ISTITUTO
GROTHENDIECK

Visionary research in the mathematical sciences

A unique place for pioneering research in the mathematical sciences

The Institute

The **Grothendieck Institute** is an **international foundation** devoted to cutting-edge research in mathematics and its interactions with other disciplines. Established in 2022 and based in **Mondovì** (Italy), the Institute is a **non-profit organisation** registered at RUNTS (Unique National Registry of the Third Sector) and the ANR (National Registry of Research).

Its main focus is **interdisciplinarity**, with particular reference to the development of **unifying methods**, both within mathematics and in relation to other areas of knowledge. In addition, the Institute aims to honour the figure of the great mathematician **Alexander Grothendieck**, after whom it is named, through studies, including humanistic ones, aimed at valorising his work and developing his cultural heritage at large.

The Institute pursues its mission notably through its **research centres**, devoted to specific themes of particular relevance, and by collaborating with academic institutions and scientific associations which share its interests. It also offers doctoral studentships and research fellowships to outstanding young scholars selected by its **Scientific Council**, which includes among its members three **Fields Medalists**.

Alexander Grothendieck *(1928 - 2014) is considered by many to be the greatest mathematician of the 20th century. Laureate of the Fields Medal in 1957 for his fundamental contributions to algebraic geometry, he has also been a prolific philosopher and writer. In addition to the works already published, Grothendieck has left a huge amount of unpublished manuscripts, whose study and dissemination are one of the main purposes of the Institute.*

Visionary research
bridging different areas of knowledge

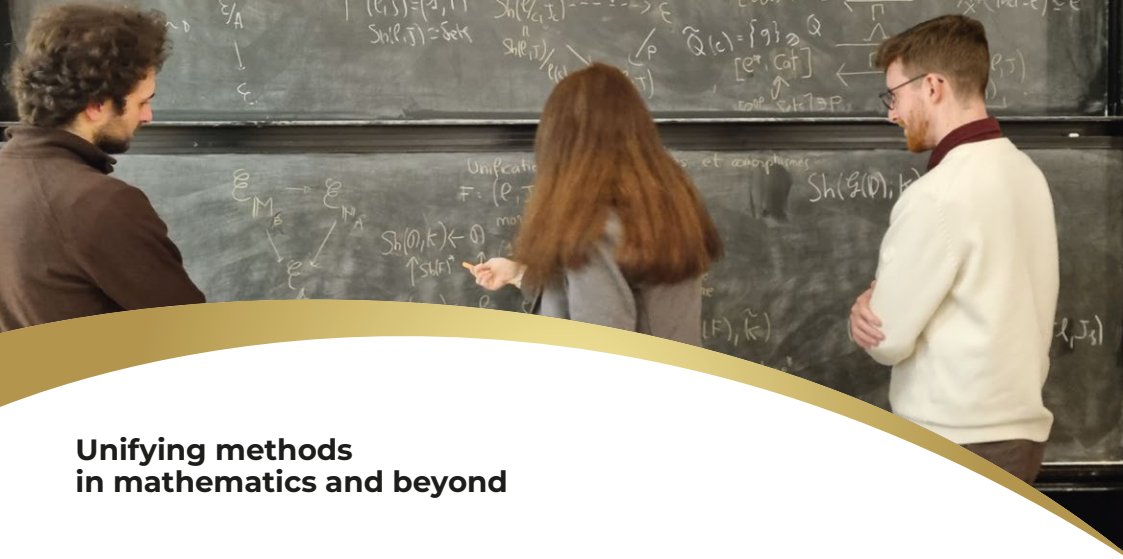
Mission

The Grothendieck Institute aims to:

- foster the development of mathematics in a **unifying** and **interdisciplinary** way, with particular reference to the theory of **Grothendieck toposes**
- experiment **new forms of synergies between the sciences** and develop theoretical tools aimed at 'delocalising' them through a comprehensive, global meta-mathematical vision
- **train a new generation of researchers** by offering, also in cooperation with partner universities, doctoral scholarships and research grants
- develop the **international scientific cooperation** by organizing conferences, seminars, intensive research periods and scientific visits
- **disseminate scientific culture** at all levels by organizing courses, schools and events for the general public

> *The vision unites the already known points of view that embody it, and it reveals to us others ignored till then, just as the fruitful point of view makes us discover and apprehend as part of a same Whole, a multiplicity of new questions, notions and statements.*
>
> *A. Grothendieck*

- perform and support historical and philosophical studies aimed at **popularising the work of Alexander Grothendieck**
- stimulate the **integration of fundamental research and technological innovation**
- promote **ethics** in scientific research.



Unifying methods
in mathematics and beyond

Centre for Topos Theory and its Applications

The **Centre for Topos Theory and its Applications (CTTA)** carries out highly innovative research in the field of **Grothendieck topos theory**, oriented towards the development of the unifying role of the concept of topos across different areas of mathematics.

The Centre notably develops the **unifying theory** of topos-theoretic '**bridges**' of Olivia Caramello, as well as the general methodologies underlying these techniques.

One of the priorities of the CTTA is the **training of young researchers**, activity which pursues, in particular, through the awarding of doctoral studentships and post-doctoral fellowships, also **in collaboration with some of the world's top universities.**

The Centre also aims to pioneer **applications**, in a wide range of disciplines, of the topos-theoretic techniques it develops.

It is the topos theme ... that constitutes this "bed", or "deep river", where come to be married geometry and algebra, topology and arithmetic, mathematical logic and category theory, the world of the continuous and that of "discontinuous" or "discrete" structures.

It is what I have conceived of most broad, in order to perceive with finesse, through a same language rich of geometrical resonances, an "essence" which is common to situations most distant from each other coming from one region or another of the vast universe of mathematical things.

A. Grothendieck

Valorisation of the cultural heritage of Alexander Grothendieck

Centre for Grothendieckian Studies

The **Centre for Grothendieckian Studies (CSG)** is devoted to honouring the memory of **Alexander Grothendieck**, one of the greatest mathematicians of the 20th century, through extensive efforts aimed at valorising and disseminating his work and ideas.

The Center is engaged in **historical research** and **editorial work** aimed at facilitating the publication of Grothendieck's numerous unpublished writings and the creation of new editions of his already published works, as well as their translation into different languages.

The CSG is also committed to fostering a **philosophical and interdisciplinary reflection** on the themes Grothendieck addressed in his writings, and to disseminating these studies to a wide and varied audience, both in the sciences and the humanities, also in order to stimulate the emergence of **new relations between different fields of knowledge**.

> *The quality of a researcher's inventiveness and imagination is the quality of his attention, to listening to the voice of things. For the things of the Universe never tire of talking about themselves and revealing themselves to those who are willing to listen.*
>
> *A. Grothendieck*

A topic of particular interest for the CSG is the **ethics of scientific research**, theme already central for Grothendieck and highly relevant for today's society.

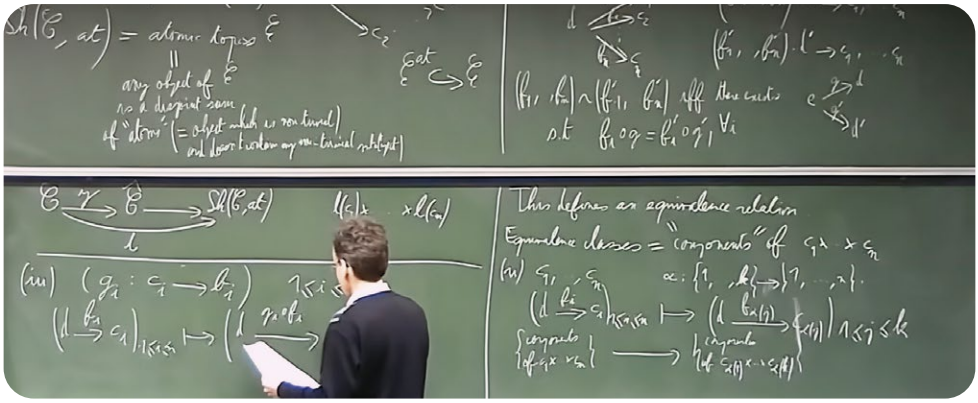
An international network pursuing excellence and interdisciplinarity

Scientific outreach

The Grothendieck Institute pursues **scientific outreach at all levels**, organising schools, specialised conferences, research visits, events for the general public, seminars and lectures.

Through such activities, the Institute also engages in promoting a better, ethically responsible, **integration** between **fundamental research** and **technological innovation**.

> *The role of writing is not to record the results of a research, but rather the research process itself.*
>
> *A. Grothendieck*

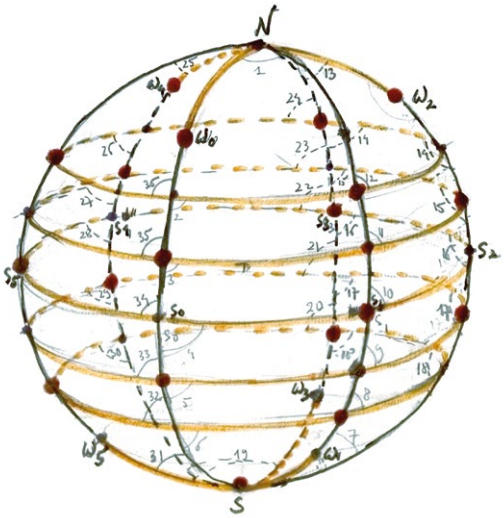


Support visionary research in mathematics and its applications

Support the Grothendieck Institute

Help us turn our mission into a tangible reality by donating today!

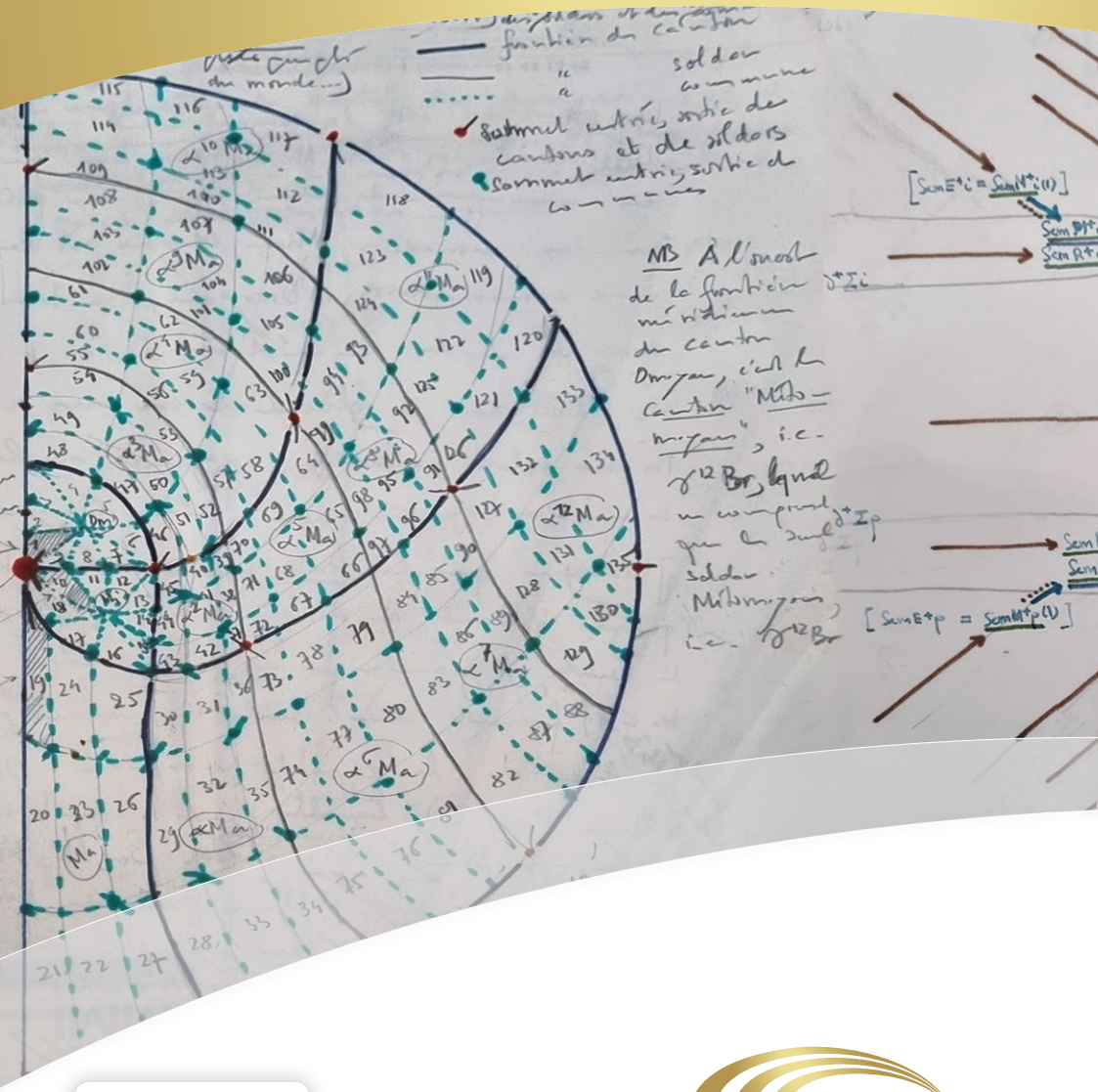
All donations make a difference for our research.



> *True generosity is beneficial to everyone, starting with the person in whom it manifests itself and the person to whom it is addressed.*
>
> *A. Grothendieck*

By making a gift to the Grothendieck Institute you will contribute to:

- foster free and independent research
- support the development of pioneering theories useful for linking together and unifying different areas of knowledge
- train a new generation of researchers with unique interdisciplinary skills
- valorize Alexander Grothendieck's scientific and cultural heritage
- promote ethics in scientific research.



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Biographical notes

Olivia Caramello

Olivia Caramello is an Italian mathematician born in 1984. She earned a Degree in Mathematics from the University of Turin and a Diploma in Piano (both at the age of 19), and a Ph.D. in Mathematics from Trinity College, Cambridge. She worked at the Scuola Normale Superiore of Pisa, the University of Cambridge, the University of Paris 7 and the Institut des Hautes Études Scientifiques (IHES), where from 2020 to 2022 she held the Gelfand Chair. In 2017 she won the "Rita Levi Montalcini" competition of the Italian Ministry of University and Research and is currently Associate Professor at the University of Insubria in Como. Caramello is known for her work on topos theory and for pioneering the unifying theory of toposes as 'bridges'.

Alain Connes

Alain Connes is a French mathematician of exceptional distinction, known for his foundational work in operator algebras and noncommutative geometry. Born in 1947, Connes has been influential in shaping modern mathematical physics and geometry through his innovative theories and research. He has held professorships at the Collège de France, at the IHES and at the Vanderbilt University.
He received the **Fields Medal in 1982**; in 2001 he was awarded the Crawford Prize and in 2004 the Gold Medal of the Centre National de la Recherche Scientifique.
He belongs to the French Academy of Sciences as well as to numerous foreign academies and scientific societies.

Maxim Kontsevich

Maxim Kontsevich is an eminent Russian and French mathematician and physicist born in 1964. He is well known for his outstanding contributions to several areas of mathematics, including geometric aspects of mathematical physics, categorification, knot theory, quantization, and mirror symmetry.
From 1992 to 1995 he held a full professorship in mathematics at the University of California, Berkeley. He is a permanent professor at the IHES, and distinguished professor at the University of Miami. He received the Henri Poincaré Prize in 1997, the **Fields Medal in 1998**, the Crawford Prize in 2008, the Shaw Prize and the Breakthrough Prize in Fundamental Physics in 2012, and the Breakthrough Prize in Mathematics in 2015.

Laurent Lafforgue

Laurent Lafforgue is a distinguished French mathematician born in 1966. He is renowned for his fundamental contributions to Langlands' program in the domains of number theory and algebraic geometry. Notably, he proved the Langlands correspondence for general linear groups over function fields, a result for which he was awarded the **Fields Medal in 2002**.
An alumnus of the École Normale Supérieure, Lafforgue held positions as a research director at the CNRS and as a permanent professor at the IHES. In the last years his research interests have shifted towards topos theory and its applications, subject which he develops in collaboration with colleagues both of academia and industry.