



INSTITUT
de MATHÉMATIQUES
de TOULOUSE



UNIVERSITÉ
TOULOUSE III
PAUL SABATIER



Université
de Toulouse



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

Abridged english version

2017 AWARD

LA RÉGION OCCITANIE
Pyrénées-Méditerranée

Article I

Agreement was reached to institute a **Fermat Prize for Mathematics Research**, created by Paul Sabatier University (University of Toulouse III, France). The amount of the Fermat Prize in 2017 has been fixed at 20 000 Euros.

Article II - Objectives

The Fermat Prize rewards the research work of one or more 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 spirit of the prize is focused on rewarding the results of research accessible to the greatest number of professional mathematicians within these fields. Thus work - even of a brilliant level - the comprehension, interest and usefulness of which are the prerogative of a restricted number of specialist mathematicians cannot be considered.

The following will be considered:

- * preferably recent results or groups of results (less than five years old)
- * younger candidates (rule : aged less than 45 years at the time of the submission).

The Fermat Prize is awarded to one or more mathematicians designated by name, and not to research groups or laboratories.

Article III - Organisation

The Fermat Prize is awarded once every two years in Toulouse (it started in 1987); the fourteenth award will be announced in **2017**.

The presentation of the prize to the winner or winners takes place in two stages:

- a lecture delivered by the winner(s) on the premises of Paul Sabatier University dealing with the prize-winning work;
- a prize-awarding ceremony under the aegis of the Région Occitanie Pyrénées-Méditerranée.

The recipient(s) are required to publish an article summarizing their findings in the mathematical journal Annales de la Faculté des Sciences de Toulouse; the aim of this paper, addressed to professional mathematicians not necessarily experts in the subject, is to explain the significance of the results of the research rewarded by the Prize.

Article IV - Jury Composition

The Fermat Prize Jury will be composed 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.);
 - three mathematicians from the University Toulouse III;
 - two mathematicians from the other scientific institutions of Toulouse or from the editorial board of the Annales de la Faculté des Sciences de Toulouse;
 - a mathematician from the University of Montpellier.
- (the last six members are chosen by the Toulouse Institute of Mathematics)

The composition of the Jury is decided every two years.

Article V - Role and Fields of Competence of the Jury

The Jury's decisions are final and will be made public following their deliberations. The Jury can decide to award no Prize if it considers that the candidacies presented do not justify the attribution of the Prize.

In no circumstances can members of the Jury themselves be candidates.

The decision of the Jury is final in the event of any question of application or interpretation of the rules, or any question not covered by the latter should it come up during the present competition. Its decisions are without appeal.

Article VI - Applications

The application file, detailed at the end of this regulation, can be completed and submitted by:

- the candidate him/herself;

or by

- a mathematician wishing to «sponsor» the candidacy of another, and who would complete the application on his/her behalf (without the candidate necessarily being aware of it).

* closing date for application: **30 June 2017**

* declaration of the results: **December 2017**

The sending off of the registration form implies the unconditional acceptance of these rules by the candidate or the sponsor.

The management and administration of dossiers will be the responsibility of Paul Sabatier University. The application must be written in French or English, excluding all other languages.

Applications are to be sent to the organizing secretariat of the Fermat Prize:

either by email at:

Prix.Fermat@math.univ-toulouse.fr

or by mail at:

Prix Fermat de Recherche en Mathématiques 2017

Institut de Mathématiques

Université Paul Sabatier

31062 TOULOUSE Cedex 9

France.

<http://www.math.univ-toulouse.fr/spip.php?article240&lang=fr>

1989 Award

The Fermat Prize for Mathematics 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 Mathematics Research 1991 was awarded to:

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

1993 Award

The Fermat Prize for Mathematics 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 Mathematics Research 1995 was awarded to:

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

1997 Award

The Fermat Prize for Mathematics Research 1997 was awarded to:

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

1999 Award

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

M. **Fabrice Bethuel** and **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 Mathematics Research 2001 was awarded jointly to:

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

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

2003 Award

The Fermat Prize for Mathematics Research 2003 was awarded to:

Professeur **Luigi AMBROSIO** (Scuola Normale Superiore, Pisa, Italie) 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 Mathematics Research has been awarded jointly to:

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

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 Mathematics Research has been awarded to:

Chandrashekar 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 Mathematics Research has been awarded to:

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

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 Mathematics Research has been awarded to:

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

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 Mathematics Research has been awarded to:

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.*

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 Mathematics Research has been awarded to:

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.*

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

APPLICATION

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

To back up this presentation, the following could also be appended:

- copies of work published in international journals;
- confidential opinions of personalities from the world of Mathematics as to the content, range and usefulness of the results presented by the candidate.
- names of personalities from the world of Mathematics who could be directly contacted by the committee to get other recommendation letters for the candidate (usually, the committee will ask for supplementary advices during its debates, between the closing date for applications and the final meeting).

These documents are non-returnable.

> Closing date for applications for the 2017 Fermat Prize: **30 June 2017**.

> Results: December 2017.

> Presentation in Toulouse, and Prize Award ceremony: Spring 2018.

> Deadline for the reception of the manuscript for the Annales de la Faculté des Sciences de Toulouse : end of 2018.