GDR Algebraic Topology
October 24-27, 2022

Nantes Université
LS2N Amphitheatre Building 34

Invited speakers:

Vladimir Dotsenko
(Université de Strasbourg)

Yonatan Harpaz
(Université Sorbonne Paris Nord)

Danica Kosanovic
(ETH Zürich)

Johan Leray
(Nantes Université)

Lyne Moser
(Universität Regensburg)

Neil Strickland
(University of Sheffield)

Minicours:

Constanze Roitzheim
(University of Kent)

Crédits : Jorgen Hendriksen, Niels Cornet

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Du 24 au 27 octobre 2022
Nantes Université - Amphithéâtre du LS2N. Bâtiment 34

Bienvenue à Nantes !

Le GDR 2875 vous salue à l'occasion de sa réunion annuelle. Ce groupement de recherche existe depuis 17 ans sous le nom «Topologie algébrique» et a récemment changé de nom pour «Théorie d'homotopie et applications». Le GDR a 17 noeuds partout en France et comporte 119 permanents. Les thématiques du GDR comprennent notamment la théorie classique de l'homotopie (stable et instable), l'homotopie motivique, l'algèbre supérieure (catégories supérieures, théorie homotopique des opérades), et les multiples interactions avec l'informatique, la combinatoire, la théorie des représentations ou la géométrie.

Le programme de la réunion à Nantes est miroir de la diversité de ces thématiques. Il y aura un minicours sur la théorie d'homotopie chromatique par Constanze Roitzheim (University of Kent) et des exposés sur les opérades, les infini-catégories, l'homotopie des espaces de plongements, la K-théorie, l'homologie de Hochschild, les tresses, la théorie motivique des noeuds et les algèbres de Clifford.

Bon séjour à Nantes !

From October 24th to 27th 2022
Nantes Université - Amphitheater LS2N. Building 34

Welcome to Nantes !

The GDR 2875 greets you on the occasion of its annual meeting. This grouping of research teams exists since 17 years under the name «Algebraic Topology» and has changed names recently to «Homotopy theory and applications». This grouping of teams is linked to 17 research labs in France and consists of 119 permanents. The themes of the GDR go from classical homotopy theory (stable and unstable) to motivic homotopy, higher algebra (higher categories, homotopy theory of operads), and its multiple interactions with informatics, combinatorics, representation theory or geometry.

The program of the meeting in Nantes reflects this diversity of themes: There will be a minicourse on chromatic homotopy theory by Constance Roitsheim (University of Kent) and talks about operads, infinity-categories, homotopy theory of embedding spaces, K-theory, Hochschild homology, braids, motivic homotopy theory of knots and Clifford algebras.

Have a nice stay in Nantes !

Committees and Contacts

GDR Director

Antoine Touzé

Scientific committee

Dimitri Ara
Julie Bergner
Baptiste Calmès
Joana Cirici
Christine Lescop
Jérôme Scherer

Local organizer

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Secretariat

Stéphanie Benoit (LMJL, Nantes)
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Program

Monday 24th

10h	*Welcome*
11h-11h50	Lyne Moser: Defining limits in (∞,n)-categories
12h-14h15	*Lunch*
14h15-15h30	Minicourse 1: Constanze Roitzheim: Introduction to chromatic homotopy theory
15h40-16h30	Lucas Darbas: Higher order Hochschild cohomology of schemes
16h30-16h50	Coffee break
16h50-17h40	Ismail Razack: Hochschild cohomology of intersection algebra

Tuesday 25th

9h-9h50	Johan Leray: Les algèbres pré-Calabi-Yau sont les gèbres double-Poisson à homotopie près
10h-10h50	Basile Coron: Structures opéradiques sur les matroïdes et dualité de Koszul
10h50-11h10	*Coffee break*
11h10-12h	Vladimir Dotsenko : Subalgebras of free algebras
12h-14h15	*Lunch*
14h15-15h30	Minicourse 2: Constanze Roitzheim: Introduction to chromatic homotopy theory
15h40-16h30	Sophie d'Espalungue: Recollements d'associahèdres et catégories lax-monoidales (itérées) non biaisées
16h30-16h50	*Coffee break*
16h50-17h40	Nguyen Xuân Bách: Generalized Clifford algebras

Wednesday 26th

9h-9h50	Danica Kosanovic: Homotopy groups of some embedding spaces
10h-10h50	Clémentine Lemarié-Rieusset: Motivic knot theory
10h50-11h10	*Coffee break*
11h10-12h	Yonatan Harpaz: The infinitesimal tangle hypothesis
12h-14h15	*Lunch*
14h15-15h30	Minicourse 2: Constanze Roitzheim: Introduction to chromatic homotopy theory
15h40-16h30	El Mehdi Cherradi: The smothering model structure and indiscernible isomorphisms
16h30-16h50	*Coffee break*
16h50-17h40	Victor Saunier: Une généralisation du théorème fondamental de la K-théorie algébrique aux infinie-catégories stables et aux foncteurs Verdier-localisants

20h Conference dinner at Brasserie Félix
https://www.brasseriefelix.com/
see map 3

Thursday 27th

9h-9h50	Neil Strickland: Chromatic cohomology of finite general linear groups
10h-10h50	Gabriel Angelini-Knoll: Algebraic K-theory of elliptic cohomology
10h50-11h10	*Coffee break*
11h10-12h	Jacques Darné: Lower central series of partitioned braids on surfaces
12h-14h15	*Lunch*

From Monday 24th to Wednesday 26th at 14h15

Constanze Roitzheim (University of Kent)
Introduction to chromatic homotopy theory

The goal of the talks is to introduce some of the foundations of chromatic stable homotopy theory and to explain how these methods are used to study the structure of the stable homotopy category. If time permits, we will look at some more recent results at the end.

Topics will include:

- left Bousfield localisation,
- p-localisation, p-completion, rationalisation, K-theory,
- E(n) and K(n): construction and properties,
- nilpotence, periodicity, chromatic convergence,
- thick subcategories and the Balmer spectrum.

Tuesday 25th at 11h10

Vladimir Dotsenko (Université de Strasbourg)
Subalgebras of free algebras

The celebrated theorem of Shirshov and Witt from 1950s asserts that every subalgebra of every free Lie algebra is itself free. Since then, ring theorists have been searching for other types of algebras satisfying this property, and such types of algebras have been perceived as extremely rare. I shall explain a new approach to this property using operads and homotopy theory which gives some concrete criteria allowing one to check this property, and to exhibit infinitely many new types of algebras for which it holds. This is based on a joint paper with Ualbai Umirbaev.

Wednesday 26th at 11h10

Yonatan Harpaz (Université Paris 13)
The infinitesimal tangle hypothesis

The tangle hypothesis is a variant of the cobordism hypothesis pertaining to tangles, that is, manifolds and cobordisms embedded in Euclidean spaces (and equipped with a suitable type of framing), in a manner that the codimension of the embedding remains fixed. This elaborate ensemble of geometric data can be assembled into a single higher categorical object, an E_m-monoidal (∞,n)-category Tang_{n,m}, where n is the maximal dimension of cobordisms one is considering and m is the fixed codimension of all the Euclidean embeddings. The tangle hypothesis then asserts that Tang_{n,m} is freely generated as an E_m-monoidal (∞,n)-category with duals from a single object. Equivalently, B^m(Tang_{n,m}) is feely generated as an (∞,n+m)-category with adjoints from an object equipped with an m-cell. A sketch of proof of the tangle hypothesis appears in Lurie's 2009 text, and a conditional argument reducing the tangle hypothesis to another conjecture was later provided by Ayala and Francis, though a complete and formal proof has not yet appeared. In this talk I will describe work in progress with Joost Nuiten which provides an infinitesimal version of this conjecture. More precisely, applying previous work with Joost Nuiten and Matan Prasma on Quillen cohomology of higher categories we calculate the cotangent complex of B^m(Tang_{n,m}) and show that, in a suitable sense, it is freely generated from a single m-cell.

This can be considered as supporting evidence in the direction of the tangle hypothesis, but also reduces the tangle hypothesis to a statement on the level of (m+n+1,m+n)-categories using a form of obstruction theory for higher categories.

Wednesday 26th at 9H

Danica Kosanovic (ETH Zurich)
Homotopy groups of some embedding spaces

In this talk I will present joint work with Peter Teichner, in which we give a reinterpretation and extension of the work of Jean-Pierre Dax from the 1970s, on the lowest interesting homotopy group of spaces of embeddings of a disk into a manifold. We combine this with a «delooping» result (space level light bulb theorem), to obtain in certain cases interesting computations beyond Dax's metastable range.

Tuesday 25th at 9H

Johan Leray (Nantes Université)
Les algèbres pré-Calabi-Yau sont les gèbres double-Poisson à homotopie près

En géométrie non-commutative dérivée, deux notions de structure de Poisson non-commutative homotopique coexistent : d'une part, les structures pré-Calabi-Yau, définies comme des éléments de Maurer-Cartan d'une généralisation des champs de polyvecteurs non commutatifs ; d'autre part, les structures double-Poisson infinies, définies comme la version à homotopie près des double-crochets de Poisson de Van den Bergh. Dans un récent travail en collaboration avec B. Vallette, nous démontrons qu'il y a correspondance de ces deux types de structures, généralisant ainsi des résultats de Iyudu-Kontsevich-Vlassopoulos et Fernandez-Herscovich. Cette correspondance nous permet notamment de définir une bonne notion de morphismes entre algèbres pré-Calabi-Yau. Après avoir introduit les deux notions, je présenterai la stratégie de preuve de cette correspondance, ainsi que les conséquences de celle-ci.

Monday 24th at 11H

Lyne Moser (Universität Regensburg)
Defining limits in (∞,n)-categories

Limits in an (∞,1)-category have been constructed as terminal objects in the corresponding (∞,1)-category of cones. In this talk, I will present a generalization of this construction to the (∞,n)-categorical setting for higher n, focusing on the case where n=2. This is work in progress with Nima Rasekh and Martina Rovelli.

Unlike their 1-categorical analogues, limits in a (strict) 2-category cannot be characterized as terminal objects in the corresponding 2-category of cones. Instead, a passage to double categories allows for such a characterization. Inspired by the strict case, we define (∞,2)-limits as terminal objects in a double (∞,1)-category of cones and show that this definition is equivalent to the established definition of (∞,2)-limits as (∞,1)-categorically enriched limits.

Thursday 27th at 9H

Neil Strickland (University of Sheffield)
Chromatic cohomology of finite general linear groups

There has been great interest in studying the Morava E-theory of classifying spaces of finite groups. There are a number of interesting theorems that apply to all finite groups, and also calculations for specific cases, including abelian groups, symmetric groups and various groups of small nilpotence class. In this talk we will discuss the case of general linear groups over finite fields of characteristic different to that of the Morava E-theory. Here there is a description of the answer due to Tanabe, but it is not very explicit or tractable. We will use different methods which provide an explicit basis and make contact with the symmetric group case via the geometric theory of formal schemes. There are several lines of evidence that point the way to the main theorem, but the only one that we could convert into an actual proof involves an elaborate calculation with the Atiyah-Hirzebruch spectral sequence. This is joint work with Sam Marsh and Sam Hutchinson.

Thursday 27th at 10H

Gabriel Angelini-Knoll (Université Paris 13)
Algebraic K-theory of elliptic cohomology

The algebraic K-theory of finite fields, the integers, and complex K-theory are some of the most fundamental algebraic K-theory computations in the field. I will discuss an explicit computation of higher chromatic complexity, the algebraic K-theory of the second truncated Brown--Peterson spectrum. As a consequence, we prove a strong form of the red-shift conjecture for the second truncated Brown--Peterson spectrum, refining a recent result of Hahn-Wilson in this case. This is based on joint work with C. Ausoni, D. Culver, E. Höning, and J. Rognes.

Wednesday 26th at 15H40

El Mehdi Cherradi (Université Paris Cité)
The smothering model structure and indiscernible isomorphisms

The notion of smothering functor introduced by Emily Riehl and Dominic Verity defines a class of functors which extends the usual notion of equivalence of categories by relaxing the faithfulness condition. These functors appear naturally as comparison functors between homotopy categories, for instance the comparison functor relating the homotopy category of a pullback of quasicategories to the pullback of the homotopy categories of these quasicategories. In this work, we construct a right Bousfield localization of the natural model structure on Cat, whose weak equivalences are a slight strengthening of the original definition of smothering functors. Interestingly, it is possible to characterize those weak equivalences by relying on an equivalence relation between isomorphisms of a given category, called indiscernibility. This notion of indiscernible isomorphism sheds light on the strength of the homotopy relation between morphisms in a model category or more generally a quasicategory.

Tuesday 25th at 10H

Basile Coron (Université de Strasbourg)
Structures opéradiques sur les matroïdes et dualité de Koszul

Il est connu que les inclusions de strates de compactifications merveilleuses de certaines familles d'arrangements d'hyperplans donnent des structures opéradiques (opérade symétrique HyperCom, permutades de Losev Manin, brick manifolds etc). Le premier objectif de cet exposé est de montrer comment unifier ces exemples en une seule structure à l'aide du formalisme des catégories de Feynman et cela à un niveau purement combinatoire. Une fois ce but atteint on montrera comment la relation de dualité de Koszul HyperCom/Grav peut être étendue à ce cadre plus vaste.

Monday 24th at 15H40

Lucas Darbas (Nantes Université)
Higher order Hochschild cohomology of schemes

We define in two ways higher order Hochschild cohomology of schemes over a field of characteristic zero, first introduced by Pirashvili for commutative algebras [Pir00]. First, we can take the hyperext functor of the sheaf associated to the higher order Hochschild presheaf. In the separated smooth case, we obtain a Hodge decomposition which generalizes Pirashvili's Hodge decomposition. We can also define the Higher Hochschild cohomology of order d by taking the ext functor of the structure presheaf over the Higher Hochschild presheaf of order d-1. These two definitions are really close to those of Swan [Swa96] for classical Hochschild cohomology but tools are model categories and derived functors.

[Pir00] T. Pirashvili. Hodge decomposition for higher order Hochschild homology. Ann. Sci. Ec. Norm. Supér. (4), 33(2):151–179, 2000.

[Swa96] R. G. Swan. Hochschild cohomology of quasiprojective schemes. J. Pure Appl. Algebra, 110(1):57–80, 1996.

Thursday 27th at 11H10

Jacques Darné (Université Catholique de Louvain)
Lower central series of partitioned braids on surfaces

Partitioned braid groups (sometimes called «mixed braid groups») are subgroups of the braid group standing between the pure braid group P_n and the whole braid group B_n. On the one hand, the lower central series of B_n is almost trivial. On the other hand, the lower central series of P_n is a very rich object, encoding finite type invariants of braids. As a consequence, one can expect partitioned braid groups to display a range of intermediate behaviors, and this is indeed what we observe. In this talk, we will explore these different behaviours and give an answer to the first question one can ask about these lower central series : when do they stop ? Even this simple question turns out to be a difficult one, especially when one considers its generalization to braids on surfaces. However, we will be able to answer it almost completely, leaving open only some cases of partitioned braids on the projective plane.

Tuesday 25th at 15H40

Sophie d'Espalungue (Université de Lille)
Recollements d'associahèdres et catégories lax-monoidales (itérées) non biaisées

On construit une catégorie d'arbres Y que l'on munie d'un foncteur K:Y-> Top, tel que la réalisation géométrique induite par K sur les préfaisceaux [Y^{op},Sets] donne précisément l'associahèdre d'arité n lorsqu'apliquée au préfaisceau représenté par la corolle d'arité n, donnant ainsi aux associahèdres le rôle de cellules de base. On munit la catégorie Y d'une topologie, de telle sorte que la réalisation géométrique d'un faisceau fournisse un polytope dont les faces sont des produits de faces de dimensions inférieures.

On remarquera que la suite formée des sous catégories pleines Y(n) de Y dont les objets sont les arbres d'arité n a une structure d'opérade dans la catégorie des catégories. De cette structure on tirera également une structure d'opérade sur la catégorie PSh_Y des préfaisceaux sur Y, au moyen d'une généralisation du produit de convolution de Day à une 2-catégorie autre que celle des catégories (en l'occurence, à la 2-catégorie des suites de catégories), que l'on exposera si le temps le permet. On pourra alors introduire la notion d'opérade interne à l'opérade PSh_Y, dont la suite <Y(n)(-,Y_n)>_n des représentables en la corolle Y_n d'arité n est un exemple (que l'on appellera A_Y).

On s'intéressera alors aux algèbres sur cette opérade dans diverses catégories: on retrouvera la notion d'A_ ∞ - algèbre dans la catégorie des complexes de chaines et dans la catégorie des espaces topologiques. On s'attardera alors à ces algèbres dans la catégorie des catégories, réalisant en particulier la notion de catégorie lax monoidale non biaisée (de Tom Leinster, HOpHCat) comme algèbre dans Cat sur l'opérade A_Y. Si le temps le permet, on montrera comment les notions de catégories lax-monoidales n-fois itérées non biaisées peuvent se déduire des considérations précédentes à partir d'un produit tensoriel de Boardman-Vogt relâché, que l'on définira pour les opérades à valeurs catégoriques. On établira également les raisons qui nous portent à croire que l'étude des structures non biaisées fournissent un cadre approprié à l'étude des espaces de lacets itérés.

Wednesday 26th at 10H

Clémentine Lemarié-Rieusset (Université de Bourgogne)
Motivic knot theory

In this talk I will present a new application of motivic homotopy theory: motivic knot theory. This theory, which I am exploring during my PhD, aims at finding analogues of certain knot (and link) invariants in algebraic geometry. In my talk I will briefly recall some notions from knot theory and motivic homotopy theory, then I will present an analogue of the linking number of two oriented disjoint knots and its computation in two examples.

Tuesday 25th at 16H50

Nguyen Xuân Bách (Université Paris 13)
Generalized Clifford algebras

The Clifford algebra of a quadratic form is a very classical object, which appears in many contexts, such as Bott's periodicity in algebraic topology or the classification of quadratic forms. Several generalizations of this construction have been studied, for example, by replacing quadratic forms by polynomial forms of higher degree. The study of these generalizations suggest that maybe they are defined as naturally attached to certain algebraic varieties. In this talk, we review the classical Clifford algebra and give the construction of generalized Clifford algebra in terms of adjunction in higher category theory.

Monday 24th at 16H50

Ismail Razack (Université de Picardie Jules Verne)
Hochschild cohomology of intersection algebra

The intersection algebra of a smooth manifold consists of the singular chains algebra (or singular cochains) equipped with the intersection product (or the cup product). The Poincaré duality implies the existence of algebraic structures (Batalin-Vikovisky) on the Hochschild cohomology of this algebra. A topological interpretation is given via loop spaces. In this talk, we are interested in the study of topological spaces with singularities. In general, for these spaces, the Poincaré duality is not satisfied. In order to restore it, M. Goresky and R. MacPherson introduced the intersection complexes which have the structure of a perverse differential graded algebra. We will define the Hochschild (co)homology for this type of objets and we will explain when we get a Batalin-Vilkovisky algebra. We will present these non trival structures through some examples.

Wednesday 26th at 16H50

Victor Saunier (Université Paris 13)
Une généralisation du théorème fondamental de la K-théorie algébrique aux infinie-catégories stables et aux foncteurs Verdier-localisants

L'espace de K-théorie d'une infinie-catégorie stable est un foncteur qui jouit d'une propriété universelle, connue depuis des travaux de Blumberg-Gepner-Tabuada (2013). Cette propriété de localisation, pour laquelle la K-théorie est universelle, est la clé d'une formule connue sous le nom de formule de Bass-Heller-Swan ou théorème fondamental de la K-théorie algébrique dans le cadre des anneaux, qui est une des rares formules générales de la K-théorie. En généralisant une preuve connue dans le contexte du foncteur A de K-théorie algébrique des espaces, on peut obtenir cette formule dans le cadre des infinie-catégories stables pour non seulement la K-théorie algébrique, mais aussi l'homologie de Hochschild topologique (THH) et l'homologie cyclique topologique (TC) qui partagent cette propriété de localisation.

List of participants

Angelini-Knoll	Gabriel	Université Sorbonne Paris Nord
Aumonier	Alexis	Université de Copenhague
Ausoni	Christian	Université Sorbonne Paris Nord
Bách	Nguyen Xuân	Université Sorbonne Paris Nord
Batelier	Etienne	WWU Muenster
Bellier-Millès	Joan	Université de Toulouse
Bianchi	Valerio	Cardiff University
Bloede	Ouriel	Laboratoire Painlevé Lille
Boivin	Antoine	Université d'Angers
Brittes	Victor	Université Côte d'Azur
Callet	Victoria	IRMA - Université de Strasbourg
Campos	Ricardo	CNRS - Université de Toulouse
Carissimi	Nicola	Université de Lille
Chabertier	Clovis	Université Paris Cité
Cherradi	El Mehdi	IRIF-Université Paris Cité
Coron	Basile	Université de Strasbourg
Curien	Pierre-Louis	IRIF-Université Paris Cité-CNRS
D'Espalungue	Sophie	Université de Lille
Danica	Kosanovic	ETH Zürich
Darbas	Lucas	Nantes Université
Darné	Jacques	UCLouvain - IRMP

Delarue	Marie-Camille	Université Paris Cité
Djament	Aurélien	CNRS
Dotsenko	Vladimir	Université de Strasbourg
Douteau	Sylvain	IRIF
Emprin	Coline	Ecole Normale Supérieure de Paris
Feltz	Antoine	IRMA - Université de Strasbourg
Flynn-Connolly	Oisin	Université Sorbonne Paris Nord
Franjou	Vincent	Nantes Université
Fresse	Benoit	Université de Lille
Gaudens	Gérald	Nantes Université
Gaujal	Thomas	Université de Lille
Giordano	Iacopo	Université de Lille
Guetta	Léonard	Institut Max Planck Bonn
Hoffbeck	Eric	Université Sorbonne Paris Nord
Hubert	Léo	Aix-Marseille Université
Kern	David	IMAG - Université de Montpellier
Lapie	Quentin	ENS de Lyon
Laubie	Paul	Université de Strasbourg
Laudenbach	François	Nantes Université - LMJL
Lemarié-Rieusset	Clémentine	Université de Bourgogne

Leray	Johan	Nantes Université
Livernet	Muriel	IMJ-PRG - Université Paris Cité
Loubaton	Félix	Université Côte d'Azur
Maillard	Jun	Université Jean Monnet
Marc	Grégoire	Radboud University
Martinez	Pierre	UBO Brest
Medina-Mardones	Anibal	Université Sorbonne Paris Nord
Melliès	Paul-André	CNRS-Université Paris Cité
Monjon	Olivia	EPFL
Moser	Lyne	MPIM Bonn
Moulla	Thiziri	Université de Montpellier
Nédélec	Silvère	Nantes Université
Piriou	Laurent	Nantes Université
Pourcelot	Hugo	Université Sorbonne Paris Nord
Powell	Geoffrey	CNRS et Université d'Angers
Pratali	Francesca	Université Sorbonne Paris Nord
Razack	Ismaïl	Université de Picardie Jules Verne
Riegel	Robin	Université de Strasbourg
Roca i Lucio	Victor	EPFL

Roitzheim	Constanze	University of Kent
Saunier	Victor	CNRS - Université Paris 13 - LAGA
Scherer	Jerôme	EPFL
Strickland	Neil	University of Sheffield
Torres Castillo	Victor Antonio	CIMAT
Touzé	Antoine	Université de Lille
Ulmer	Jakob	Université Sorbonne Nord
Verstraete	Marvin	Université de Lille
Wagemann	Friedrich	Nantes Université
Yalin	Sinan	Université d'Angers

Coming to Nantes Université

FROM DOWNTOWN: see tramway network on map 1

At the station «Commerce», take the tramway line 2 in the direction of «Orvault Grand Val». Get off at the station «Michelet-Sciences».

The cost of one-hour-valid ticket is 1,70€. There are some vending machines at the stop «Commerce». You can also buy a book of 10 tickets which costs 16€. Breakdown ticket available from the driver on board the bus for 2 €.

FROM THE TRAIN STATION: see transport map on map 1

Upon your arrival at the main station, take the North exit (Sortie nord) and walk in the direction of the tramway stop «Gare Nord» which is in front of the main entrance of the station. Take the tramway line 1 in the direction of «François Mitterrand», get off at «Commerce». Take the tramway line 2 in the direction of «Orvault Grand Val» and get off at «Michelet Sciences».
ATTENTION : The vending machines may not take non-France issued credit/Banking cards.

For detailed bus schedules and maps please visit TAN http://www.tan.fr

FROM THE AIRPORT:

Get to the city center by the airport shuttle bus (navette aéroport) in 20 minutes. The final stop of the shuttle is «Commerce». There is one bus every 30 minutes. From there, take the bus line as indicated in the paragraph «FROM DOWNTOWN».

Website airport: https://www.nantes.aeroport.fr/fr

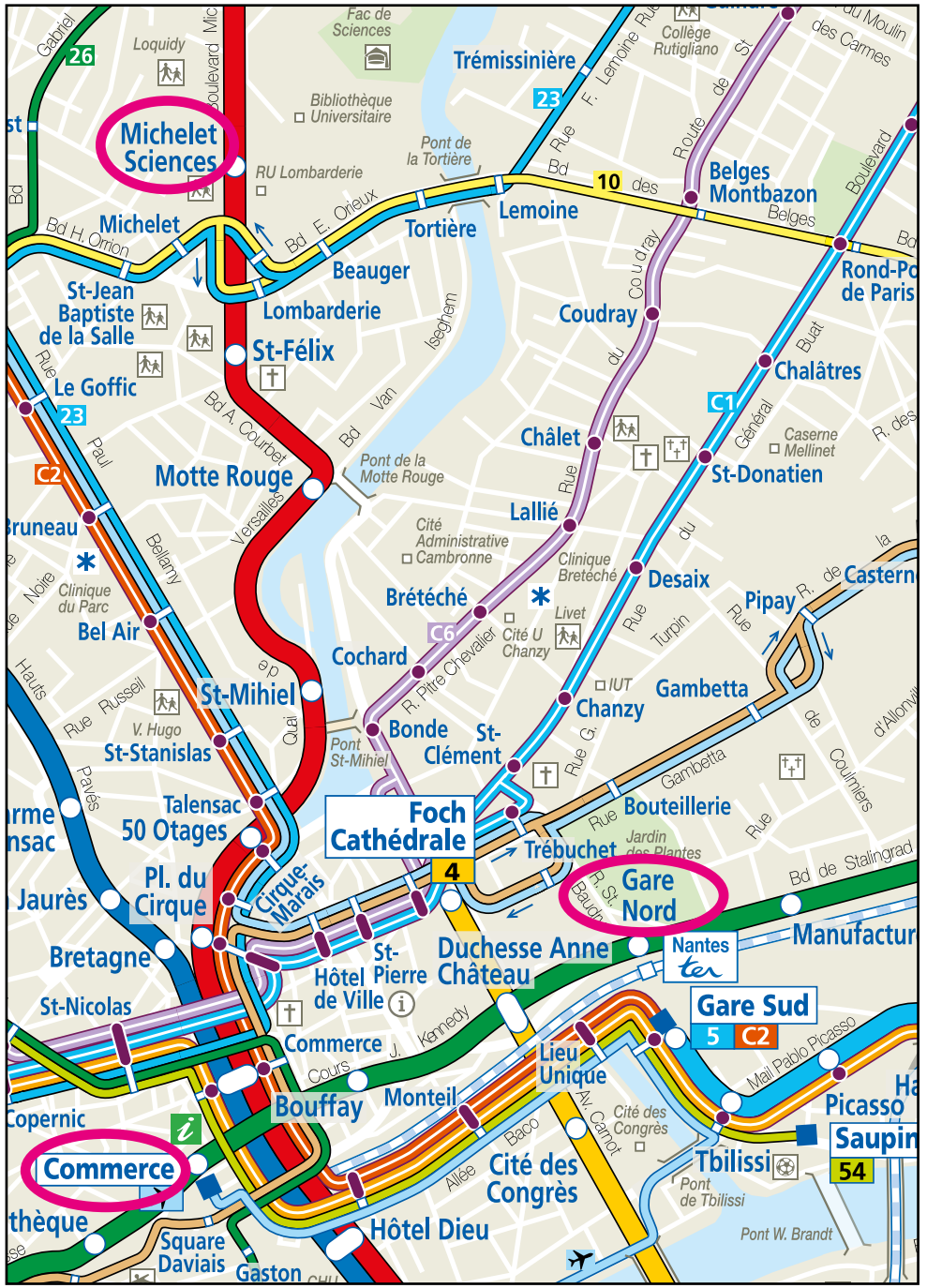
By taxi : The station head is located just in front of the terminal opposite Arrivals 1. The cost is around 40€.

Once on the campus : Walk to building 34 (Laboratoire des Sciences du Numérique LS2N) where the conference will take place. see map 2

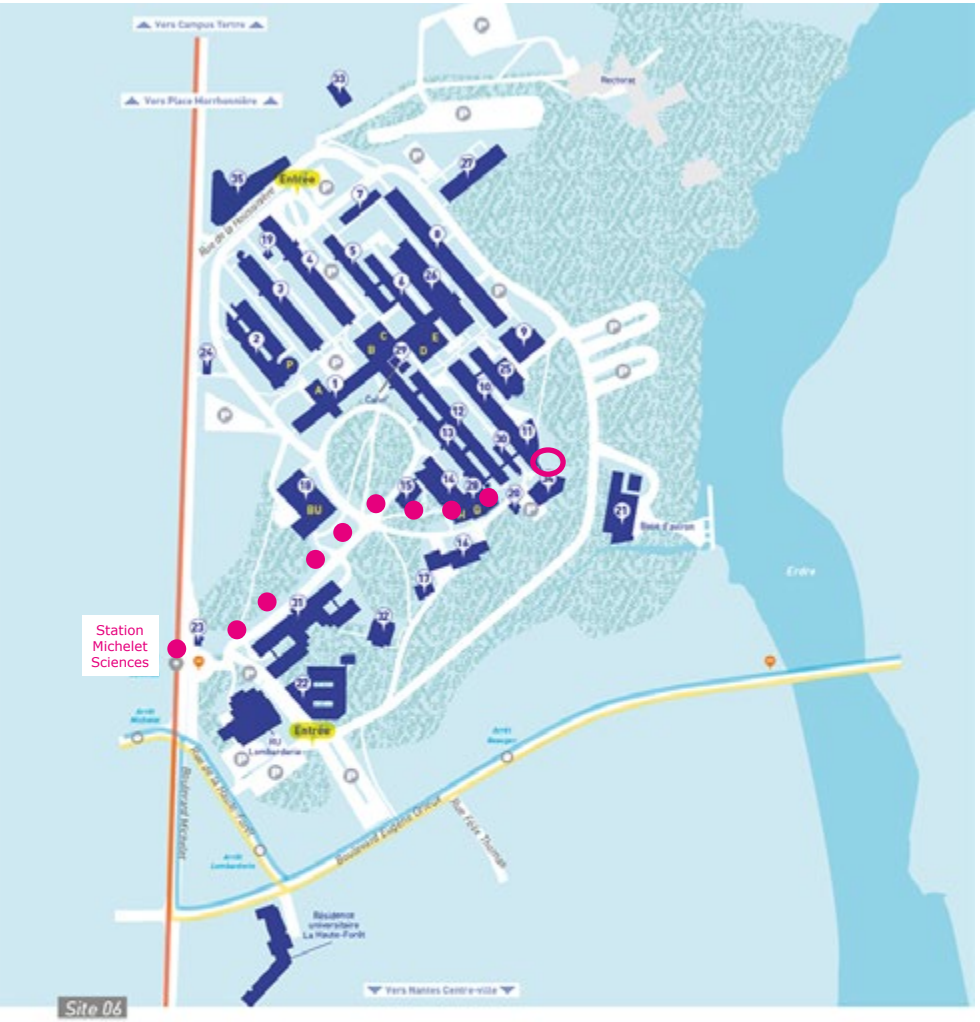
Laboratoire des
Sciences
du Numérique
2 rue de la Houssinière
44322 Nantes cedex 03

https://www.ls2n.fr

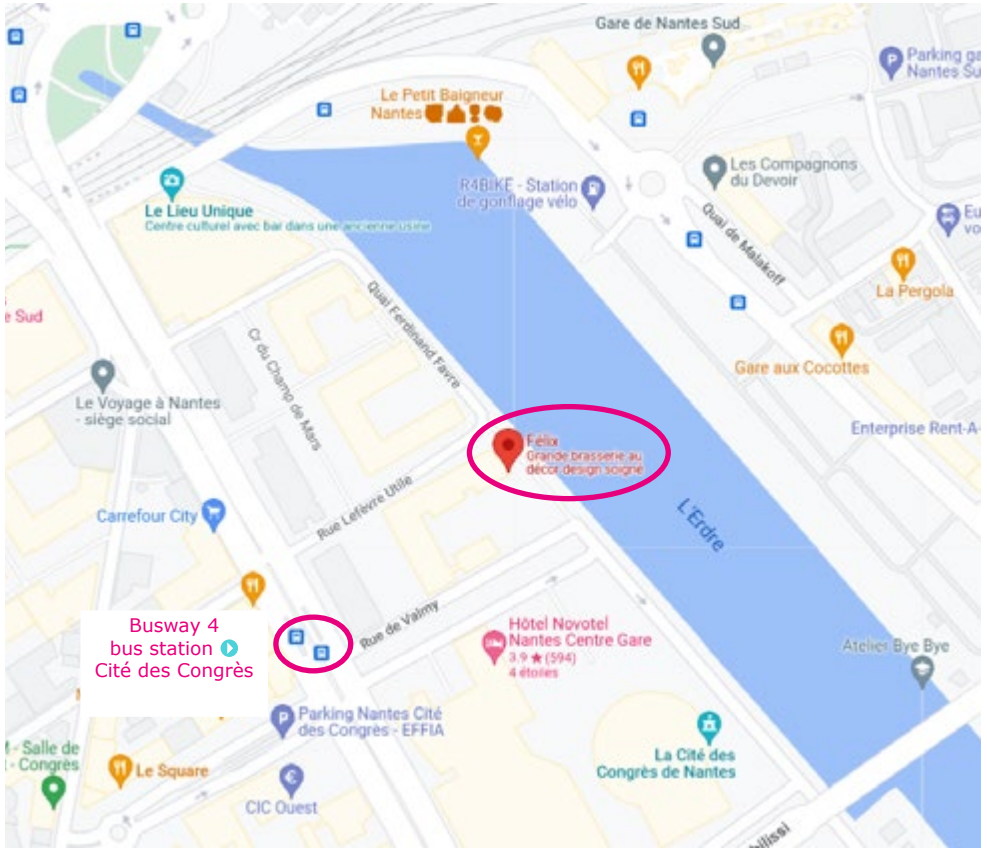
Map 1: Public transport map



Map 2: Campus Lombarderie



Map 3: Brasserie Félix



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https://www.nantes-tourisme.com/fr

Crédits : Ryan Klaus
ATELIER COQUICO
GALERIE DE L'HORLOGE
PICTURE
PAPETERIE