

Simon ROBY

Date of birth: Nov.1, 1993

4, rue de l'abreuvoir
57000 Metz, FRANCE
☎ +33 (0)6 83 20 73 39 / +86 18519353171
✉ roby@mail.tsinghua.edu.cn
🌐 simonroby.org

Nationality : French

Languages

French Mother tongue
English Fluent
German Good
Chinese Beginner

Education

- Sept. 2021 - Dec. 2023 **Postdoc**, *Tsinghua University*, Beijing - China, Researcher at Yau Mathematical sciences center.
- Sept. 2020 - Aug. 2021 **ATER**, *Université de Lorraine*, Metz - France, Lecturer and Research Assistant.
- Oct. 2017 - Aug. 2020 **Ph.D.**, *Graduate Student*, Metz - France, advised jointly by Angela Pasquale and Tomasz Przebinda (University of Oklahoma) supported by a three-year doctoral scholarship funded by the Grand-Est Region, France.
- 2017 **Agrégation**, (*the top French competition for teaching mathematics*)., National rank: 159 (out of more than 1500 candidates).
- 2016 **Capes**, (*Mathematics teaching competition*), National rank: 37 (out of more than 2000 candidates)., Received 37th in an other in France.
- 2015–2017 **Master**, *Université de Lorraine*, Metz - France, Master in Mathematics ("mention: très bien" - with highest honours).
- 2012–2015 **Licence**, *Université de Lorraine*, Metz - France, B. S. in Mathematics ("mention: bien" - with honours).
- 2011–2012 **CPGE**, *Lycée Kleber*, Strasbourg - France, First year of preparatory class.
- 2011 **Baccalauréat**, *Lycée Saint Pierre Chanel*, Thionville - France, Scientific Baccalaureat ("mention: bien" - with honours).

Awards or Grants

- Oct. 2017 - Sept. 2020 **Doctoral scholarship funded by the Grand Est Region**, France.
- Jan.-Aug. 2020 **Fulbright doctoral Fellow**, *University of Oklahoma (OU)*.

Research

Research interest

- Harmonic analysis on Lie groups and symmetric spaces.
- Representation theory of reductive Lie groups.
- Resonances of operators on symmetric spaces
- Character Varieties of non-classical groups

Publications and preprints

- 2023 To appear **Discrete series representations as residue representations of the Laplace operator**, <https://simonroby.org/realisation-of-discrete-series/>.
- 2023 **Resonances of the d'Alembertian on the Anti-de Sitter space $SO_e(2,2)/SO_e(2,1)$** , *arXiv:2305.05922*.
- 2023 **Residue representations - the rank one case**, *Journal of Geometry and Physics*, <https://doi.org/10.1016/j.geomphys.2023.104822>.
- 2022 **Resonances of the Laplace operator on homogeneous vector bundles on symmetric spaces of real rank-one**, *Advances in Mathematics*, <https://doi.org/10.1016/j.aim.2022.108555>.

In preparation

- 2023 **Character variety of $Spin(n)$ (with A. Merino)**, *Notes available on demand*.

Invited talks

- Oct. 2023 **Resonances of the d'Alembertian on AdS3**, *YMSC, Tsinghua University, Postdoc Workshop I*.
- Nov. 2022 **Discrete series representations of rank one semisimple Lie groups**, *Beijing Institute of Mathematical Sciences and Applications, Postdoc Workshop*.
- Nov. 2021 **Resonances of the Laplacian on homogeneous vector bundles on $H^n(\mathbb{R})$** , *Aarhus-Paderborn universities, "Geometric analysis and number theory" seminar*.
- Nov. 2021 **Resonances of the Laplacian on homogeneous vector bundles**, *YMSC, Tsinghua University, Postdoc Workshop*.
- Mai 2020 **Harmonic analysis, a generalization of Fourier transforms**, *Université de Lorraine, PhD student seminar*.
- March 2020 **Resonances of the Laplacian on homogeneous vector bundles on real rank one symmetric spaces**, *University of Oklahoma (OU), Algebra and Representation Theory Seminar*.
- May 2019 **Why do we study Lie groups and their representations?**, *Université de Lorraine, PhD's Day at the Institute Élie Cartan*.
- Nov. 2017 **Harmonic analysis on homogeneous vector bundles**, *Université de Lorraine, PhD student seminar*.

Conferences and schools as invited participant

- March 2023 **Postdoc Workshop**, *BIMSA*, Beijing, China.
- July 1–15 2022 **Representations and Characters: Revisiting the Works of Harish-Chandra and André Weil**, A satellite conference of the virtual ICM, *National University of Singapore*, Singapore.
- April 2022 **Postdoc Workshop**, *BIMSA*, Beijing, China.
- Aug. 5-9 2019 **Workshop on Harmonic Analysis and Lie Group Representations**, *Xiamen University*, Xiamen, China.
- July 28 - August 2 2019 **Introduction in Harmonic Analysis Lie Group Representations**, *Xiamen University*, Xiamen, China.
- July 8-19 2019 **Aspects of Geometric Group Theory**, *IHES*, Bures-sur-Yvettes, France.
- June 24-30 2019 **Representation Theory of Lie groups, Mathematical Physics, and Combinatorics**, *Université de Champagne Ardenne*, Reims, France.
- March 21-22 2019 **Journées SL2R**, *Université de Lorraine*, Metz, France.
- Oct. 18-19 2018 **Journées SL2R**, *Université de Champagne Ardenne*, Reims, France.
- March 22-23 2018 **Journées SL2R**, *Université de Strasbourg*, Strasbourg, France.
- Nov. 16-17 2017 **Journées SL2R**, *Université de Lorraine*, Nancy, France.

Teaching experiences

- 2021-2023 **Teaching Assistant**, *Tsinghua University*, Language: English.
- Grader for "Linear Algebra" for 1st year math majors
 - Grader for "Calculus" for 1st year math majors
- 2017-2020 **Graduate Teaching Assistant**, *Université de Lorraine*, Performed all teaching duties, including lecturing, preparing and administrating exercise sessions, mentoring, grading.
- Course Instructor for Algebra 2 for 1st year engineer students (German), at Institut supérieur franco-allemand de techniques, d'économie et de sciences, Metz, France
 - Grader for Analysis for 2nd year math majors.
 - Course Instructor for the Preparation for the Computer Modeling Exam in Probability for the Agrégation (Option A, Scilab).
 - Grader for Probability for 4th year math majors.
 - Course Instructor for "Math and Statistics" (plotting functions, sequences, integrals, discrete probabilities).
 - Course Instructor in "Calculus" and "Foundations of Mathematics" for 1st year math majors
 - Course Instructor in "Mathematical Methods" at Institut Universitaire de Technologie de Mesures Physiques, Metz, France.

- Grader for Statistics (normal distributions, confidence intervals, hypothesis testing) for first year medicine students.
- Course Instructor for "An Introduction to the Latex Programming" (in 2018 and in 2019).
- Course Instructor for "An Introduction to the SAGE Programming" (in 2018 and in 2019).
- Course Instructor for Probability (normal distributions, trust intervals, test theory).
- Administered Oral Exams for 2nd and 3rd year math majors in Algebra, Analysis and Probability.

2020 **Label de l'enseignement supérieur**, *Université de Lorraine*, Formal certification of successful teaching and skills at the university level.

2017-2020 **Member of IAEM doctorate school's Council**, *Ufr Mathématique Informatique Mécanique*, .

Popularization of Mathematics

2021-2023 **Invited researcher for "Math.en.Jeans"**, *French school of Beijing*, Make high school student researching on short Maths topics during one year.

2018-2019 **Founded the student association "Maths and Us" and served as the first President**, *Ufr Mathématique Informatique Mécanique*, Metz - France.

2015–2016 **Tutor**, *Université de Lorraine*, Exercise sessions for 1st year students.

2013–2016 **Private lessons**, in math for high school students.

Chess related duties

2018-2022 **Association's President**, *Thionville chess club*.

2014-2018 **Association's Treasurer**, *Thionville chess club*.

2016-... **Member of the Chess Mosel Committee**.

2015-2016 **Chess Refereeing Director for the Lorraine**, *Duty ended because of the French regional reorganization merging Alsace, Champagne-Ardenne and Lorraine into the Region Grand-Est*.

Since 2011 **Federal Arbiter Open 1 of the FIDE (World Chess Federation)**.

2001-2020 **Chess classes for kids**.