

39th British Topology Meeting
Abstracts
1–2 October 2026

Plenary talks

Naomi Andrew (Université Paris-Saclay)

Title: The Farrell–Tate K -theory of $\text{Out}(F_n)$

Abstract: Given a (nice enough) group, there is an isomorphism, due to Lück, relating the rationalised K -theory groups of its classifying space to a large product of cohomology groups, some with rational and some with p -adic coefficients.

In joint work with Irakli Patchkoria, we identify a generalised cohomology theory capturing the p -adic part of this product. Working in $\text{Out}(F_n)$, in ranks close to p we can fully compute this p -adic part and in this way produce an infinite family of odd-dimensional summands in the rationalised K -theory of $\text{Out}(F_n)$.

I will discuss these results and the tools that go into them, which range from spherical group rings to the lemma that is not Burnside's, via results about centralisers in $\text{Out}(F_n)$: I will try to explain how all these various ideas fit together!

Clark Barwick (University of Edinburgh)

Title: Stratified étale homotopy types and symmetric monoidal categories

Abstract: The purpose of this talk is to describe an approach to defining a stratified étale homotopy type of a presentable symmetric monoidal (∞) -category (work in progress). We will begin gently by describing and illustrating how stratified étale homotopy types work in algebraic geometry, including the exodromy results of Glasman, Haine, and me. Then we will start to explain our approach to extending these ideas to a categorified regime.

David Gabai (Princeton University)

Title: Pseudo-isotopy, loops of multi-spheres in $\#_k S^2 \times S^2$ and diffeomorphisms of 4-manifolds

Abstract: We discuss how a pseudo-isotopy of S^4 induces a loop of k embedded pairwise disjoint 2-spheres in $\#_k S^2 \times S^2$, where the i -th 2-sphere is based at the i -th pt $\times S^2$. We define a non-trivial invariant with values in $\mathbb{Z}_2$ which vanishes on loops homotopic to ones having geometrically dual spheres. Joint work with David Gay and Daniel Hartman.

John Greenlees (University of Warwick)

Title: Rational G -spectra with Weyl-finite isotropy

Abstract: If G is a compact Lie group, the structure of rational equivariant cohomology theories can be described in terms of the space of conjugacy classes of subgroups of G , and in many cases this gives a complete algebraic model. The talk will consider the simplest situation and illustrate it with examples.

Sungkyung Kang (University of Cambridge)

Title: Infinite cyclic covers and real Seiberg–Witten theory

Abstract: In classical knot theory, almost all information, such as Alexander polynomial and Seifert form, is extracted from infinite cyclic covers of knots. On the other hand, gauge-theoretic invariants that are powerful enough to detect the difference between smooth and topological categories are extremely hard to define over such noncompact manifolds. In this talk, we show that real Seiberg–Witten theory can be used to detect the difference between smooth and topological $\widetilde{H}$ -cobordism groups, which are defined using finiteness conditions on infinite cyclic covers of cobordisms.

Clara Löh (Universität Regensburg)

Title: The cost of trivialising boundary operators of chain complexes

Abstract: We consider quantitatively controlled replacements of normed chain complexes by their homology complex. This has applications to measuring the conversion of real cohomological fillings into integral cohomological fillings and to lower bounds of the ℓ^1 -semi-norm.

Contributed talks

Diarmuid Crowley (University of Melbourne)

Title: Splitting the Kervaire–Milnor Sequence

Abstract: For $n \geq 5$, Kervaire and Milnor placed the group of n -homotopy spheres, Θ_n , into a short exact sequence $bP_{n+1} \rightarrow \Theta_n \rightarrow K_n$, where bP_{n+1} is finite cyclic and K_n is a subquotient of the stable n -stem. Away from the “magic dimensions” $n(j) = 2^{j+1} - 3$, Brumfiel proved that the Kervaire–Milnor sequence splits. Recent progress on the Kervaire invariant problem by Hill–Hopkins–Ravenel shows that $bP_{n(j)+1} = \mathbb{Z}/2$ for $j \geq 7$, leaving the splitting of the Kervaire–Milnor sequence open in the magic dimensions for $j \geq 7$. This talk discusses work in progress, joint with Ishan Levy and Robert Burklund, whose goal is showing that the Kervaire–Milnor sequence always splits. As a first step, we translate this extension problem into a problem in stable homotopy theory, analogous to Browder’s translation of the Kervaire-invariant problem. To complete the proof of the splitting it suffices to establish mod 2 versions of the Hill–Hopkins–Ravenel arguments.

András Juhász (University of Oxford)

Title: Quantum braid Floer homology

Abstract: We introduce quantum braid Floer homology, which is a triply graded homology theory associated with a braid. It contains a distinguished non-zero element, and admits a spectral sequence to knot Floer homology. Furthermore, its graded Euler characteristic is a two-variable polynomial that specialises to the Alexander and Jones polynomials. This is joint work with Cristina Anghel.

Dan Marlowe (University of Warwick)

Title: Verdier sequences for exact categories

Abstract: The existence of a good theory of bifibre sequences, aka Verdier sequences, of stable ∞ -categories gives rise to the rich theory of localising invariants. In this talk, we report on joint work with Yonatan Harpaz, in which we generalise the notion of Verdier sequence to the realm of exact ∞ -categories. We will recall the main technical tool of heart structures on stable categories, discuss the consequences for connective K -theory, and speculate about applications to other K -theoretic invariants.

Ananya Satoskar (King's College London)

Title: Constructing Relations in the Torelli Group

Abstract: The Torelli group associated to a surface is the subgroup of its mapping class group that acts trivially on its first homology; this is a rich and mysterious subgroup of the mapping class group whose algebraic structure is not yet fully understood. We construct new relations in the Torelli group of closed, compact surfaces, and discuss some work in progress aimed at studying its algebraic structure inspired by the work of Birman, Johnson and Putman.

Ismael Sierra (University of Glasgow)

Title: Mixed Tate motives over number fields (for an algebraic topologist)

Abstract: I will discuss recent work with D. Rudenko and A. Kupers on the structure of mixed Tate motives over number fields. I will state a result giving a full description of the category of mixed Tate motives of a number field in terms of a topological construction associated with the E_∞ homology of the general linear groups, and then I will sketch the main ideas in the proof.

Lukas Waas (University of Oxford)

Title: Function–Rips complexes in persistent homotopy theory: Stability and persistent Latschev theorems

Abstract: Classical results of Hausmann and Latschev show that Vietoris–Rips complexes can recover the homotopy type of a manifold, even from finite metric spaces that are nearby in Gromov–Hausdorff distance. We prove persistent homotopical versions of these theorems for metric spaces equipped with filtration functions. The central object of study is the so-called persistent homotopy type of the function–Rips complex, a filtered simplicial complex that combines a fixed Rips scale with the filtration data on the underlying space. Using techniques from $\text{CAT}(\kappa)$ -geometry and persistent simplicial homotopy theory, we generalize Latschev's and Hausmann's theorems to the setting of spaces with filtration functions and homotopical interleavings. A fundamental ingredient is a new homotopical stability theorem. The fixed-scale function–Rips construction is known not to be globally stable with respect to function Gromov–Hausdorff distance and homotopical interleaving distance. Here, we show that it is nevertheless stable for appropriate choices of the Rips parameter at such pairs (M, f) for which M is a complete metric space of curvature bounded above, and f is a Lipschitz continuous multivariate function.

Mengmeng Zhang (Beijing Institute of Mathematical Sciences and Applications)

Title: Homotopy theory of digraphs

Abstract: In 2014, Grigor'yan, Lin, Muranov, and Yau introduced the homotopy theory of digraphs, defining the n^{th} homotopy group of a digraph as the fundamental group of its $(n - 1)$ -fold iterated based loop digraph. Inspired by the cubical approach to higher homotopy groups of based topological spaces, we introduced relative grid maps to give a direct definition of the n^{th} homotopy group $\bar{\pi}_n(G)$ of a digraph, and showed several properties analogous to those of homotopy groups of topological spaces. At this point, a natural question then arises: can these homotopy groups distinguish different digraphs? In this talk, I will give a brief introduction for this.