize-awarding ceremony at the Paul Sabatier University.

The recipient(s) will publish a survey article about the award-winning research work in the journal Annales de la Faculté des Sciences de Toulouse; this paper should be accessible to professional mathematicians who are not experts on the subject and will explain the significance of the award-winning results.

#### **Article IV - Le jury : Composition of the Jury**

The Fermat Prize Jury will be made up of:

- a representative of the Académie des Sciences de Paris;
- a representative of the European Mathematical Society (E.M.S.) ;
- a representative of the French Mathematical Society (S.M.F.) ;
- a representative of the French Society of Applied and Industrial Mathematics (S.M.A.I.);
- a representative of the Scientific Council of the University Paul Sabatier - Toulouse III;
- a representative of the editorial board of the Annales de la Faculté des Sciences de Toulouse;
- three mathematicians appointed by the Toulouse Mathematics Institute.

The composition of the Jury is decided every two years.

#### **Article V - Role and Competence of the Jury**

Only the Jury is competent to decide upon the application and interpretation of the rules, and upon any situation not covered by the rules. Its decisions are final.

The Jury can decide not to award any Prize if it considers that the applications presented do not justify the attribution of the Prize.

The members of the Jury cannot be applicants. They will consider collectively all applications. They will be careful to avoid any conflict of interest. A member of the jury would not participate to a vote concerning a close collaborator, a former student or a member of the same department.

The Jury's final decisions will be published on the website of Paul Sabatier University and in the media.

#### **Article VI - Applications**

The application file, an outline for which is given at the end of these regulations, can be completed and submitted by:

- the applicant him/himself;
- or by a mathematician wishing to «sponsor» the application of another, and who would complete the application on his/her behalf (without the applicant necessarily being aware of it).

> Deadline for applications: **30 June 2025**.

> Announcement of the results: **December 2025**.

Submission of the registration form implies unconditional acceptance of these rules by the candidate or his/her sponsor.

The application must be written in French or English, excluding any other language.

Applications must be sent to the secretary of the Fermat Prize:

- either by email to:

*Prix.Fermat@math.univ-toulouse.fr*

- or by mail to:

*Prix Fermat de Recherche en Mathématiques 2025*

*Institut de Mathématiques de Toulouse*

*Université Toulouse III - Paul Sabatier*

*31062 TOULOUSE Cedex 9, Franc*

## WINNERS OF PREVIOUS EDITIONS

### 1989 Award

The Fermat Prize for Mathematical Research 1989 was awarded jointly to:

Mr. **Abbas BAHRI** for *the introduction of new methods in the Calculation of Variations*.

Mr **Kenneth A. RIBET** for his contribution *to Number Theory and Fermat's last Theorem*.

### 1991 Award

The Fermat Prize for Mathematical Research 1991 was awarded to:

Mr. **Jean-Louis COLLIOT-THELENE** for *his work on Number Theory and rational manifolds, research which was undertaken to a large extent with Mr Jean-Jacques Sansuc*.

### 1993 Award

The Fermat Prize for Mathematical Research 1993 was awarded to:

Mr. **Jean-Michel CORON** for *his contributions to the study of Variational Problems and Control Theory*.

### 1995 Award

The Fermat Prize for Mathematical Research 1995 was awarded to:

Mr. **Andrew J. WILES** for *his works on Shimura-Taniyama-Weil's conjecture which resulted in the proof of Fermat's last Theorem*.

### 1997 Award

The Fermat Prize for Mathematical Research 1997 was awarded to:

Mr. **Michel TALAGRAND** for *his fundamental contributions in various domains of Probability*.

### 1999 Award

The Fermat Prize for Mathematical Research 1999 was awarded jointly to:

Mr. **Fabrice BETHUEL** and Mr. **Frédéric HELEIN** for *several important contributions to the theory of variational calculus, which have consequences in Physics and Geometry*.

### 2001 Award

The Fermat Prize for Mathematical Research 2001 was awarded jointly to:

Mr. **Richard L. TAYLOR** for *his various contributions to the study of links between Galois representations and automorphic forms*.

Mr. **Wendelin WERNER** for *his works on the intersection exponents of Brownian motion and their impact in theoretical Physics*.

### 2003 Award

The Fermat Prize for Mathematical Research 2003 was awarded to:

**Mr. Luigi AMBROSIO** for *his impressive contributions to the Calculus of Variations and Geometric Measure Theory, and their link with partial differential equations.*

### 2005 Award

The Fermat Prize 2005 for Mathematical Research was awarded jointly to:

**Mr. Pierre COLMEZ** for *his contributions to the study of L functions and p-adic Galois representations.*

**Mr. Jean-François LE GALL** for *his contributions to the fine analysis of planar Brownian motion, his invention of the Brownian snake and its applications to the study of non-linear partial differential equations.*

### 2007 Award

The Fermat Prize 2007 for Mathematical Research was awarded to:

**Mr. Chandrashekhar KHARE** for *the proof in collaboration with Jean-Pierre Wintenberger of Serre's modularity conjecture in number theory.*

### 2009 Award

The Fermat Prize 2009 for Mathematical Research was awarded jointly to:

**Mr. Elon LINDENSTRAUSS** for *his contributions in ergodic theory and their applications in number theory.*

**Mr. Cédric VILLANI** for *his contributions to the optimal transport theory and the study of non-linear evolution equations.*

### 2011 Award

The Fermat Prize 2011 for Mathematical Research was awarded jointly to:

**Mr. Manjul BHARGAVA** for *his generalizations of Davenport-Heilbronn estimates and his remarkable results (in collaboration with A. Shankar) on the average rank of elliptic curves.*

**Mr. Igor RODNIANSKI** for *his fundamental contributions to the study of the equations of general relativity and the light propagation on curved space-times (in collaboration with M. Dafermos, S. Klainerman, H. Lindblad).*

### 2013 Award

The Fermat Prize 2013 for Mathematical Research was awarded jointly to:

**Mr. Camillo DE LELLIS** for *his fundamental contributions (in collaboration with L. Székelyhidi) on the Onsager conjecture on the dissipative solutions to Euler equations, and his works on the regularity of minimal surfaces.*

**Mr. Martin HAIRER** for *his remarkable contributions to the analysis of stochastic partial differential equations, in particular on their well-posedness, the regularity of solutions and the convergence to equilibrium.*

## 2015 Award

The Fermat Prize 2015 for Mathematical Research was awarded to:

**Mrs. Laure SAINT-RAYMOND** for the development of asymptotic theories of partial differential equations, including the fluid limits of rarefied flows, multiscale analysis in plasma physics equations and ocean modeling, and the derivation of the Boltzmann equation from interacting particle systems.

**Mr. Peter SCHOLZE**, for his invention of perfectoid spaces and their application to fundamental problems in algebraic geometry and in the theory of automorphic forms.

## 2017 Award

The Fermat Prize 2017 for Mathematical Research was awarded to:

**Mr. Simon A. BRENDLE** for his deep results in geometric analysis, involving partial differential equations of elliptic, parabolic and hyperbolic type; and for his elegant proof of Lawson's conjecture, for his characterization of soliton solutions of Ricci flows and mean curvature flows in three dimensions, and for his remarkable contributions, with Gerhard Huisken, to the analysis of mean curvature flow of convex surfaces on three-dimensional manifolds.

**Mr. Nader MASMOUDI** for his remarkable work on the analysis of nonlinear partial differential equations, and particularly for his recent contributions to the complete and rigorous solution of hydrodynamic stability problems in fluid mechanics.

## 2019 Award

The Fermat Prize 2019 for Mathematical Research was awarded to:

**Mr. Alexei BORODIN**, for the invention of integrable probability theory, a new area at the interface of representation theory, combinatorics and statistical physics.

**Mrs Maryna VIAZOVSKA**, for her original solution of the famous sphere packing problem in dimensions 8 and 24.

## 2021 Award

The Fermat Prize 2021 for Mathematical Research was awarded to:

**Mr. Fernando CODÁ MARQUES**, for major advances, obtained with André Neves, on geometric applications of calculus of variations.

**Mr. Vincent PILLONI**, for remarkable results of arithmetic geometry, dealing with  $p$ -adic modular forms, including the introduction and development of the higher Hida theory.

## 2023 Award

The Fermat Prize 2023 for Mathematical Research was awarded to:

**Mr. Jason MILLER**, for his major advances in random geometry, including relation to Liouville quantum gravity (partly with Scott Sheffield).

**Mr. Aaron NABER**, for his groundbreaking work on Ricci limit spaces, in particular rectifiability, isometry group and co-dimension 4 conjecture.

## APPLICATION

- 1- Detailed curriculum vitae and academic record of the applicant.
- 2- List of publications, including works not connected with the application for the Prize.
- 3- A summary of the research works which would justify awarding the Prize.
- 4- A handwritten statement by the candidate or by the sponsor certifying the truthfulness of the material supplied and the authenticity of the documents and other information provided.

The following could also be appended:

- copies of research work published in international journals;
- confidential opinions of personalities from the mathematical community as to the content, range and usefulness of the results presented by the candidate.
- names of personalities who could be directly contacted by the committee and asked to send recommendation letters for the candidate (as usual, the committee will ask for supplementary advice between the closing date for applications and the final decision meeting).

These documents are non-returnable.

- > Deadline for applications for the 2025 Fermat Prize: **30 June 2025.**
- > Results: December 2025.
- > Presentation in Toulouse, and Prize award ceremony: Spring 2026.
- > Deadline for the reception of the manuscript for the Annales de la Faculté des Sciences de Toulouse: end of 2026.