

Salim Tayou

Personal information

Address : 1 Oxford street, 02138 Cambridge, Massachusetts, USA.
Phone : +1 609 786 0905
E-mail address : tayou@math.harvard.edu
Web page : <https://people.math.harvard.edu/~tayou/>

Positions held

2020-present **Benjamin Peirce fellow at Harvard university**, Cambridge, Massachusetts.
January-July 2021 **Member of the School of Mathematics, Institute for Advanced Study**, Princeton.
Fall 2020 **Postdoctoral researcher**, Centre de recherches mathématiques, Montréal.
2017-2020 **Teaching assistant**, École Normale Supérieure Ulm, Paris.
2016-2017 **Teaching assistant**, Université Paris-Sud, Orsay.

Education

2015-2019 **Ph.D in Pure Mathematics**, Université Paris-Sud, Orsay.
Advisor : François Charles ; Thesis : *On some arithmetic and geometric aspects of orthogonal Shimura varieties.*
2014-2015 **Masters in Pure Mathematics**, École Normale Supérieure-Université Pierre et Marie Curie, Paris, Summa Cum Laude.
Advisor : Gaëtan Chenevier ; Thesis : *Images of certain Galois representations associated to Siegel modular forms of genus 2.*
2013 **Bachelors in Mathematics**, École Normale Supérieure-Université Paris Diderot, Paris, Summa Cum Laude.
Advisor : Olivier Biquard ; Thesis : *On curve shortening flow*, joint work with Antoine Song.
2012 **Admission to École Normale Supérieure Paris**, Moulay Youssef school, Rabat, Morocco.
Two years of preparation for tests of French schools.
2010 **High school diploma, with focus on Mathematics**, Moulay Youssef Technical high school, Tangier, Morocco.
Summa Cum Laude, ranked second at the national level.

Honors and Awards

2016-2019 **PhD grant from École Normale Supérieure Ulm.**

- 2012-2016 **Undergraduate grant from École Normale Supérieure Ulm.**
- 2012 **Entrance contest to École Polytechnique.**
Ranked first, international entrance exam.
- 2012 **Concours National Commun, Morocco.**
Ranked first. Moroccan national exam for entrance to best engineering schools.
- 2010 **International Mathematical Olympiads.**
Bronze medal. Astana, Kazakhstan.
- 2010 **Concours Général des Sciences et Techniques of Morocco.**
First prize in mathematics. The Concours Général is the highest competitive contest in Morocco for 12th grade students.

Publication list

- March 2022 **Picard rank jumps in bad reduction.**
Preprint.
- March 2021 **Equidistribution of Hodge loci II, with Nicolas Tholozan.**
To appear in *Compositio Mathematica*.
- September 2019 **Exceptional jumps of Picard ranks of K3 surfaces over number fields, with Ananth Shankar, Arul Shankar and Yunqing Tang.**
To appear in *Forum of Mathematics, Pi*.
- May 2018 **Rational curves on elliptic K3 surfaces.**
Mathematical Research Letters, Vol. 27, No. 4 (2020), pp. 1237-1247.
- January 2018 **Equidistribution of some Hodge loci.**
J. Reine Angew. Math. 762 (2020), 167–194.
- February 2016 **Image de certaines représentations galoisiennes associées aux formes modulaires de Siegel de genre 2.**
Int. J. Number Theory, 13, 1129 (2017)

Invitations for talks

- November 2022 University of Washington at Saint-Louis, Algebraic Geometry seminar.
- October 2022 Harvard University, number theorists seminar.
- October 2022 Beijing-Taipei Algebraic Geometry and Dynamics seminar.
- October 2022 Finiteness results for special subvarieties : Hodge theory, o-minimality, dynamics. Como, Italy.
- October 2022 Geometry and Arithmetic of Hyperkähler Manifolds, AMS Fall Southeastern Sectional Meeting.
- October 2022 UC Berkeley, Number Theory Seminar.
- June 2022 Hannover University, Algebraic Geometry seminar.
- May 2022 Harvard University, number theorists seminar.
- January 2022 Harvard University, Algebraic Geometry seminar.

- December 2021 Michigan State University, Algebraic Geometry seminar.
- November 2021 University of Chicago, Number Theory seminar.
- October 2021 UC Santa Barbara, Algebraic Geometry seminar.
- September 2021 Harvard University, Number Theory seminar.
- May 2021 Humboldt Universität, Algebraic Geometry seminar, Berlin.
- April 2021 University of Georgia, Algebraic Geometry seminar.
- March 2021 Harvard University, Number Theory seminar.
- February 2021 IAS/Princeton university joint Number Theory seminar.
- January 2021 Member's seminar, Institute for Advanced Study, Princeton.
- December 2020 Essener Oberseminar, Duisburg-Essen university.
- October 2020 Geometry and Arithmetic of Hyperkähler Manifolds, AMS Fall Southeastern Sectional Meeting.
- October 2020 MIT Number Theory seminar.
- September 2020 Member's seminar, CRM Montréal.
- September 2020 Quebec-Vermont number theory seminar.
- January 2020 Séminaire Arithmétique et géométrie algébrique, IRMA, Strasbourg.
- January 2020 Réseau des étudiants en géométrie algébrique, Ihp, Paris.
- January 2020 University of Copenhagen Number Theory seminar.
- December 2019 Arithmetische und Algebraische Geometrie seminar, TU, Munich.
- September 2019 Séminaire de géométrie complexe, Institut Élie Cartan, Nancy.
- May 2019 Young Mathematicians Academic Forum, Hefei, China.
- April 2019 Séminaire de Géométrie Arithmétique et Motivique, Université Paris 13.
- January 2019 Séminaire "Raconte moi...", ENS Paris.
- November 2018 Algebraic geometry seminar, Bonn University.
- October 2018 Seminario di geometria algebrica, Università degli Studi di Milano.
- March 2018 Séminaire d'Arithmétique et de Géométrie Algébrique, Paris-Sud University, Orsay.
- February 2018 Groupes Fondamentaux, Théorie de Hodge et Motifs, villa Finaly, Florence.
- January 2018 Cycles algébriques, UPMC, Paris.
- September 2017 Journée de rentrée de l'équipe d'Algèbre, ENS Paris.
- June 2017 Mathjeunes Seminar, IHÉS, Bures-sur-Yvette.
- March 2017 Ph.D students seminar, Université Paris-Sud, Orsay.
- May 2016 Mathjeunes seminar, Université Pierre et Marie Curie, Paris.

Long term invitations

- December 2019 Technische Universität München, invited by Frank Gounelas.

- November 2019 Princeton University, invited by Yunqing Tang.
November 2018 Max Planck Institute, Bonn, invited by Daniel Huybrechts.
October 2018 Università degli Studi di Milano, invited by Fabrizio Andreatta.

Teaching and advising

- 2021-present **Benjamin Peirce fellow**, *Harvard University*.
- Supervised Keeley Hoek's minor thesis.
 - Taught Introduction to Linear Algebra for non-math majors (Math 21b, Spring 2021).
 - Taught graduate level classes : Commutative Algebra(Math 221, Fall 2021 and Fall 2022), Hodge Theory (Spring 2022), Number Fields (Math 129, Spring 2023).
- 2017-2020 **Teaching assistant**, *ENS Paris*.
- Supervision of the first year project of Jérémi Gaspar and Côme Tabary on "Banach-Ruziewicz problem."
 - Member of the jury of third year defense.
 - Supervision of the first year project at of Pierre Godfard and Raphaël Picovschi on "Deformations of Galois representations."
 - Supervision of the first year project of Nataniel Marquis and Paul Wang on "On the class number of quadratic imaginary fields."
 - Teaching assistant for Algebraic Topology course intended for second year students at ENS Ulm.
 - Supervision of the first year project of Florent Noisette and Théo Lenoir on " Representations of integers by positive definite quadratic forms and the Siegel Mass formula."
 - Taught 4 hour course of LaTeX for bachelor students in mathematics at Paris-Sud university.
- 2016-2017 **Teaching assistant**, *Université Paris-Sud*, 64 hours of teaching.
- TA for linear differential equations intended for second year students in biochemistry. Course taught by Yves Duval. 15 hours.
 - TA for the course Calculus for first year students. Course taught by Guy David. 33 hours.
 - TA for Scilab for second year physics students. Course taught by Christian Gérard. 10 hours.
 - 4 hours course of LaTeX for bachelor students in mathematics.
- 2014-2015 **Oral examiner in Mathematics**, *Lycée Louis-Le-Grand*.
Gave oral examinations to students preparing for best engineering schools in France.
- May 2014 **Member of the jury in Tournoi Français Des Jeunes Mathématiciens et Mathématiciennes**, *National mathematics competition for high school students.*

Scientific outreach

- 2016-present **Training of the Moroccan team for International Mathematical Olympiads.**
Supervision of several summer camps and online training.
- 2017 **Pan African Mathematics Olympiads (PAMO).**
Organization of the 25th edition of PanAfrican mathematical olympiads. Member of the jury.
- 2014-2016 **Speaker at Parimaths, Mathematics club for high school students in Paris area.**

Administrative and scientific duties

- Spring 2022 **Seminar on Ax-Schanuel and Mordell-Lang.**
I wrote the program for the graduate students seminar.
- March 2022 **Member of thesis jury of Si Ying Lee.**
I reported on Si Ying Lee's Thesis "Eichler-Shimura relations."
- April 2022 **Member of thesis jury of Alexander Petrov.**
I reported on Alexander Petrov's Thesis "Arithmetic properties of local systems on algebraic varieties."
- September 2021 **Member of thesis jury of Tian Nie.**
I reported on Tian Nie's Thesis "Hodge cycles in prismatic cohomology."
- December 2021 **Graduate school selection committee.**
Member of the committee for incoming graduate students to Harvard University.
- 2019-2020 **Assessment of master students.**
Member of jury of defense for master 2 students in ENS Paris.
- 2017-2019 **Entrance contest in Mathematics, Physics, Computer Science of ENS Paris, Lyon, Cachan, Rennes.**
In charge of the administrative aspects. Elaborated timetables for the examiners. Contacted the students for oral exams.
- 2016-2018 **Organizer of RéGA, Réseau d'étudiants en Géométrie Algébrique.**
Seminar for Ph.D students and Post-docs in algebraic geometry in Paris area.

Languages

- Arabic : Native.
French, English : Fluent.
German, Spanish : Beginner.