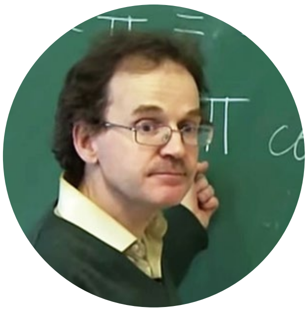
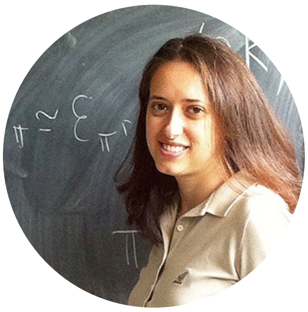
スーパーグローバルコース数学特別講演会

2017 年 4 月 10 日・11 日　京都大学理学研究科 3 号館 127 大会議室



Laurent Lafforgue

Laurent Lafforgue 教授は，現在，フランス高等科学研究所（IHES）教授で，専門は整数論・数論幾何学です．関数体上の大域 Langlands 予想の解決は世界的に有名で，2002 年国際数学者会議（ICM）において Fields 賞を受賞しました．最近では Caramello 氏と共同で，数論幾何の手法の論理学への応用についての研究も行っています．



Olivia Caramello

Olivia Caramello 氏は，現在，フランス高等科学研究所（IHES）研究員で，専門は数理論理学・数論幾何学です．Grothendieck によるトポス理論を基礎とした論理学の研究で有名な研究者です．2017 年 6 月には著書『理論・サイト・トポス（Theories, Sites, Toposes）』が Oxford 大学出版会より出版予定です．

Mon, April 10, 2017

15:30-16:30　L. Lafforgue

Langlands' automorphic transfer as a problem of generalising the addition operation

Langlands' automorphic transfer from reductive groups to linear groups is equivalent to the existence of local and global Fourier transform operators induced by representations of the dual groups, of local and global functional spaces that should be stabilized by these operators and of a Poisson linear form on the global functional spaces that should be fixed by Fourier transform.

Looking for a definition of non-additive Fourier transform operators leads to the crucial question of determining the Fourier transform of the operator of point-wise multiplication of functions. It has to be a generalisation of ordinary additive convolution operators.

16:45-17:45　O. Caramello

Grothendieck toposes as unifying ‘bridges’ in mathematics

The talk will explain how Grothendieck toposes can be effectively used as ‘bridges’ for transferring ideas and results across different mathematical theories. The interest of these general techniques is that they allow one to discover in classical domains new results which are established by topos-theretic means but whose statement does not involve toposes.

By way of example, these general methods will be illustrated by a topos-theoretic reinterpretation and generalisation of Stone-type dualities in topology.

Tue, April 11, 2017

15:30-16:30　O. Caramello

When do fundamental groups exist ?

The talk will present an abstract topos-theoretic framework for building Galois-type theories in a variety of different mathematical contexts : this unifies and generalises Grothendieck's theory of ‘Galoisian categories’ and Fraïssé's construction in model theory.

This theory allows one to construct fundamental groups in many classical contexts such as finite groups, finite graphs, motives and many more.

We will in particular present an approach based on it for investigating the independence from l of l-adic cohomology.

16:45-17:45　L. Lafforgue

Fundamental groups and imaginary covers

This talk is based on joint work with O. Caramello.

It examines the concrete construction of the new categories classified by fundamental groups as defined in the previous talk.

Many classical categories - such as the categories of finite groups or finite graphs and their embeddings or their surjective homomorphisms - naturally embed into larger categories classified by fundamental groups. The new ‘imaginary’ objects which have to be added to make these categories Galoisian can be described concretely.

These constructions allow one to associate new invariants - including cohomological invariants - to groups, graphs and many geometric objects.

✦ 全部で 4 講演行われます．前半の 2 講演は広い聴衆を対象とした入門的な解説となっています．
✦ 様々な分野の研究者や，大学院生・学部生の参加を歓迎します．