Young Topologists Meeting

A Marcus Wallenberg Symposium

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The organizers

Eric Ahlqvist
Hadrien Espic
Magnus Carlson
Matthias Grey
Oliver Gäfvert
Petra Poklukar
Bashar Saleh
Ben Ward
Stephanie Ziegenhagen

1 Schedule

Monday July 3^{rd}

Time	Lecture Hall D1	Lecture Hall D2
8:30-9:00	Registration	
9:00-10:00	Brooke Shipley: *Lecture 1*	
	Fika (= coffee break)	
10:30-11:00	Lauren Bandklayder - *A proof of the Dold-Thom theorem from factorization homology.*	Alyson Bittner - *Spaces with complexity one.*
11:15-11:45	Piotr Pstragowski - *Moduli of Pi-algebras.*	David Recio-Mitter - *Topological complexity of subgroups of the braid groups.*
12:00-12:30	Stephen Nand-Lal - *Basepoints for stratified spaces.*	
	Lunch	
14:00-15:00	Benson Farb: *Lecture 1*	
	Fika	
15:30-16:00	Arthur Soulié - *The Long-Moody construction and polynomial functors.*	Rex Cheung - *Smooth structures on the 7-sphere.*
16:15-16:45	David Mehrle - *The Eckmann-Hilton property in braided monoidal 2-categories.*	Dominik Wrazidlo - *Detecting exotic smooth structures on spheres via indefinite fold singularities.*
17:00-17:30	Thomas Wasserman - *A reduced tensor product of braided fusion categories.*	Manuel Krannich - *On the cohomology of moduli spaces of manifolds connect summed with an exotic sphere.*

Welcome Party: 18:00 at SU-Brunnsviken

Tuesday July 4^{th}

Time	**Lecture Hall D1**	**Lecture Hall D2**
9:00-10:00	Benson Farb: *Lecture 2*	
	Fika	
10:30-11:00	Peter Patzt - *Representation stability for filtrations of Torelli groups.*	Ciaran Corvan - *Spectra and projective spaces in homotopy theory.*
11:15-11:45	Daniel Lütgehetmann - *Configuration spaces of graphs.*	Azez Kharouf - *Higher Toda brackets.*
12:00-12:30	Philip Tosteson - *Stability in the cohomology of singular configuration spaces.*	Yasuhiko Asao - *Loop homology of some global quotient orbifolds.*
	Lunch	
14:00-15:00	Brooke Shipley: *Lecture 2*	
	Fika	
15:30-16:00	Alice Hedenlund - *The Tate spectral sequence for compact Lie groups.*	Ruizhi Huang - *Cancellation and homotopy rigidity of classic functors.*
16:15-16:45	Clover May - $RO(G)$*-graded cohomology.*	David Mendez - *Homotopically rigid Sullivan algebras and its applications.*
17:00-17:30	Jack Davies - *Global homotopy theory - a unified approach to equivariance.*	Hatice Çoban - *An* n*-dimensional manifold with no real projective structure.*
17:45-18:15	Jay Shah - *The theory of spectral Mackey functors.*	

Wednesday July 5^{th}

Time	**Lecture Hall D1**	**Lecture Hall D2**
9:00-10:00	Brooke Shipley: *Lecture 3*	
	Fika	
10:30-11:00	Veryovkin Yakov - *Pontryagin algebras of some moment-angle complexes.*	Daniel Robert-Nicoud - *Representation of the deformation* ∞*-groupoid.*
11:15-11:45	Abigail Linton - *Massey products in toric topology.*	Alejo Lopez-Avila - *Monadic Lie algebras.*
12:00-12:30	Mariam Pirashvili - *Comparison of symmetric cohomology with classical cohomology.*	Robin Frankhuizen - A_∞ *resolutions and the Golod property.*

Afternoon: Conference Outing

Thursday July 6^{th}

Time	**Lecture Hall D1**	**Lecture Hall D2**
9:00-10:00	Benson Farb: *Lecture 3*	
	Fika	
10:30-11:00	Anna Parlak - *Roots in the mapping class group of a nonorientable surface.*	Alice Kwon - *Angle structures on hyperbolic 3-manifolds.*
11:15-11:45	Jens Jakob Kjaer - *Cooperadic structure on the bar construction of a spectral operad.*	Daniel Fauser - *Simplicial volume and amenable glueings.*
12:00-12:30	Najib Idrissi - *The Lambrechts–Stanley model of configuration spaces.*	Simon Naarmann - *A spectral sequence for large-scale spaces.*
	Lunch	
14:00-15:00	Brooke Shipley: *Lecture 4*	
	Fika	
15:30-16:00	Shun Wakatsuki - *String topology on rational Gorenstein spaces.*	Nevena Palić -*On the oriented matroid Grassmannians.*
16:15-16:45	Surya Raghavendran - *Khovanov homology from supersymmetric field theory.*	J. D. Quigley - *The motivic Mahowald invariant.*
17:00-17:30	Tse Leung So - *Homotopy types of gauge groups over 4-manifolds.*	Lior Yanovski - *The l-adic analyticity of Morava-Euler characteristics and (generalized) homotopy cardinality.*
17:45-18:15	Jun Yoshida - *On cobordisms of dimension 2 with strings.*	

Conference Dinner: Peppes Kök 19:00

Friday July 7^{th}

Time	**Lecture Hall D1**	**Lecture Hall D2**
9:00-10:00	Benson Farb: *Lecture 4*	
	Fika	
10:30-11:00	Cynthia Lester - *The canonical Grothendieck topology.*	Barbara Giunti - *Topology and data analysis: an introduction to persistent homology.*
11:15-11:45	Andreas Holmstrom - *Tannakian symbols, part I.*	Tegan Emerson - *TBA*
12:00-12:30	Torstein Vik - *Tannakian symbols, part II.*	Kristian Alfsvåg - *A brief overview of homotopy type theory.*

2 Abstracts

2.1 Mini-courses

Benson Farb (University of Chicago)

Title: Topology interacting with number theory, representation theory and algebraic geometry.

Abstract: In these 4 lectures I hope to exhibit algebraic topology not as an isolated topic, but as a powerful viewpoint that is part of a rich and beautiful circle of ideas. In particular I will describe some connections to the classical theory of algebraic functions, to representation theory, to algebraic geometry and to number theory.

Lecture 1: *Braids, polynomials and Hilbert's (still open) 13th problem from a topological point of view.*

There are still many fundamental open questions about polynomials, including Hilbert's 13th problem (widely believed (incorrectly) to be solved in 1957). In this talk I will explain the powerful point-of-view on such problems provided by topology. The topology of the space $P(d)$ of monic, degree d, square-free polynomials is a central object here; it still has many mysteries to reveal. I will explain the close connections of $P(d)$ with braid groups, algebraic functions, hyperplane complements, discriminants, and the cohomology of all of these objects.

Lecture 2: *Representation stability and FI-modules.*

Many spaces or groups X_n have nontrivial automorphism groups G_n. In such cases, X_n almost never satisfies homological stability. I will explain the theory of representation stability and FI-modules, which gives a precise sense in which $H_i(X_n)$ does stabilize, as a G_n-representation. This is a very active area of current research, with ideas coming in from (and out to) combinatorics, topology, arithmetic groups, geometric group theory, number theory, representation theory, and more.

Lecture 3: *Point counting for topologists.*

In this lecture I will give a whirlwind tour of the amazing dictionary (proposed by Weil, built by Grothendieck, Artin, Deligne and many others) between the complex points of a variety and its points over a finite field. I will explain some very new entries in this dictionary, coming from homological stability and representation stability. I will also describe some open problems and new (and old) examples in topology that arise from this viewpoint.

Lecture 4: *How to make predictions in topology using number theory.*

In this talk I will tell the story of how Melanie Wood, Jesse Wolfson and I were led to discover some amazing coincidences in topology purely by analogy with some classical analytic number theory. These coincidences are given in terms of a new topological concept: the "homological density" of one space in another. We have no explanation as to why these topological predictions end up being true. I will also explain why the following question is not completely crazy: why is the Riemann zeta function evaluated at $n + 1$ like the 2-fold loop space of projective n-space?

Brooke Shipley (University of Illinois, Chicago)

Title: The equivalence of differential graded modules and HZ-module spectra, applications, and generalizations.

Abstract: This sequence of lectures will explore the connections between the differential graded world and the spectral world. There will first be a brief introduction to model categories, stable homotopy, and symmetric spectra. Then we will discuss the equivalence between the homotopy theories of HZ-module (respectively, algebra) spectra and of differential graded modules (respectively, algebras or DGAs) where HZ here is the Eilenberg-Mac Lane spectrum associated with ordinary homology. We will then use this comparison to develop algebraic models of rational (equivariant) stable homotopy theories and to define topological equivalences of DGAs. In both of these applications we will discuss current on-going work; in the latter case, this uses a variant of Goerss-Hopkins

obstruction theory to compute topological equivalences. As time permits we will also discuss extensions of the original comparison to the commutative (or E_∞) case and to co-modules and co-algebras.

2.2 Talks by Participants

1. Kristian Alfsvåg (University of Bergen)

   Title A brief overview of homotopy type theory.

   Abstract Type theory is an alternative to set theory as the foundations to mathematics, and it is well suited for computer proof assistants. Using a proof assistant one can implement definitions and proofs as computer code, and formally verify that a proof is correct. The objects in type theory are types. Typically, types have been thought of as sets or propositions, where a proof of a proposition corresponds to an element of a set.

   Homotopy type theory emerged from Voevodsky's addition of the univalence axiom, which states that if types are equivalent, then they are equal. This opens up interpreting types not as just sets or propositions, but also as spaces, where equality of elements correspond to paths between them. This is an entirely new perspective on type theory, and it has opened up new and exciting opportunities. It has also allowed topologists to enter the field of computer science.

   We will try to give a brief overview of homotopy type theory for a topologist with no prior knowledge. If time, we will also say a few words about our current work.

2. Yasuhiko Asao (Tokyo University)

   Title Loop homology of some global quotient orbifolds.

   Abstract Let LX be the function space $Map(S^1, X)$ for a topological space X. The loop homology of X is the homology group $H_*(LX)$ equipped with some algebraic structure defined by Chas- Sullivan, which is called string topology. Lupercio, Uribe and Xicoténcatl extended the framework of string topology to global quotient orbifolds. We determine the ring structure of the loop homology of some global quotient orbifolds. We can compute by our theorem the loop homology ring with suitable coefficients of the global quotient orbifolds of the form $[M/G]$ for M being some kinds of homogeneous manifolds, and G being a finte subgroup of a connected topological group $\mathcal{G}$ acting on M. It is shown that these homology rings split into the tensor product of the loop homology ring of the manifold $\mathbb{H}_*(LM)$ and that of the classifying space of the finite group, which coincides with the center of the group ring $Z(k[G])$.

3. Lauren Bandklayder (Northwestern University)

   Title A proof of the Dold-Thom theorem from factorization homology.

   Abstract The Dold-Thom theorem is a classical result in algebraic topology relating homotopy and homology. It states that for a nice, based topological space M, there is an isomorphism between the homotopy groups of the infinite symmetric product of M and the homology groups of M itself: $\pi_*(Sym(M; A)) \cong \tilde{H}_*(M; A)$.

   The crux of most known proofs of this is to check a certain map is a quasi-fibration. This is a bit of a technical digression, and it is our goal in this talk to present a more direct proof which does not require any such fact.

4. Alyson Bittner (University of Buffalo)

   Title Spaces with complexity one.

   Abstract The inductive construction of a CW-complex builds the space out of spheres. This process can be generalized to build A-cellular spaces out of some fixed space A. Given such a construction, we can ask if it is the most efficient construction in the sense that it requires the least ordinal number of steps to build the space out of copies of A, called the A-complexity. With certain assumptions on A, every space has A-complexity less than or equal to one. We will discuss the properties and significance of such spaces A with the use of algebraic theories.

5. Rex Cheung (Peking University)

   Title Smooth structures on the 7-sphere.

   Abstract Milnor established the existence of distinct smooth structures on the 7-sphere. We will discuss as much of his proof as time permits.

6. Hatice Çoban (Middle East Technical University)

   Title An n-dimensional manifold with no real projective structure.

   Abstract It is an important question whether it is possible to put a geometry on a given manifold or not. Cooper and Goldman gave an example of a 3-dimensional manifold not admitting a real projective structure and this is the first known example. By generalizing their work, we construct a manifold M^n, for any $n \geq 4$ with no real projective structure.

7. Ciaran Corvan (Queen's University Belfast)

   Title Spectra and projective spaces in homotopy theory.

   Abstract A spectrum is, in essence, a sequence of topological spaces $(X_n)_{n\in\mathbb{N}}$ together with structure maps from the so-called suspension of the n^{th} space to the $n+1^{\text{st}}$ space. In this talk I will talk about a variant of spectra in which we have two structure maps. I will outline how they are related to sheaves on the projective line.

8. Jack Davies (Universität Bonn)

   Title Global homotopy theory - a unified approach to equivariance.

   Abstract Equivariant stable homotopy theory is a powerful area of topology, as demonstrated by Hill, Hopkins and Ravenel's proof of the Kervaire invariant 1 problem. Whereas in equivariant homotopy theory one studies a single group G and the associated category of orthogonal G-spectra as a model for G-stable homotopy types, in global homotopy theory we study orthogonal spectra which carry a compatible G-homotopy type for each compact Lie group G simultaneously.

   The construction of a global model structure on the category of orthogonal spectra is simple to describe, and constructing a G-spectrum from a non-equivariant spectrum is essentially trivial, however the algebraic structure that naturally falls out is very interesting, and this new global homotopy language seems to better express some natural problems in equivariant stable homotopy theory.

   A brief overview of equivariant stable homotopy theory and global homotopy theory will be given, with some examples and motivation why we should study these objects.

9. Tegan Emerson (Colorado State University)

   Title TBA

   Abstract TBA

10. Daniel Fauser (Universität Regensburg)

    Title Simplicial volume and amenable glueings.

    Abstract Simplicial volume is a homotopy invariant for oriented closed connected manifolds introduced by Gromov. Roughly speaking, simplicial volume measures the complexity of a given manifold in terms of singular simplices (with real coefficients). Gromov proved that simplicial volume is additive under amenable glueings via bounded cohomology. One can split the proof into two parts: Gromov's Equivalence Theorem and the uniform boundary condition by Matsumoto and Morita. In the talk I will introduce simplicial volume and give an alternative proof of the second part of Gromov's Additivity Theorem using geometric Følner arguments instead of bounded cohomology. This is joint work with Clara Löh.

11. Robin Frankhuizen (University of Southampton)

    Title A_∞ resolutions and the Golod property.

    Abstract A monomial ring R is said to be Golod if all Massey products on Koszul homology vanish. In this talk we present a new approach to this problem using A_∞-algebras. We construct an A_∞-algebra structure on the minimal free resolution of R in case R is rooted. This allows us to show that for rooted R, Golodness is equivalent to triviality of the product on Koszul homology. If time permits, we give some indication how this approach can be extended to general R using algebraic Morse theory.

12. Barbara Giunti (Università di Pavia)

    Title Topology and data analysis: an introduction to persistent homology.

    Abstract Being able to handle big data sets, and to extract information from them, is one of the challenges of the scientific world. A growing approach is the use of topological features to achieve this goal. With this idea in mind, in this talk, I will introduce the persistent topology of data. Persistent homology and the related barcode provide a tool to recover topological properties from a point cloud. A simplicial complex structure on the points is needed to define the persistent homology of a given data set. There are several possibilities to do that, and I will explain the most applied. Then, I will define the persistent homology and its algebraic characterization: the barcodes, giving some examples.

13. Alice Hedenlund (University of Oslo)

    Title The Tate spectral sequence for compact Lie groups.

    Abstract The Tate spectral sequence is a spectral sequence that calculates the homotopy groups of the Tate construction of a G-spectrum for a finite group G. This is an expository talk on the subject where we sketch two different constructions of this spectral sequence: the Greenlees-May construction and Hesselholt-Madsen construction. We also discuss a possible generalization of the Tate spectral sequence to compact Lie groups.

14. Andreas Holmstrom (Fagerlia vgs, Ålesund)

    Title Tannakian symbols, part I.

    Abstract Lambda-rings are algebraic structures appearing naturally in K-theory, homotopy theory and representation theory. We present a new approach to explicit computations in lambda-rings, with some applications to number theory.

15. Ruizhi Huang (National University of Singapore)

    Title Cancellation and homotopy rigidity of classic functors.

    Abstract We show that simply connected co-H-spaces and connected H-spaces can be uniquely decomposed into prime factors in the category of pointed p-local spaces of finite type, which may be used to develop a p-local version of Gray's correspondence between homotopy types of prime co-H-spaces and homotopy types of prime H-spaces, and the split fibration which connects them as well. Further, we use the unique decomposition theorem to study the homotopy rigidity problem for classic functors. Among others, we prove that $\Sigma\Omega$ and Ω are homotopy rigid on simply connected p-local co-H-spaces of finite type, and $\Omega\Sigma$ and Σ are homotopy rigid on connected p-local H-spaces of finite type.

16. Najib Idrissi (Université Lille 1)

    Title The Lambrechts–Stanley model of configuration spaces.

    Abstract We prove a conjecture of Lambrechts and Stanley about the homotopy invariance and the definition of models for configuration spaces of (smooth) simply connected manifolds over $\mathbb{R}$. We do this using ideas coming from Kontsevich's proof of the formality of the little disks operads.

17. Azez Kharouf (University of Haifa)

    Title Higher Toda brackets.

    Abstract We describe a theory of Toda brackets of all orders, explain how they are related to rectifying chain complexes in general pointed model categories, and describe in more detail the case of chain complexes.

18. Jens Jakob Kjaer (University of Notre Dame)

    Title Cooperadic structure on the bar construction of a spectral operad.

    Abstract Operads have since their introduction by May in the 70's proven to be an exceptionally useful tool in homotopy theory, from defining power operations to structured ring spectra. Ginzburg and Kapranov introduced the notion of the Koszul dual of an operad. It has been shown that the Koszul dual of the commutative operad is the shifted Lie operad, giving us, amongst many other interesting results, a new way of understanding the famous Quillen equivalences in rational homotopy theory.

    The Koszul dual of a spectral operad $\mathcal{O}$ is in nice cases given by the Spanier-Whitehead dual of its bar construction, $B\mathcal{O}$, this relies on equipping $B\mathcal{O}$ with a cooperadic structure. This was done in a very concrete point-set manner by Ching. A completely different approach using Lurie's ∞-categorical machinery was done by Francis and Gaitsgory. The obvious question is now: do the two cooperadic structures agree?

    I will in this talk sketch the two different approaches, as well as an argument for answering the question in the affirmative. Doing this I hope to make clear of some of the difficulties in comparing concrete point set constructions to objects in infinity categories.

19. Manuel Krannich (University of Copenhagen)

    Title On the cohomology of moduli spaces of manifolds connect summed with an exotic sphere.

    Abstract Restricting diffeomorphisms of a closed n-manifold M to an embedded disc D^n induces a fibration sequence $\mathrm{Diff}(M, D^n) \to \mathrm{Diff}(M) \to \mathrm{Fr}(M)$, where $\mathrm{Fr}(M)$ denotes the frame bundle and $\mathrm{Diff}(M, D^n)$ the group of diffeomorphisms fixing the embedded disc. Connect summing M with an exotic sphere Σ does not affect the homotopy type of the outer terms in the sequence, so one might expect it to be hard to detect the possible exotic nature of $M\#\Sigma$ by means of homotopical properties of its group of diffeomorphisms.

    In this talk, I will present results on the behavior of the cohomology of $B\,\mathrm{Diff}(M)$ when taking the connected sum with an exotic sphere Σ. After constructing explicit examples in low degrees for which the cohomology changes, I will show that for simply connected manifolds of high even dimension, the cohomology in question stays unaffected in a range of degrees after inverting the order of Σ. This uses recent advances in manifold theory by Galatius and Randal-Williams.

20. Alice Kwon (The CUNY Graduate Center)

    Title Angle structures on hyperbolic 3-manifolds.

Abstract A hyperbolic ideal tetrahedron is determined by its three dihedral angles. In the 1990s, Andrew Casson and Igor Rivin discovered a technique for solving Thurston's gluing equations using angle structures on an ideal triangulation for a hyperbolic 3-manifold. Using angle structures the gluing equations separate into a linear part and a non-linear part. The solutions to the linear system of equations form a convex polytope, and the solutions to the non-linear part is a critical point of a certain volume functional on this polytope. This talk will focus on the main theorem that a critical point of the volume functional produces a complete hyperbolic structure. We will illustrate this method on many examples and give some applications.

21. Cynthia Lester (University of Oregon)

Title The canonical Grothendieck topology.

Abstract We are looking at a very particular Grothendieck topology, called the canonical topology, on the categories of topological spaces and R-modules. We wish to look at the characteristics of these sites, motivate their importance and hopefully discuss the categories of sheaves on these sites.

22. Abigail Linton (University of Southampton)

Title Massey products in toric topology.

Abstract Massey products are secondary operations defined on differential graded algebras, such as on the cohomology rings of a topological space. Although difficult to describe, there are a number of applications of Massey products in topology, geometry, algebra and combinatorics. For example, a triple Massey product detects the non-trivial linking in the Borromean rings, which cannot be detected by cup products in cohomology.

Toric topology is the study of spaces arising from m-torus actions on topological spaces, whose orbit spaces have a rich combinatorial structure. A key example of such spaces are moment-angle complexes $\mathcal{Z}_{\mathcal{K}}$, whose T^m-orbit space is a simplicial complex $\mathcal{K}$ on m-vertices. In this talk, I detect Massey products on moment-angle complexes and describe them in combinatorial terms.

23. Alejo Lopez-Avila (University of Osnabrueck)

Title Monadic Lie algebras.

Abstract Lie algebras appeared in geometry as the infinitesimal approximation of a Lie group. They are non-associative algebras over a field where the multiplicative map is given by an alternating bracket which verifies the Jacobi identity. This definition has many generalizations to different contexts: DG-Lie algebras for DG-algebras, super Lie algebras in superalgebra or L_∞ algebras in higher algebra. The Milnor-Moore theorem gives us a criterion to define Lie algebras as algebras for a monadic adjunction. With this motivation, we will give a new definition for Lie algebras in higher category theory as algebras for a monadic adjunction and we will compare it to the others definitions. This is joint work in progress with Hadrian Heine.

24. Daniel Lütgehetmann (Berlin Mathematical School)

Title Configuration spaces of graphs.

Abstract The configuration space of a finite number of particles in a topological space is an object of interest in many areas of mathematics, in particular if the ambient space is a manifold. While the geometry of configuration spaces of manifolds is understood quite well, the case of particles in general simplicial complexes remains rather mysterious, even for 1-dimensional complexes. In this talk, I will describe an efficient combinatorial model for configurations of particles in a finite graph, which was first defined by Jacek Świątkowski. Afterwards, I will sketch the other techniques we used to prove torsion-freeness and representation stability of those configuration spaces' homology.

25. Clover May (University of Oregon)

Title $RO(G)$-graded cohomology.

Abstract For a finite group G, any CW complex X with a cellular G-action can be given the structure of a G-CW complex. However, it is often difficult to compute the $RO(G)$-graded cohomology of X, even when X has a simple G-CW structure. For $G = \mathbb{Z}/2$, I will present results classifying the $RO(G)$-graded cohomology of G-CW complexes using coefficients in the constant Mackey functor $\underline{\mathbb{Z}/2}$. These results can be quite useful for computations.

26. David Mehrle (Cornell University)

Title The Eckmann-Hilton property in braided monoidal 2-categories.

Abstract The Eckmann-Hilton argument is the reason that higher homotopy groups are abelian. At its most basic, it states that if a set A has two binary operations that commute with each other, then the two operations are the same and moreover commutative. This principle can be generalized to an object with two compatible monoid structures in a braided monoidal category, or even further to monoidal category structures on a category (due to Joyal and Street). We investigate the Eckmann-Hilton argument in braided monoidal 2-categories, and give applications.

27. David Mendez (Universidad de Malaga)

Title Homotopically rigid Sullivan algebras and their applications.

Abstract Spaces with trivial groups of homotopy self-equivalences, the so called homotopically rigid spaces, were thought to be quite rare. Kahn thought that such spaces might play a role in some way of decomposing a space. Recently, Costoya and Viruel were able to obtain infinitely many examples of such spaces. However, they all share their level of connectivity, as they are built upon an example of Arkowitz and Lupton.

In this talk we generalise said example, thus obtaining a family of homotopically rigid spaces, showing a level of connectivity as high as desired. Thus, these spaces are not as rare as they were though to be. We also illustrate some applications for the obtained spaces. Reference: C. Costoya, D. Mendez, A. Viruel, Homotopically rigid Sullivan algebras and its applications, preprint, arXiv:1701.03705 [math.AT].

28. Simon Naarmann (Universität Göttingen).

Title A spectral sequence for large-scale spaces.

Abstract Using a topological construction, we give a spectral sequence that computes the K-theory of C*-algebras. As an application, we analyze the Roe algebra of a large-scale space. The spectral sequence takes as input finitely many C*-ideals. I am investigating how to relax these input conditions.

29. Stephen Nand-Lal (University of Liverpool)

Title Basepoints for stratified spaces.

Abstract I will begin this talk by introducing a transferred model category on stratified spaces, allowing a categorical approach to studying the homotopy theory of stratified spaces. This is accomplished by cofibrantly transferring the Joyal model structure on simplicial sets to our category of stratified spaces. By studying the cofibrations and fibrations in the model structure it becomes apparent that choice of the Joyal model structure is the right setting, because it is coherent with previous homotopical approaches to the study of stratified spaces.

There are a number of approaches to basing a stratified space that one may naively hope to use. For example considering the pointed objects in the category of stratified spaces, or to somehow use the poset attached to the stratified space to construct a basing. I will explain why, in reality none of these approaches are satisfactory, along with the notion of a basing for a stratified space that we believe to be correct. There are a number of reasons to believe this is the correct approach; there is an adjunction between stratified suspension and loop space functors, which allows us to construct an $\mathbb{N}$-indexed family of categories that behave analogously to homotopy groups of a connected space.

This is a joint work with my supervisor Jon Woolf.

30. Alon Nissan-Cohen (Hebrew University of Jerusalem)

Title Infinity-categorical Hermitian algebraic K-theory and THH.

Abstract In recent years, Hesselholt and Madsen, and later Dotto, developed Hermitian (i.e. "twisted"-Z/2-equivariant) versions of algebraic K-theory and Topological Hochschild Homology, with a natural equivariant trace map $K \to \mathrm{THH}$. In this talk we present a project for developing a purely infinity-categorical version of this picture, using new machinery from equivariant higher algebra, developed by Barwick et al.

31. Nevena Palić (Freie Universität Berlin)

Title On the oriented matroid Grassmannians.

Abstract The oriented matroid Grassmannian, later also called MacPhersonian, was introduced in 1993 by Robert MacPherson as a combinatorial analogue to the real Grassmann manifold. The MacPhersonian $\mathrm{MacP}(r,n)$ is the order complex of the partially ordered set of all rank r oriented matroids on a labelled set of n elements, ordered by weak maps. It was a crucial ingredient for giving a combinatorial formula for Pontrjagin classes by Gelfand and MacPherson. Moreover, MacPherson constructed a canonical map $\mu : G(r,n) \to \mathrm{MacP}(r,n)$ from the Grassmannian to the oriented matroid Grassmannian. Since then, the main question is whether the map μ is a homotopy equivalence. Some progress towards understanding this map has been made in the literature, but the topology of the MacPhersonian is still unknown.

In this talk some properties of the MacPhersonian will be discussed and main results will be mentioned. This is an ongoing research project.

32. Anna Parlak (University of Gdańsk)

Title Roots in the mapping class group of a nonorientable surface.

Abstract It is well known that the mapping class group $\mathcal{M}(S_g)$ of an orientable surface of genus g is generated by a finite number of Dehn twists. Quite recently Margalit and Schleimer showed that, surprisingly, these elements are not primitive in $\mathcal{M}(S_g)$. They proved that every Dehn twist about a nonseparating circle in $\mathcal{M}(S_{g+1})$, $g \geq 1$, has a root of degree $2g+1$. Their work has been extended by McCullough and Rajeevsarathy who described all n for which the n-th root of a Dehn twist exists, given the genus of a surface.

In the mapping class group $\mathcal{M}(N_g)$ of a nonorientable surface of genus g we can find elements that cannot be expressed as a product of Dehn twists. Additional generators are needed, such as crosscap slides (Y-homeomorphisms) or crosscap transpositions. The purpose of the talk will be to describe joint work with Michał Stukow on roots of crosscap slides, crosscap transpositions and Dehn twists in $\mathcal{M}(N_g)$. I will discuss the existence of roots, their possible degrees and conjugacy classes. I will also sketch the main differences between the orientable and the nonorientable case.

33. Peter Patzt (Copenhagen/Purdue)

Title Representation stability for filtrations of Torelli groups.

Abstract We show finitely generated rational $\mathsf{VIC}_{\mathbb{Q}}$–modules and $\mathsf{SI}_{\mathbb{Q}}$–modules are uniformly representation stable and all their submodules are finitely generated. We use this to prove two conjectures of Church and Farb, which state that the quotients of the lower central series of the Torelli subgroups of $\mathrm{Aut}(F_n)$ and $\mathrm{Mod}(\Sigma_{g,1})$ are uniformly representation stable as sequences of representations of the general linear groups and the symplectic groups, respectively. Furthermore we prove an analogous statement for their Johnson filtrations.

34. Mariam Pirashvili (University of Southampton)

Title Comparison of symmetric cohomology with classical cohomology.

Abstract Let G be a group and M be a G-module. In order to better understand 3-algebras arising in lattice field theory, Staic defined a variant of group cohomology, which he denoted by $HS^*(G,M)$ and called *symmetric cohomology of groups*. There is an obvious natural transformation from the symmetric cohomology to the classical Eilenberg-MacLane cohomology $\alpha^n : HS^n(G,M) \to H^n(G,M), \quad n \geq 0$. α^n is an isomorphism if $n = 0, 1$ and is a monomorphism for $n = 2$. Staic showed that α^2 is an isomorphism if G has no elements of order two. The aim of this talk is to generalise Staic's work in higher dimensions. The main tool used is a new spectral sequence. Among other results, this allows us to show that if G has no elements of order $\leq n$, then $HS^n(G,M) \to H^n(G,M)$ is an isomorphism up to degree n.

35. Piotr Pstragowski (Northwestern University)

Title Moduli of Pi-algebras.

Abstract A Pi-algebra is an algebraic object encoding all of the primary structure present in the homotopy groups of a pointed space. It is a well-studied problem to try to describe the possible realizations of a given Pi-algebra, that is, to describe the possible pointed spaces with prescribed homotopy groups.

The work of Blanc-Dwyer-Goerss gives an inductive description of the moduli space of all such realizations, relating the latter to cohomology of Pi-algebras. I will describe a new, simpler and more conceptual approach to this theory, based on the Grothendieck construction for infinity-categories.

I will introduce all of the needed notions, so that only basic knowledge of homotopy theory is required.

36. J. D. Quigley (University of Notre Dame)

Title The motivic Mahowald invariant.

Abstract The Mahowald (root) invariant is a construction which takes an element $\alpha \in \pi_t^s(S^0)$ in the stable stems and produces a new element $M(\alpha) \in \pi_{t+N}^s(S^0)$, $N > 0$, in a higher stable stem. Computations by Mahowald, Ravenel, Shick, Sadofsky, and Behrens support the conjecture that if α is v_n-periodic, then $M(\alpha)$ is v_n-torsion.

There are at least two types of periodicity in the motivic stable stems. There is v_n-periodicity, which closely mirrors the classical case, and there is w_n-periodicity, which is only visible in the motivic stable stems because $\pi_{**}(S^{0,0})$ contains elements which are not nilpotent. In this talk, I will define a motivic version of the Mahowald invariant. I will show that many classical calculations can be repeated in the motivic setting, and then I will present some evidence that in addition to redshift in the v_n-direction, the motivic Mahowald invariant produces redshift in the w_n-direction.

37. Surya Raghavendran (Perimeter Institute for Theoretical Physics)

Title Khovanov homology from supersymmetric field theory.

Abstract Khovanov homology is a categorification of the Jones polynomial. Following his earlier work on the Jones polynomial, Edward Witten gave a construction of Khovanov homology from considerations in supersymmetric gauge theory. This talk will begin by explaining how several aspects of such theories can be cleanly described homotopically, in the language of derived symplectic geometry. We will then show how a cousin of Witten's construction admits a mathematical description in this language. No physics background will be assumed.

38. David Recio-Mitter (University of Aberdeen)

Title Topological complexity of subgroups of the braid groups.

Abstract Topological complexity (TC) was introduced in the early 2000s by Michael Farber in the context of topological robotics. It is a numerical homotopy invariant of a space which measures the instability of motion planning. Moreover, TC can also be defined for a (discrete) group π, as the TC of its Eilenberg-Mac Lane space K(π,1). In particular the TC of the full braid group B_n is by definition equal to the TC of the unordered configuration space of n points on the plane.

In this talk the TC of groups will be introduced and calculated for some subgroups of the full braid groups, for instance mixed (or coloured) braid groups and congruence subgroups. The methods used in the calculations are algebraic rather than topological. This is joint work with Mark Grant.

39. Daniel Robert-Nicoud (Université Paris 13)

Title Representation of the deformation ∞-groupoid.

Abstract We construct a cosimplicial dg Lie algebra representing (homotopically speaking) the functor sending (complete) dg Lie algebras to their Deligne–Hinich–Getzler ∞-groupoid, a Kan complex encoding the space of Maurer–Cartan elements. We prove that the resulting object has some nice properties. The main tools used are certain new results in the theory of algebraic operads and some simplicial homotopy theory.

40. Jay Shah (MIT)

Title The theory of spectral Mackey functors.

Abstract For a finite group G, the homotopy theory of genuine G-spectra admits a presentation in terms of "spectral Mackey functors" - direct-sum preserving functors from the Burnside category of finite G-sets to spectra. We survey the spectral Mackey functor approach to equivariant stable homotopy theory, paying special attention to multiplicative structure. In particular, we will explain the necessity of considering families of spectral Mackey functors indexed on the orbit category of the group in order to define G-commutative ring spectra. Time permitting, we will also discuss examples beyond that of G-spectra which fall within the same Mackey functor framework.

41. Tse Leung So (University of Southampton)

Title Homotopy types of gauge groups over 4-manifolds.

Abstract Gauge groups originate from physics and they have many applications in physics and mathematics, for example Yang-Mills theory and the classification of 4-dimensional smooth manifolds. Given a Lie group G, a gauge group is defined to be the group of G-equivariant automorphisms of a principal G-bundle fixing its base manifold. In general gauge groups are difficult to calculate. In this talk, I will give a homotopy decomposition method and classify the homotopy types of gauge groups over certain non-simply connected 4-manifolds.

42. Arthur Soulié (Université de Strasbourg, IRMA)

Title The Long-Moody construction and polynomial functors.

Abstract In 2016, Randal-Williams and Wahl proved homological stability with certain twisted coefficients for different families of groups, in particular the one of braid groups. In fact, they obtain the stability for coefficients given by functors satisfying polynomial conditions. We only know few examples of such functors. Among them, we have the functor given by the unreduced Burau representations. In 1994, Long and Moody gave a construction on representations of braid groups which associates a representation of B_n with a representation of B_{n+1}. This construction complexifies in a sense the initial representation: for instance, starting from a dimension one representation, one obtains the unreduced Burau representation. In this talk, I will present this construction from a functorial point of view. I will explain that the construction of Long and Moody defines an endofunctor, called the Long-Moody functor, between a suitable category of functors. Then, after defining strong polynomial functors in this context, I will prove that the Long-Moody functor increases by one the degree of strong polynomiality of a strong polynomial functor. Thus, the Long-Moody construction will provide new examples of twisted coefficients entering in the framework of Randal-Williams and Wahl.

43. Philip Tosteson (University of Michigan)

    Title Stability in the cohomology of singular configuration spaces.

    Abstract Church proved that the cohomology of configuration space of a ≥ 2 dimensional manifold is representation stable. We introduce a spectral sequence converging to the cohomology of configurations in any Hausdorff topological space, and use it to extend his results to spaces that are in some sense ≥ 2 dimensional.

44. Torstein Vik (Fagerlia vgs, Ålesund)

    Title Tannakian symbols, part II.

    Abstract Lambda-rings are algebraic structures appearing naturally in K-theory, homotopy theory and representation theory. We present a new approach to explicit computations in lambda-rings, with some applications to number theory.

45. Shun Wakatsuki (University of Tokyo)

    Title String topology on rational Gorenstein spaces.

    Abstract Chas and Sullivan introduced a new operation, called the loop product, on the homology of the free loop space of a connected closed oriented manifold. Cohen and Godin extended this product to other operations including a coproduct, called the loop coproduct. But Tamanoi showed that the loop coproduct is almost trivial. Then Félix and Thomas generalized these operations to Gorenstein spaces. I will introduce the loop products and coproducts on Gorenstein spaces, and give results on description and triviality by using rational homotopy theory.

46. Thomas Wasserman (University of Oxford)

    Title A reduced tensor product of braided fusion categories.

    Abstract An important algebraic ingredient in studying Topological Quantum Field Theories (TQFTs) in low dimensions is the theory of (braided) fusion categories. In this talk, I will give a short overview of what fusion categories are and how they come up in TQFTs. Then I will proceed to define a particular product between fusion categories and discuss its relevance in TQFT.

47. Dominik Wrazidlo (Heidelberg University)

    Title Detecting exotic smooth structures on spheres via indefinite fold singularities.

Abstract A theorem by Saeki asserts that groups of homotopy spheres of dimension ≥ 6 are canonically isomorphic to cobordism groups of so-called *special generic functions*, i.e. Morse functions with only minima and maxima. We subject special generic functions to an equivalence relation coarser than that of cobordism by also allowing for indefinite fold singularities in a controlled way. Our main result reveals that the information detected by indefinite fold singularities is strongly related to a filtration by subgroups featuring homotopy spheres that can be bounded by cobordisms of prescribed connectedness. As an application of our theorem, we show that indefinite fold lines of middle absolute index are capable of detecting the Kervaire sphere in certain dimensions.

48. Veryovkin Yakov (Moscow State University)

Title Pontryagin algebras of some moment-angle complexes.

Abstract We consider the problem of describing the Pontryagin algebra (loop homology) of moment-angle complexes and manifolds. The moment-angle complex Z_K is a cell complex built of products of polydiscs and tori parametrised by simplices in a finite simplicial complex K. It has a natural torus action and plays an important role in toric topology. In the case when K is a triangulation of a sphere, Z_K is a topological manifold, which has interesting geometric structures. Generators of the Pontryagin algebra $H_*(\Omega Z_K)$ when K is a flag complex have been described in the work of Grbic, Panov, Theriault and Wu. Describing relations is often a difficult problem, even when K has a few vertices. Here we describe these relations in the case when K is the boundary of a pentagon or a hexagon. In this case, it is known that Z_K is a connected sum of products of spheres with two spheres in each product. Therefore $H_*(\Omega Z_K)$ is a one-relator algebra and we describe this one relation explicitly, therefore giving a new homotopy-theoretical proof of McGavran's result. An interesting feature of our relation is that it includes iterated Whitehead products which vanish under the Hurewicz homomorphism. Therefore, the form of this relation cannot be deduced solely from the result of McGavran. This work is supported by the Russian Science Foundation under grant 14-11-00414.

49. Lior Yanovski (Hebrew University of Jerusalem)

Title The l-adic analyticity of Morava-Euler characteristics and (generalized) homotopy cardinality.

Abstract We show that under suitable assumptions, the sequence of Euler characteristics of a pi-finite space with respect to the Morava K-theories of all heights is locally analytic as a function from the natural numbers to l-adic numbers. Moreover, analytic continuation of this function to n=-1 recovers the homotopy cardinality of the space. This transchromatic phenomena which is of interest by itself, can be used to define a numerical invariant which simultaneously generalizes both the Euler characteristic and the homotopy cardinality of a space and posses some of the additivity properties of the former and the multiplicativity of the latter.

50. Jun Yoshida (University of Tokyo)

Title On cobordisms of dimension 2 with strings.

Abstract After Atiyah's formalism of topological quantum field theories (TQFT), the thery of cobordisms is a very important subject in the categorical point of view. In this talk, I will introduce a variant of cobordisms, namely the "nested" version. More precisely, we will consider cobordisms in which another lower dimensional cobordism is embedded. As is the case with ordinary cobordisms, such type of cobordisms form a symmetric monoidal category. We will see the classification of them gives rise to a graphical calculus of some sort of monoidal categories, including symmetric autonomous categories.

3 List of participants

Semen Abramyan	Faculty of Mathematics, Higher School of Economics
Eric Ahlqvist	KTH
Bako Ahmed	SU/KTH
Meru Alagalingam	University of Augsburg
Kristian Alfsvg	University of Bergen
Assar Andersson	University of Luxembourg
Erland Arctaedius	Stockholm University
Yasuhiko Asao	Tokyo University
Evgeny Astashov	Lomonosov Moscow State University
Lauren Bandklayder	Northwestern University
Jannes Bantje	Westfälische Wilhelms-Universität Münster
David Marius Bauer	University of Bonn
Jalal Hatem Bayati	Iraq Baghdad University College of Science for Women Department of mathematics
Andrea Bianchi	Universität Bonn
Alyson Bittner	University at Buffalo
Felix Boes	MPIM / Uni Bonn
Dorin Boger	Harvard
Kaj Börjeson	Stockholm University
Julian Brüggemann	Ruhr-Universität Bochum
Matthew Burfitt	University of Southmapton
Luigi Capitu	University of Regensburg
Louis Carlier	Universitat Autònoma de Barcelona
Jeffrey Carlson	University of Toronto
Magnus Carlson	KTH
Mel Chen	University of Glasgow
Rex Cheung	Peking University
Alessio Cipriani	University of Liverpool
Adrian Clough	U Texas
Hatice Çoban	Middle East Technical University
Ciaran Corvan	Queen's University Belfast
Jacques Darné	Université Lille 1
Jack Davies	Bonn Universität
Sylvain Douteau	LAMFA
Serhii Dovhyi	University of Manitoba
Albertas Dvirnas	Lund University
Yury Elkin	One against a hundred
Tegan Emerson	Colorado State University
Aras Ergus	University of Bonn
Hadrien Espic	Stockholm University
Daniel Fauser	Universität Regensburg
Viktória Földvári	Eötvös Loránd University, Budapest
Dávid Fonyó	Eötvös Loránd University, Budapest
Edoardo Fossati	Scuola Normale Superiore - Pisa
Robin Frankhuizen	University of Southampton
Joseph Frias	George Mason University
Xin Fu	University of Southampton
Nir Gadish	The University of Chicago

Ana Lucía García Pulido	
Robin Gaudreau	McMaster University
Sabri Ghozali	Université Paris 1 Pantheon-Sorbonne
Barbara Giunti	Università di Pavia
Florian Göppl	
Daniel Graves	University of Sheffield
Matthias Grey	Stockholm University
Gillian Grindstaff	The University of Texas at Austin
Alice Hedenlund	University of Oslo
Gard Helle	University of Oslo
Leon Hendrian	University of Bonn
Fabian Henneke	University of Bonn / MPIM Bonn
Thorsten Hertl	University of Göttingen
Renee Hoekzema	University of Oxford
Andreas Holmstrom	Fagerlia vgs, Ålesund
Jan Holz	Ruhr-Universität Bochum
Ruizhi Huang	National University of Singapore
Joshua Hunt	University of Copenhagen
Anders Husebø	University of Bergen
Najib Idrissi	Université Lille 1
Sacha Ikonicoff	Université Paris 7 - Diderot
Jocelyne Ishak	University of Kent
Laura Jakobsson	Aalto University
Alvin Jin	University of California, Santa Cruz
Raymond Jones	University at Buffalo
Sungkyung Kang	University of Oxford
Bastien Karlhofer	University of Bonn
Ramesh Kasilingam	Indian Statistical Institute, Bangalore
Thorben Kastenholz	University of Bonn
Azez Kharouf	University of Haifa
Jens Jakob Kjaer	University of Notre Dame
Dimitar Kodjabachev	University of Sheffield
Johan Konter	Northwestern
Feride Ceren Köse	The University of Texas at Austin
Manuel Krannich	University of Copenhagen
Roman Krutovskiy	National Research University Higher School of Economics
Arun Kumar	Osnabrueck University
Alice Kwon	The CUNY Graduate Center
Brice Le Grignou	Utrecht University
Eon-Kyung Lee	Sejong University
Sang-Jin Lee	Konkuk University
Malte Leip	University of Bonn
Cynthia Lester	University of Oregon
Abigail Linton	University of Southampton
Max Lipton	Cornell University
Mikel Lluvia	Universitat de Barcelona
Robin Loose	Mathematical Institute of the WWU Münster
Daniel Lütgehetmann	Berlin Mathematical School
Tommy Lundemo	University of Bergen

Stavroula Makri	Georg-August-University Göttingen
Clover May	University of Oregon
David Mehrle	Cornell University
David Méndez	Universidad de Malaga
Stefan Mihajlović	Central European University
María José Moreno Silva	Universidad de Santiago de Chile
Lyne Moser	EPFL
Alexander Müller	FU Berlin
Felipe Müller	Heidelberg University, mathematisches Institut
Simon Naarmann	Universitt Göttingen
Csaba Nagy	University of Melbourne
Stephen Nand-Lal	University of Liverpool
Alon Nissan-Cohen	Hebrew University of Jerusalem
Ko Ohashi	Graduate School of Mathematical Sciences, The University of Tokyo
Nevena Palić	Freie Universität Berlin
Anna Parlak	University of Gdańsk
Peter Patzt	Copenhagen/Purdue
Sabrina Pauli	University of Oslo
Stefano Piceghello	University of Bergen
Ilia Pirashvili	
Mariam Pirashvili	University of Southampton
Petra Poklukar	Stockholm University
Luca Pol	University of Sheffield
Nils Prigge	University of Cambridge
Piotr Pstragowski	Northwestern University
Timm von Puttkamer	University of Bonn
James Dizon Quigley	University of Notre Dame
Marko Radovanović	University of Belgrade, Faculty of Mathematics
Surya Raghavendran	Perimeter Institute for Theoretical Physics
Catherine Ray	UChicago
David Recio Mitter	University of Aberdeen
Raphael Reinauer	University of Münster
Daniel Robert-Nicoud	Université Paris 13, Sorbonne Paris Cité
Bashar Saleh	Stockholm University
Axel Sarlin	KTH
Eric Schlarmann	Universität Augsburg
Markus Schmetkamp	University of Münster
Johann Selewa	Stockholm University
Iuliia Semikina	University of Bonn
Jay Shah	MIT
Divya Sharma	WWU Münster
Igor Sikora	Jagiellonian University
Anurag Singh	Indian Institute of Technology(IIT), Kanpur, India
Tse Leung So	University of Southampton
Arthur Soulié	Université de Strasbourg, IRMA
Martin Speirs	University of Copenhagen
Robin Stoll	University of Bonn
Engelbert Suchla	Universität Göttingen
Danny Sugrue	QUB

Sabrina Syed	Universität Osnabrück
Fabio Tanania	The University of Nottingham
Steffen Tillmann	University of Münster
Philip Tosteson	University of Michigan
Paula Verdugo	Universität Osnabrück
Yakov Alexandrovich Veryovkin	Lomonosov Moscow State University
Torstein Vik	Fagerlia vgs
Shun Wakatsuki	Graduate School of Mathematical Sciences, the University of Tokyo
Mengistu Chalchisa Wakjira	
Ben Ward	Stockholm University
Thomas Wasserman	University of Oxford
Benjamin Waßermann	Karlsruhe Institute for Technology (KIT)
Kay Werndli	Universiteit Utrecht
Felix Wierstra	Stockholm University
Jordan Williamson	University of Sheffield
Dominik Johannes Wrazidlo	Heidelberg University
Lior Yanovski	Hebrew University of Jerusalem
Sarah Yeakel	University of Maryland
Seifu Endris Yimer	
Jun Yoshida	The University of Tokyo
Neza Zager Korenjak	University of Texas at Austin
Stephanie Ziegenhagen	KTH Royal Institute of Technology

4 Welcome party, excursions and conference dinner

4.1 Welcome party

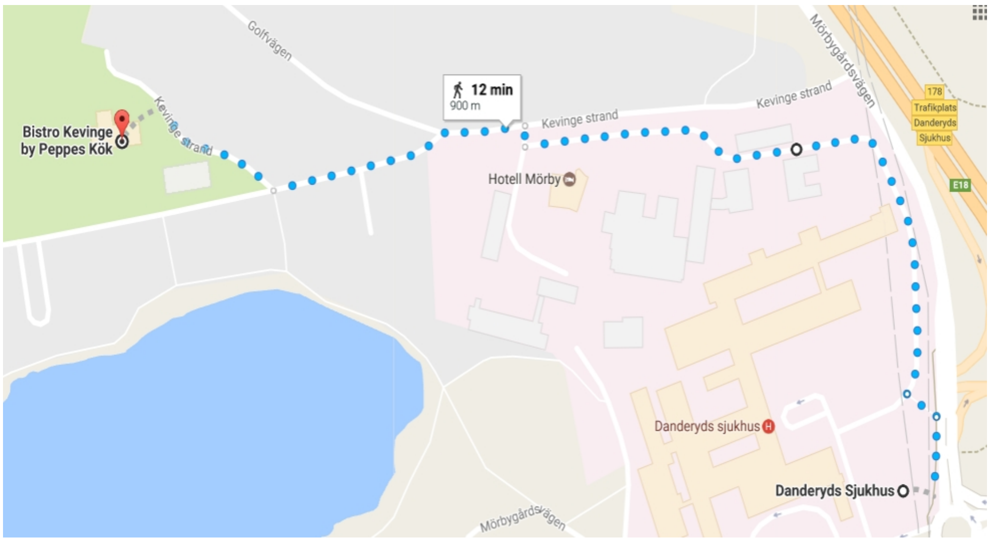
On Monday evening at 18:00 you are invited to a welcome party at Stockholm University. We will provide food for everyone and will sell beer and wine. The party will be at the mathematical department of Stockholm University, which is located at a part of the campus called Kräftriket. If the weather is good we'll meet in front of the Restaurant Kräftan at the lake Brunnsviken. Otherwise the party will be in house 5.
To get to the Math Department of Stockholm University from KTH, you can either walk or take one of the buses 639, 670 or 676 that leave from the middle aisle at the metro station *Tekniska Högskolan*, then get off at *Albano* and find the department on the other side of the street. Follow the signs leading to the restaurant Kräftan or to house 5 depending on the weather.

4.2 Excursions

On Wednesday afternoon you have the possibility to explore Stockholm. There will be several groups offering different activities, and you will have a chance to sign up for the excursion of your choice during conference week.

4.3 Conference dinner

If you registered for the conference dinner you are invited to join us on Thursday evening at Peppes Kök, Kevinge Strand 22, in Danderyd at 19:00. To get from KTH to Peppes Kök, take metro line 14 from *Tekniska Högskolan* to *Danderyds Sjukhus* and walk from there for a kilometer (see the map below). This journey should take approximately half an hour.



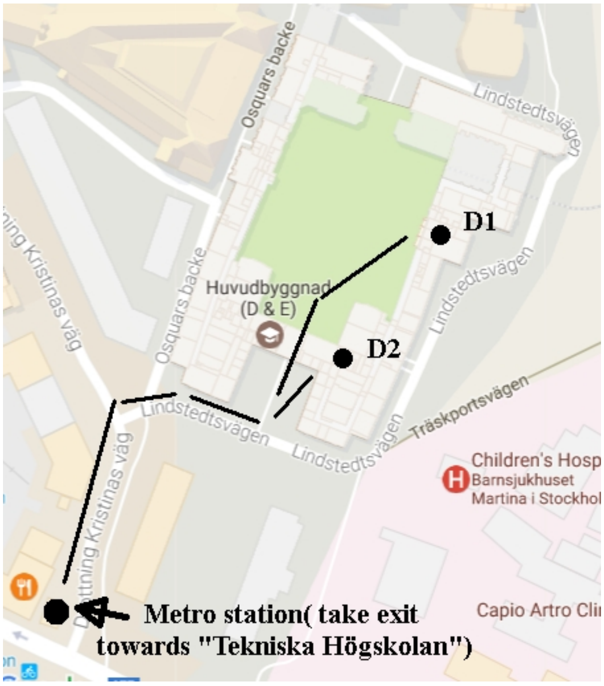
5 Miscellaneous

5.1 Wifi access

Eduroam is available at Stockholm University and at the KTH campus. If that doesn't work for you, you can use the conference wifi network at KTH. Select the network *KTH-Conference* and use the password *xazupape*.

5.2 Getting to KTH and Lecture Halls

The talks will be at KTH in the rooms D1 and D2. To get to KTH from the central station, take Metro Line 14 towards *Mörby Centrum* and get off three stations later at the stop *Tekniska Högskolan*. From there it is a 5 minute walk to the lecture halls.
Lecture hall D1 is located on the top floor of Lindstedtsvägen 17 at KTH. Lecture hall D2 is on floor 3 of Lindstedtsvägen 5 at KTH. We meet close to lecture hall D2, in front of room D36, for the coffee breaks. Here is a map showing how to get from the metro station *Tekniska Högskolan* to the lecture halls:

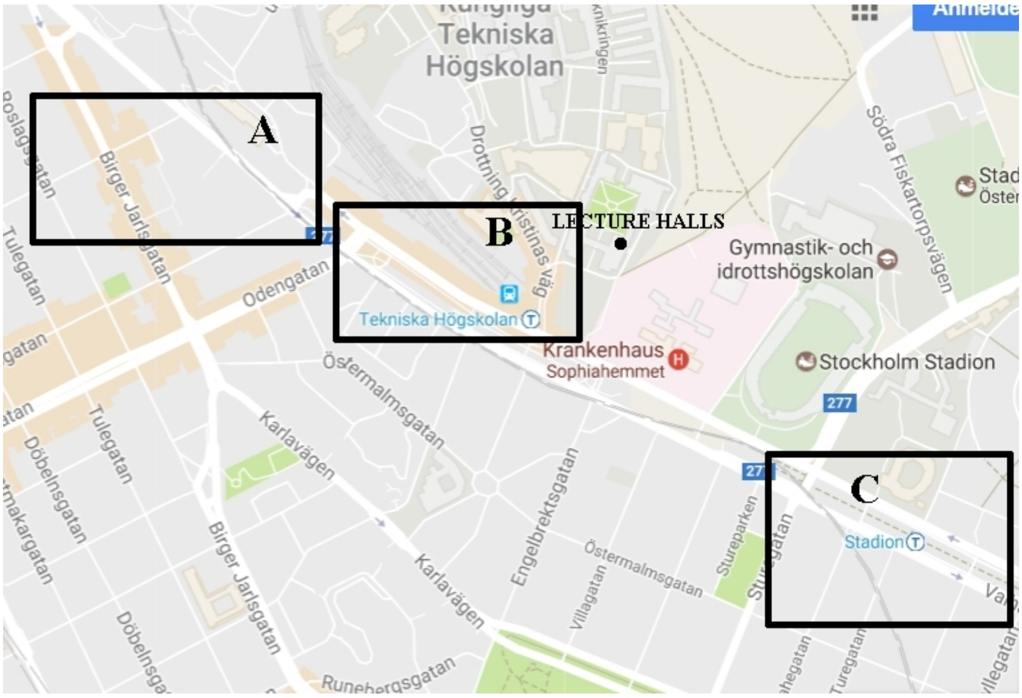


5.3 Public transport

Stockholm has a well-functioning public transport system. You can buy tickets at any metro station, note however that it is not possible to buy tickets when boarding a bus. The website of the public transport company is sl.se. Single tickets are valid for 75 minutes and cost 43 SEK. There are no zones, the ticket is valid for the whole SL network. You can either buy a paper ticket or buy a *SL Access card* for 20 SEK and load the ticket onto the card. If you want to use public transport more often it is probably better to buy a travelcard. For this you have to buy a *SL Access card* for 20 SEK and then can choose between a 24-hour ticket (120 SEK), a 72 hour ticket (240 SEK) and a 7-day ticket (315 SEK). Again there are no zones, the ticket is valid for the whole SL network.

5.4 Lunch restaurants

Unfortunately the university restaurants will be closed during the summer, but there are many lunch options around KTH. A selection is shown in the following maps. The restaurants in area B are rather basic and affordable, while the restaurants in area C are a bit more expensive in comparison.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Högskolan
Tekniska Högskolan
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Sophiahemmet
Stockholm Stadion
Stadion
Birger Jarlsgatan
Tulegatan
Odengatan
Östermalmsgatan
Karlavägen
Döbelnsgatan
Engelbrektsgatan
Villagatan
Stureparken
Södra Fiskartorpsvägen
Runebergsgatan
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Evidensia Djurkliniken
Roslagstull
Sushi Zen AB
Elite Hotel Arcadia
Stockholm
Frick & Son
Fishing Store
Berras Sportfiske
Prime Burger
Sibiriens Soppkök
Dim Mak Raw Bar
Due Fratelli
Ramen Ki-Mama
Valhallavägen
Birger Jarlsgatan
Freigatan
Körsbärsvägen
Surbrunnsgatan
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Dino Pizzeria
Nymble - Tekniska
Högskolans Kårhus
Drottning Kristinas väg
Valhallavägen
Gårdinger
Restaurangkonsult AB
Ashima Sushi
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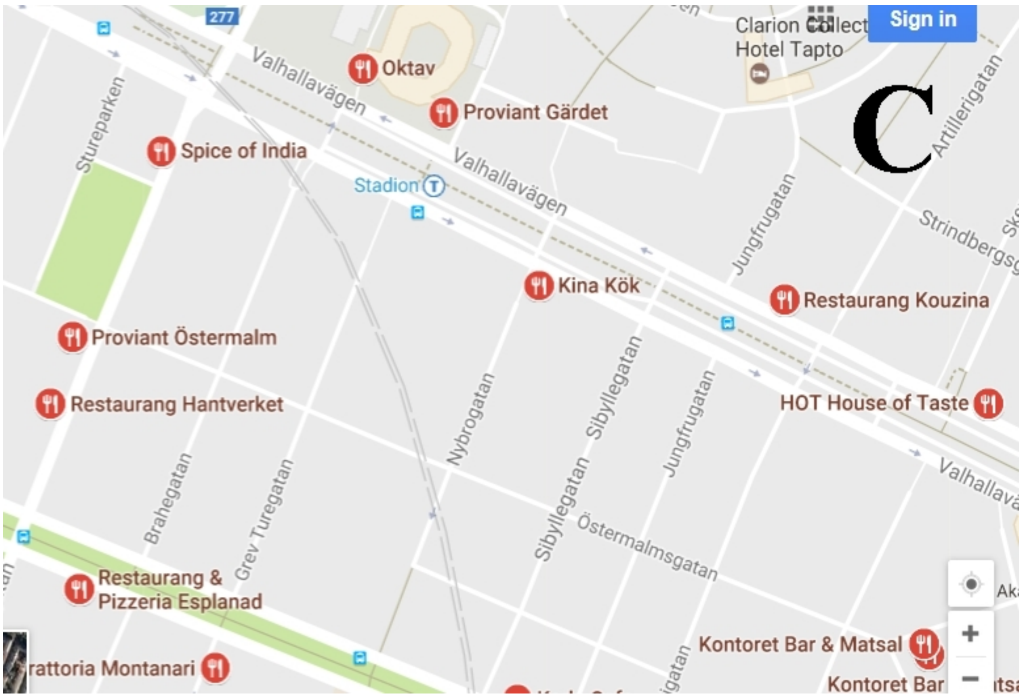
Kebab Kitchen
Bullens Café
Östra Station
Järnvägsrestaurangen
Tyrgatan
Lindstedtsvägen
Osquars backe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Sturepraken
Stadion
Artillerigatan
Strindbergsg
Jungfrugatan
Kina Kök
Restaurang Kouzina
Proviant Östermalm
Restaurang Hantverket
HOT House of Taste
Nybrogatan
Sibyllegatan
Brahegatan
Grev Turegatan
Östermalmsgatan
Restaurang &
Pizzeria Esplanad
rattoria Montanari
Kontoret Bar & Matsal
Kontoret Bar

5.5 Hostels

If you are have been offered accomodation by the YTM, you wil be assigned one of the following hostels:

- Zinkensdamm Vandrarhem: From central station take metro line 13 or 14 to *Zinkensdamm.* From there it is a ten minute walk to the hostel, which is located at Zinkens Väg 20. Their phone number is +46 8 616 81 00.
- Info City Hostel: From central station take line 10 or 11 to *Rådhuset.* From there it is a ten minute walk to the hostel, which is located at Fleminggatan 19. Their phone number is +46 8 410 038 30.
- Birka Hostel: From central station take metro line 17, 18 or 19 to *Hötorget.* From there it is a 5 minute walk to the hostel, which is located at Luntmakargatan 14-16. Their phone number is +46 8 218 418.

5.6 Other information

In case of a fire, an accident or a medical emergency call 112.