Clémentine Lemarié–Rieusset

French citizen; birth date: 2 August 1996

Education and diplomas

2020-2023 **Ph.D. in mathematics**, at Université de Bourgogne-Franche-Comté (Dijon, France), under the supervision of Frédéric Déglise and Adrien Dubouloz, title of the thesis : *Motivic knot theory*; my PhD thesis is funded by a CDSN from École Normale Supérieure de Rennes (Bruz, France); the defense will occur in early September 2023 at the latest

2019-2020 **Fourth year in mathematics at École Normale Supérieure de Rennes (Bruz, France) and M2 in fundamental mathematics**, at Sorbonne Université (Paris, France), Master's degree (research) and degree of the ENS Rennes

2018-2019 **Third year in mathematics at École Normale Supérieure de Rennes (Bruz, France) and M2 to prepare the Agrégation**, at Université de Rennes 1 (Rennes, France), success at the competitive exam of the Agrégation externe de mathématiques (rank : 34) and Master's degree (agrégation)

Agrégation externe de mathématiques In France, this is a national competitive examination of high level which allows one to teach in high schools or in preparatory schools (see below) with benefits (higher income etc.).

2017-2018 **Second year in mathematics at École Normale Supérieure de Rennes (Bruz, France) and M1 in mathematics** at Université de Rennes 1 (Rennes, France)

2016-2017 **First year in mathematics at École Normale Supérieure de Rennes (Bruz, France) and L3 in mathematics** at Université de Rennes 1 (Rennes, France), Bachelor's degree

2013-2016 **MPSI-MP* at Louis-le-Grand (Paris, France) with the Computer Science option**, post-secondary preparatory school

Post-secondary preparatory school In France, these are classes preparing for entrance examinations to the Grandes Écoles, which include the four Écoles Normales Supérieures (schools which provide research-oriented training). MPSI stands for mathematics, physics, and engineering science, and MP stands for mathematics and physics (the * denotes a class which is particularly focused on preparing the entrance examinations to the Écoles Normales Supérieures).

Institut de Mathématiques de Bourgogne, UMR 5584 CNRS,
Université Bourgogne Franche-Comté, F-2100 Dijon, France
✉ *clementine.lemarie-rieusset@u-bourgogne.fr*   *1/5*

2013	**Baccalauréat Diploma (Science), International option (British)**
International option (British)	The French Baccalauréat (the examination taken at the end of high school in order to be allowed to continue one's education) can be passed with an international option, which for the British international option adds English Language and Literature and History-Geography (in English) exams which are made by Cambridge International Education (a division of the University of Cambridge) in concertation with the French ministry of education.

Research internships

Internship of Master 2

2020	**K-théorie invariante par homotopie**
	Université Paris-Saclay (Orsay, France) with Joël Riou as supervisor.
	The title translates as *Homotopy invariant K-theory*. We studied Denis-Charles Cisinski's article *Descente par éclatements en K-théorie invariante par homotopie* and focused mainly on the $\mathbb{A}^1$-localization functor and the Bass-Thomason-Trobaugh construction.

Internship of Master 1

2018	**An introduction to toric varieties**
	University of Edinburgh (Edinburgh, United Kingdom) with Milena Hering as supervisor.
	We studied the proof that any fan can be transformed into a regular fan by stellar subdivisions (which gives an algorithm to find a resolution of singularities of any toric variety).

Internship of Licence 3 (Bachelor)

2017	**Liberté et rigidité systoliques**
	Laboratoire IMJ-PRG (Paris, France) with Nicolas Bergeron as supervisor.
	The title translates as *Systolic freedom and systolic constraint*. We proved that the differentiable manifold $\mathbb{S}^3 \times \mathbb{S}^1$ is $(1,3)$-systolically free.

Preprint

2022	*The quadratic linking degree*: arXiv:2210.11048 [math.AG]; MSC 2020: Primary 14F42, 57K10; Secondary 11E81, 14C25, 19E15; Keywords: Motivic homotopy theory, Knot theory, Links, Witt groups, Milnor-Witt K-theory, Rost-Schmid complex. I have submitted this preprint to the *Annales de l'Institut Fourier*.

Teaching

Jan.-June 2022
34h of Integration, Sequences and series of functions, and Normed vector spaces exercise sessions for students in their second year of bachelor studies in science (L2 Sciences et techniques, Université de Bourgogne, Dijon). All of the exercise sessions were face-to-face. I devised and corrected several examinations for these students.

Sept.-Dec. 2021
30h of Logic and Algebra exercise sessions for students in their first year of bachelor studies in science (L1 Sciences et techniques, Université de Bourgogne, Dijon). More precisely, the exercises were on naïve logic, naïve set theory and the complex numbers (definition, equations, the fundamental theorem of algebra, trigonometry and geometry). All of the exercise sessions were face-to-face. I devised and corrected several examinations for these students.

Sept. 2020 - June 2021
64h of Analysis (numerical sequences and series, real functions, integration, ordinary differential equations, parametric curves, probabilities) exercise sessions for students in their first year of preparatory school for the Esirem (a Grande École). Part of the exercise sessions were face-to-face (as is usual), part were online (using Microsoft Teams and sometimes Overleaf), and part were hybrid (some of the students face-to-face and some of the students online at the same time). I devised an examination and corrected several examinations for these students.

Feb. 1-5 2021
I supervised the internship of a 3e student (3e is the last year of middle school in France; it is customary for 3e students to do a week-long internship to discover a job). I presented to him the job of a researcher in mathematics and made him work on a combinatorial argument which is at the heart of Zeev Dvir's proof of the algebraic geometry version of the Kakeya conjecture.

Responsibilities

Oct. 2021 - today
I am a member of the Conseil de la Fédération de Bourgogne Franche-Comté Mathématiques (which has 16 members, 8 from Dijon and 8 from Besançon); we met on November 29, 2021 in Besançon and on 30 November 2022 in Dijon.

ANR Project

2021 - today
I am a member of the ANR-21-CE40-0015 HQDIAG project *Motivic homotopy, quadratic invariants and diagonal classes* which is funded by the ANR (the French National Research Agency).

Talks at Seminars, Workshops, ...

Mar. 23 2023
Basel-Dijon-EPFL joint seminar (Lausanne, Switzerland); I gave a talk in English about my preprint (*The quadratic linking degree*)

Institut de Mathématiques de Bourgogne, UMR 5584 CNRS,
Université Bourgogne Franche-Comté, F-2100 Dijon, France
✉ *clementine.lemarie-rieusset@u-bourgogne.fr*   *3/5*

Nov. 18 2022	Journée de la Fédération Bourgogne Franche-Comté Mathématiques (Day of the Bourgogne Franche-Comté Mathematics Federation; Besançon, France); I gave a talk in French about my preprint (*The quadratic linking degree*)
Oct. 26 2022	Réunion annuelle du GDR Topologie algébrique (Annual meeting of the French national research group Algebraic topology; Nantes, France); I gave a talk in English about my preprint (*The quadratic linking degree*)
Sept. 5 2022	ANR HQDIAG workshop (Lyon, France); I gave a talk in English about my preprint (*The quadratic linking degree*)
April 15 2022	Septième Journée des Jeunes Chercheuses et des Jeunes Chercheurs en Mathématiques de l'Université de Bourgogne-Franche-Comté (Seventh Young Researchers in Mathematics in UBFC's Day; Besançon, France); I gave a talk in French to present motivic knot theory
April 8 2022	*Real geometry, motives and $\mathbb{A}^1$-homotopy* workshop (online, using Zoom; this workshop is funded by the ANR HQDIAG); I gave a talk in French about Milnor-Witt K-theory, homotopy modules and localization (in an ∞-categorical setting)
Dec. 1 2021	Dijon Ph.D. students' seminar (Dijon, France); I gave a talk in English to present motivic knot theory
June 23 2021	Dijon Ph.D. students' seminar (Dijon, France); I gave a talk in English to present $\mathbb{A}^1$-homotopy theory
Feb. 12 and 26 2021	*Variations on a theme by Rost* workshop (online, using BigBlueButton); I gave two talks in English to present Rost cycle modules and give an example (de Rham cohomology)

▬▬▬ Seminars, Workshops, ...

Mar. 23-24 2023	Basel-Dijon-EPFL joint seminar (Lausanne, Switzerland)
Nov. 18 2022	Journée de la Fédération Bourgogne Franche-Comté Mathématiques (Day of the Bourgogne Franche-Comté Mathematics Federation; Besançon, France)
Oct. 24-27 2022	Réunion annuelle du GDR Topologie algébrique (Annual meeting of the French national research group Algebraic topology; Nantes, France)
Oct. 6-7 2022	Basel-Dijon-EPFL joint seminar (Dijon, France)
Sept. 5-6 2022	ANR HQDIAG workshop (Lyon, France)
April 15 2022	Septième Journée des Jeunes Chercheuses et des Jeunes Chercheurs en Mathématiques de l'Université de Bourgogne-Franche-Comté (Seventh Young Researchers in Mathematics in UBFC's Day; Besançon, France)
Jan.-July 2022	*Real geometry, motives and $\mathbb{A}^1$-homotopy* workshop (online, using Zoom; this workshop is funded by the ANR HQDIAG)

Institut de Mathématiques de Bourgogne, UMR 5584 CNRS,
Université Bourgogne Franche-Comté, F-2100 Dijon, France
✉ *clementine.lemarie-rieusset@u-bourgogne.fr*   *4/5*

2021-2022	IMB (Institut de Mathématiques de Bourgogne) Colloquium (Dijon, France)
2020-2022	Dijon Ph.D. students' seminar (Dijon, France)
2020-2022	GADT (Geometry, Algebra, Dynamical systems, Topology) Seminar (Dijon, France)
November 19 2021	Journée de la Fédération de Bourgogne Franche-Comté Mathématiques (The Federation of the Besançon and Dijon mathematics laboratories' Day; Dijon, France)
November 12 2021	Mini-Workshop on Cremona groups and Grothendieck rings (Orsay, France)
November 8-9 2021	ANR HQDIAG workshop (Dijon, France)
October 7-8 2021	Algebraic geometry workshop (Dijon, France; this workshop was partly funded by the ANR FIBALGA)
September 20-24 2021	10th Swiss-French Workshop in Algebraic Geometry (Charmey, Switzerland)
July 12-16 2021	Summer school at the Park City Mathematics Institute (PCMI) : *Motivic Homotopy Theory* (online, using Zoom)
June-July 2021	*Topics in Motivic Homotopy Theory* seminar (online, using Cisco WebEx)
June 29 2021	25th anniversary of the Laboratoire de mathématiques de Besançon (Besançon, France)
February-June 2021	*Variations on a theme by Rost* workshop (online, using BigBlueButton and Zoom)
March 18-19 2021	ANR FIBALGA workshop (Dijon, France)
2020-2021	*Motivic Geometry Seminar* (online, using Zoom)
2020-2021	*Zoom Algebraic Geometry Seminar* (online, using Zoom)
October 1-2 2020	Basel-Dijon-EPFL joint seminar (Dijon, France)
September 7-11 2020	*Motivic Geometry Conference* (online, using Zoom)
September 1 2020	*Zoom Algebraic Geometry Marathon* (online, using Zoom)
July 6-17 2020	Summer school at the Institut des Hautes Études Scientifiques (IHÉS) : *Motivic, Equivariant and Non-commutative Homotopy Theory* (online, using Zoom)