



北京大学数学科学学院
School of Mathematical Sciences
Peking University



International Workshop on Algebraic Topology 2026

Participant Handbook

School of Mathematical Sciences, Peking University

Beijing, China

August 17-21, 2026

Official Website: <https://iwoat.github.io/2026>

Welcome



Welcome to the International Workshop on Algebraic Topology 2026. The workshop is a five-day event hosted by the School of Mathematical Sciences at Peking University in Beijing, China, from Monday, August 17 to Friday, August 21, 2026. It brings together leading researchers and young scholars to share recent advances in algebraic topology and related fields.

Time and Venue:

Time: Monday, August 17th to Friday, August 21st, 2026

Venue: Dingshisun Lecture Hall(丁石孙教室), Zhihua Building(智华楼), School of Mathematical Science, Peking University, No. 5 Yiheyuan Road, Haidian District, Beijing, China

Program Schedule

Time	Mon, Aug 17	Tue, Aug 18	Wed, Aug 19	Thu, Aug 20	Fri, Aug 21
09:00-10:00	-	-		-	John Palmieri
09:30-10:30	Ko Honda	John Greenlees	Andrew Blumberg	Birgit Richter	
10:00-10:15	-	-		-	Tea Break
10:30-11:00	Group Photo Tea Break	Tea Break	Tea Break	Tea Break	
10:15-11:15	-	-		-	Piotr Pstrągowski
11:00-12:00	Sihao Ma	Zhengyi Zhou	Shangjie Zhang	Eva Belmont	
11:15-11:30	-	-	-	-	Tea Break
11:30-12:30	-	-		-	Yu Zhang
12:00-14:00 (Fri: 12:30-14:00)	Lunch Break				
14:00-15:00	Mark Behrens	Jianfeng Lin	-	Yang Su	Conclude
15:00-15:30	Tea Break	Tea Break	-	Tea Break	
15:30-16:30	Luya Wang	Eunice Sukarto	-	Prasit Bhattacharya	

Titles and Abstracts

Mark Behrens (University of Notre Dame)

Title: A delocalized construction of BP_{μ_p}

Abstract: Hill-Hopkins-Ravenel conjectured the existence of a C_p -equivariant spectrum BP_{μ_p} which serves as an odd primary analog of the C_2 -equivariant spectrum $BP_{\mathbb{R}}$. They proposed that for $p = 3$, such a spectrum, with a suitable "slice-like" filtration, could be used to imitate their 2-primary techniques to solve the 3-primary Kervaire invariant one problem. I will describe a construction in the genuine C_p -equivariant homotopy category which builds this spectrum BP_{μ_p} out of representation-spoke graded suspensions of the equivariant Eilenberg–MacLane spectrum $H\mathbb{Z}_{(p)}$. Thus this construction builds in the desired "slice-like" filtration. The construction extends an analogous construction of BP_{μ_p} given by Hu–Kriz–Somberg–Zou in the Borel C_p -equivariant category. This project is joint with Gabriel Angelini-Knoll, Maxwell Johnson, and Hana Jia Kong.

Eva Belmont (Case Western Reserve University)

Title: Machine computation of unstable homotopy groups of spheres

Abstract: Computer calculations have driven several recent breakthroughs involving the stable homotopy groups of spheres, including the solution due to Lin, Wang, and Xu of the remaining case of the Kervaire invariant problem. I will discuss work in progress, joint with Francis Baer, William Balderrama, and Dan Isaksen, to employ some of the same methods to studying the unstable homotopy groups of spheres via the unstable Adams spectral sequence.

Prasit Bhattacharya (New Mexico State University)

Title: Eulerian Sequences: A universal framework for Stable Power Operations

Abstract: Stable power operations, such as classical Steenrod and Dyer-Lashof operations, serve as some of the most indispensable computational tools in stable homotopy theory. While traditionally studied in specific contexts, recent developments suggest a deeper, unified structural origin. In joint work with Waugh, Zeng, and Zou, we introduced the framework of Eulerian sequences to construct equivariant Steenrod operations. In new joint work with Waugh, we have generalized this approach to capture equivariant Dyer-Lashof operations. In this talk, I will present the general theory of Eulerian sequences and show the converse — all stable power operations originate from Eulerian sequences.

Andrew Blumberg (Columbia University)

Title: A vision for the future of mathematics in the age of AI

Abstract: I will report on our experiences with the First Proof project evaluating the capabilities of frontier AI for mathematical discovery. Based on this, I will describe some possible futures for the mathematical enterprise as a whole.

John Greenlees (University of Warwick)

Title: Weyl-finite blocks of rational G -equivariant cohomology theories.

Abstract: For a compact Lie group G , we may study G -equivariant cohomology theories, and it is conjectured that there is an abelian category $A(G)$ so that there is an equivalence between rational G -spectra $= \mathrm{dg} A(G)$. The category $A(G)$ is (in a sense to be made precise) a category of sheaves over the space $X(G)$ of conjugacy classes of subgroups of G . In fact $X(G)$ is a finite disjoint union of blocks $V(G, H)$ (where H is a subgroup with finite Weyl group) so $A(G) = A(V(G, H_1)) \times \dots \times A(V(G, H_n))$. The talk will describe some progress understanding the structure of blocks in general and explain the algebraic model $A(V(G, H))$ for Weyl-finite blocks $V(G, H)$.

Ko Honda (University of California, Los Angeles)

Title: A Morse A_{∞} -model for the higher-dimensional Heegaard Floer homology of cotangent fibers

Abstract: Given a smooth closed n -manifold M and a κ -tuple of basepoints $\mathbf{q} \subset M$, we define a Morse-type A_{∞} -algebra called the based multiloop A_{∞} -algebra and show the equivalence with the higher-dimensional Heegaard Floer A_{∞} -algebra of κ disjoint cotangent fibers of T^*M .

Jianfeng Lin (Tsinghua University)

Title: Some applications of parametrized homotopy theory to diffeomorphism groups of 4-manifolds.

Abstract: In this work, I will present some recent work that uses (parametrized, equivariant) stable homotopy theory to study diffeomorphism groups of 4-manifolds. The idea is to study the Seiberg-Witten equations on a smooth 4-manifold bundle $X \rightarrow E \rightarrow B$ with base B . Using the finite dimensional approximation technique of Bauer-Furuta, one obtains an equivariant map between two Thom spectra. Then one deduce nontrivial topological applications about the bundle E .

Sihao Ma (University of California, Los Angeles)

Title: $RO(C_2)$ -graded Hurewicz images and C_2 -equivariant Adams differentials

Abstract: We determine the $RO(C_2)$ -graded Hurewicz images of several C_2 -equivariant theories. Surprisingly, the answer is closely tied to the problem of vector fields on spheres. Moreover, in every filtration of the genuine C_2 -equivariant Adams spectral sequence and every positive filtration of the R -motivic Adams spectral sequence, we exhibit classes supporting nonzero differentials of arbitrary length. This is based on works with Guo, Kong, Li, Lu, Shi, Wu, Xu, Yang, and Zhang.

John Palmieri (University of Washington)

Title: Toward Quillen stratification for the odd primary Steenrod algebra

Abstract: The mod 2 Steenrod algebra satisfies a theorem (1999) which is a direct analog of Quillen stratification for the cohomology of compact Lie groups. We will present some work in progress on Quillen stratification for the polynomial part of the odd primary Steenrod algebra, in particular when $p=3$ or for certain families of sub-Hopf algebras of the Steenrod algebra.

Piotr Pstrągowski (University of Washington)

Title: The even filtration and algebraic K-theory

Abstract: The even filtration, introduced by Hahn-Raksit-Wilson, is a canonical filtration attached to a commutative ring spectrum which measures its failure to have homotopy groups concentrated in even degrees. Despite its extremely simple definition, the even filtration recovers many geometrically and arithmetically important constructions, such as the Adams-Novikov filtration of the sphere or the various motivic filtrations on topological Hochschild homology and its variants. A conjecture of Robert Burklund and Achim Krause predicts that the when applied to ℓ -adic algebraic K-theory of a field, the even filtration should recover the motivic filtration of Voevodsky, relating the concept of evenness to algebraic cycles. In this talk, I will talk about a proof of this conjecture for global and local fields.

Birgit Richter (University of Hamburg)

Title: Galois and separable extensions of Tambara functors.

Abstract: We will explain how to transfer the notions of separability and Galois extensions from ordinary algebra to equivariant algebra. The definition of separability of Tambara functors is a straightforward generalization. We show that the Burnside Tambara functor is separably closed. The notion of Galois extensions of Tambara functors is closely modelled on the one for commutative rings. We prove that Galois extensions are separable and we show how to interpret Nullstellensatzian objects in the category of Tambara functors in terms of Galois extensions.

Yang Su (Chinese Academy of Sciences)

Title: The group of self-equivalences of homology CP^3 's

Abstract: We computed the group of homotopy equivalences of simply-connected homology CP^3 's. The method is a combination of homotopy theory and surgery theory. This completes the classical result of Yamaguchi from 40 years ago. This is a joint work with Matthias Kreck and Shengye Zhu.

Eunice Sukarto (Harvard University / University of California, Los Angeles)

Title: Power operations modulo Lubin-Tate parameters

Abstract: Power operations provide an algebraic approach to understanding E_∞ -rings. In the chromatic setting, we consider subquotients of power operations in Morava E -theory modulo sequences of Lubin-Tate parameters and show that they are Koszul of decreasing length as we quotient out by more parameters. We show that at the prime 2, there are cofiber sequences relating these subquotients, which allows an inductive understanding of the structure of operations. We use this to gain insight into the E -theory of configuration spaces on $\mathbb{R}^n$, equivalently, of free E_n -

algebras on spheres. In particular, we inductively show that certain Tor groups over the algebra of power operations vanish in nonzero degrees. These Tor groups are the linearization of the E2-page of a bar spectral sequence converging to the graded E-cohomology of configuration spaces on $\mathbb{R}^n$. This is joint work with Andrew Senger.

Luya Wang (Institute for Advanced Study)

Title: Stabilization of symplectic structures

Abstract: In symplectic geometry, stabilization is defined as taking a product with the standard symplectic two-sphere. In general, we do not understand how much information about a symplectic manifold is preserved under stabilization. In light of this, Donaldson conjectured a relationship between smooth structures of symplectic manifolds in dimension four and their symplectic stabilizations in dimension six. I will discuss some recent joint work with Amanda Hirschi on this conjecture. In particular, I will give examples in which symplectic stabilizations retain more information than the smooth structures, and discuss when stabilizations determine smooth invariants of the underlying four-manifolds.

Shangjie Zhang (University of California, San Diego / University of Washington)

Title: The Yang–Conner–Floyd index and equivariant Mahowald invariants

Abstract: In his series of annals papers, Chung-Tao Yang defines several indices on free C_2 spaces and generalizes the classical Borsuk–Ulam theorem. Subsequent studies of Yang's index include Conner–Floyd's computation of indices of the Stiefel manifold and the real projective spaces, and generalizations to spaces with other type of equivariance. This talk establishes a connection of the Yang–Conner–Floyd's index with the equivariant Mahowald invariant, an invariant defined on the $RO(G)$ -graded equivariant stable stems, studied recently by Hopkins–Lin–Shi–Xu in their work on the intersection form of spin 4-manifolds. In particular, we compute the C_p -equivariant Mahowald invariant for some families of Euler classes. This gives the Yang–Conner–Floyd's index of the lens spaces $(BC_{2^n})^{2m-1}$. As an application, we are able to describe the reduced ring structure of certain $RO(C_4)$ and $RO(C_8)$ -graded equivariant stable stems.

Yu Zhang (Tianjin University)

Title: Computer-Assisted Computations of the Adams Spectral Sequence E2-Page

Abstract: Large-scale computer calculations are playing an increasingly important role in stable homotopy theory. A landmark example is the recent work of Lin, Wang, and Xu on the Kervaire invariant problem, which relied heavily on Weinan Lin's program for computing the Adams spectral sequence at the prime 2. We extend this computational approach to odd primes. By developing new algorithms tailored to the more complex structure of the odd-primary Steenrod algebra, our program achieves significant improvements in efficiency. This has enabled us to completely determine the algebra structure of the E2-page in a large range. Our results establish a foundational computational resource for future investigations in odd-primary stable homotopy theory. This is joint work in progress with Weinan Lin.

Zhengyi Zhou (Chinese Academy of Sciences)

Title: Algebraic planar torsion in contact manifolds.

Abstract: This talk explains how functoriality with respect to Maurer–Cartan deformations arises in symplectic field theory. Using these structures, I will establish three main results: (1) for any integer $k > 0$, there exist infinitely many contact manifolds of dimensions at least 5 with algebraic planar torsion k that are weakly fillable but not strongly fillable, confirming a conjecture of Latschev and Wendl; (2) tight contact manifolds that are not weakly fillable abound in all dimensions at least 5; and (3) all known contact manifolds in dimension five and higher that fail to be weakly or strongly fillable are observed to possess algebraic planar torsion.

Accommodation



Speakers

Speakers will stay at:

Zhongguanyuan Global Village PKU

Address: No. 126 Zhongguancun North Street, Haidian District, Beijing

Funded Participants

Funded participants will stay at:

FX Hotel Beijing Zhongguancun

Address: No. 68 North 4th Ring West Road, south of Haidian Bridge, Haidian District, Beijing 100080, China

Reimbursement Note

Participants who need reimbursement should keep the hotel folio or payment receipt and the official tax invoice, known as a fapiao (发票).

Meals and Dining



Workshop Meals

- Lunch: Buffet lunch at the Western Restaurant of Shaoyuan (勺园西餐厅).
- Dinner: No group dinner will be arranged during the workshop.

Dining Inside Campus

Most restaurants on campus are open only to students. The following restaurants and cafes are generally open to the public:

- Chinese Restaurant of Shaoyuan (勺园中餐厅)
- Western Restaurant of Shaoyuan (勺园西餐厅)
- 3W Coffee
- Paradise Coffee
- Faculty's House (教师之家). Please note that you may need to be accompanied by a faculty member or postdoc.
- Food trucks on campus

Dining Outside Campus

- Restaurants are available in or near the hotels.
- Changchunyuan (畅春园) area: many restaurants are located outside the Small West Gate (小西门).
- Zhongguancun Art park(大融城) area: A food court just one stop away on Subway Line 4.
- Haidianhuangzhuang (海淀黄庄), Wudaokou (五道口), and Suzhoujie (苏州街): these areas have many restaurants and shopping malls and are about 30 minutes on foot from campus.
- Sanlitun (三里屯) and Nanluoguxiang (南锣鼓巷): these areas are recommended for visitors who would like to try some of Beijing's well-known restaurants, dishes, cafes, pubs, and bars. Public transport or taxi is recommended.

Campus Entry



All participants should carry a valid ID document when entering campus, such as an ID card, passport. Participants should enter Peking University through the **Southeast Gate (东南门)** and present the registered ID document at the gate.

The organizing committee will arrange daily campus-entry reservations for registered participants, with one morning entry and one afternoon entry each day. Please avoid leaving and re-entering campus multiple times on the same day whenever possible.

Directions

The closest subway station for the workshop area is Peking University East Gate (北京大学东门) on Subway Line 4. Travel times and fares below are estimates and may vary with traffic, weather, crowding, and luggage.

From Beijing Capital International Airport (PEK)

Taxi: About 1-2 hours, depending on arrival time and traffic. Estimated fare: 100-150 RMB.

Metro: Take the Capital Airport Express to Sanyuanqiao (三元桥), transfer to Subway Line 10 counter-clockwise to Haidian Huangzhuang (海淀黄庄), then transfer to Subway Line 4 northbound to Peking University East Gate (北京大学东门). Estimated travel time: about 1.5 hours. Estimated fare: about 30 RMB.

From Beijing Daxing International Airport (PKX)

Taxi: About 1.5-2 hours, depending on arrival time and traffic. Estimated fare: 300-400 RMB.

Metro: Take the Daxing Airport Express to Caoqiao (草桥), transfer to Subway Line 19 northbound to Mudanyuan (牡丹园), transfer to Subway Line 10 counter-clockwise to Haidian Huangzhuang (海淀黄庄), then transfer to Subway Line 4 northbound to Peking University East Gate (北京大学东门). Estimated travel time: about 1.5 hours. Estimated fare: about 40 RMB.

From Beijing South Railway Station

Taxi: About 1 hour. Estimated fare: about 100 RMB.

Metro: Take Subway Line 4 northbound directly to Peking University East Gate (北京大学东门). Estimated travel time: about 40 minutes. Estimated fare: about 5 RMB.

