

# Saad Slaoui

## Curriculum Vitae

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Department of Mathematics, University of Texas at Austin

## Education

- 2019–present **University of Texas at Austin**, *PhD student in Mathematics*.  
PhD advisor: David Ben-Zvi
- 2018–2019 **University of Pennsylvania**, *M.A. in Mathematics*.  
Master's thesis: "Topological K-Theory and Some of Its Applications".  
Thesis supervisor: Mona Merling.
- 2015–2019 **University of Pennsylvania**, *B.A. in Mathematics with honors*.  
Graduated Summa Cum Laude.
- 2017–2018 **University of Oxford**, *Academic year abroad, Lady Margaret Hall college*.

## Honors and Awards

- 2019–2024 **Provost's Graduate Excellence Fellowship recipient**, *University of Texas at Austin*.
- 2019 **Phi Beta Kappa**, *University of Pennsylvania*.
- 2017 **Penn Math Undergraduate Research Prize**, *University of Pennsylvania*.
- 2015–2019 **Dean's List**, *University of Pennsylvania*.

## Projects and Expository Writing

(Files accessible by clicking the title)

- 2021 **Introduction to Varieties and Schemes - or Grothendieck's Paradise**.  
Lecture notes for a summer mini-course co-organized by Desmond Coles and myself.
- 2020 **A Prelude to the Geometric Satake Equivalence**.  
Lecture notes for a summer mini-course co-organized by Alberto San Miguel Malaney and myself.
- 2019 **Topological K-Theory and Some of Its Applications**.  
Master's thesis. Advisor: Mona Merling.
- 2019 **The Brown Representability Theorem: Old and New**.  
Co-written with Mark Macerato
- 2018 **Building up to the Pontryagin-Thom Theorem & Computation of  $\pi_*(MO)$** .  
UChicago REU 2018 project. Mentors: Peter May and Colin Aitken.
- 2018 **Tensor Product of Functors**.  
Written in contribution to the book in progress "Finite Spaces and Larger Contexts", by Peter May.
- 2018 **A Primer on Sheaf Theory and Sheaf Cohomology**.  
Oxford reading course project. Mentor: André Henriques.
- 2017 **Geometry and Topology of Complex Matrix Spaces**.  
Summer 2017 project in collaboration with Louis Esser and Mark Macerato, supervised by Dennis DeTurck and Herman Gluck.

## Talks

- April 2021 **Chern classes in complex algebraic geometry**, *Junior Geometry Seminar, University of Texas at Austin (online)*.
- March 2021 **Height filtration of the moduli of formal groups**, *Chromatic Seminar, University of Texas at Austin (online)*.

- March 2021 **The étale fundamental group and Tannakian formalism**, BAGS Seminar, University of Texas at Austin (online).
- February 2021 **Formal group laws and Lazard's theorem**, Chromatic Seminar, University of Texas at Austin (online).
- October 2020 **Algebraic K-theory from the geometric viewpoint**, Junior Geometry Seminar, University of Texas at Austin (online).
- October 2020 **Introduction(s) to  $\mathcal{D}$ -modules and their 6 functor formalism**, BZR Seminar, University of Texas at Austin (online).
- September 2020 **Schemes from the functor of points perspective**, BAGS Seminar, University of Texas at Austin (online).
- May 2020 **Serre's GAGA theorems**, BAGS Seminar, University of Texas at Austin (online).
- March 2020 **Derived functors and sheaf cohomology**, BAGS Seminar, University of Texas at Austin (online).
- March 2020 **Quantum groups and their representations in the context of 3-2-1 TQFTs**, Junior Geometry Seminar, University of Texas at Austin.
- Oct. 2019 **A Primer on Lie groups and Lie algebras**, Sophex Seminar, University of Texas at Austin.
- Sept. 2019 **Clifford algebras and Clifford modules**, Junior Geometry and String Theory Seminar, University of Texas at Austin.
- Oct. 2018 **The Pontryagin-Thom isomorphism and null-bordism of manifolds via Stiefel-Whitney numbers**, Invited talk for Math 618, University of Pennsylvania.
- Sept. 2018 **From the Pontryagin-Thom isomorphism to the classification of manifolds up to unoriented cobordism**, Graduate Geometry/Topology Seminar, University of Pennsylvania.
- Aug. 2018 **Representability in algebraic topology**, REU 2018 participant talks, University of Chicago.
- Aug. 2018 **Geometry of matrix spaces**, Undergraduate Workshop in Geometry/Topology, University of Notre Dame.

## Conferences Attended

- August 2021 **Topological field theories and factorization homology**, University of Copenhagen.
- July 2021 **Motivic Homotopy Graduate Summer School**, IAS/PCMI (online).
- June 2020 **Viva Talbot!**, MIT (online).
- July 2020 **Motivic, Equivariant and Non-commutative Homotopy Theory**, IHES (online).
- June 2020 **Geometric Representation Theory**, Perimeter Institute/Max Planck Institute (online).
- Feb. 2020 **Introductory Workshop: Higher Categories and Categorification**, MSRI.

## Teaching Experience

- Fall 2021 **M341: Linear Algebra and Matrix Theory. Teaching assistant**, University of Texas at Austin.
- July 2021 **Introduction to Varieties and Schemes. Summer mini-course instructor**, University of Texas (Online) at Austin.  
Two-week-long mini-course jointly led by Desmond Coles. Click here for lecture notes.
- July 2020 **The Geometric Satake Equivalence. Summer mini-course instructor**, University of Texas at (Online) Austin.  
Week long mini-course jointly led by Alberto San Miguel Malaney. Click here for lecture notes.
- May 2020 **Introduction to Representation Theory. Summer mini-course teaching assistant**, University (Online) of Texas at Austin.  
Two-week-long mini-course on the representation theory of semisimple Lie algebras, led by Tom Gannon.
- F2019-S2020 **Directed Reading Program. Mentor**, University of Texas at Austin.  
Undergraduate mentees: Rithvik Reddy (algebraic topology), Joshua Wong (representation theory).
- Fall 2016 **CIS 120: Programming Languages and Structures. Teaching assistant**, University of Pennsylvania.

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## Service

### Organizational

- Fall 2021 **Junior Geometry seminar. Organizer**, *University of Texas at Austin*.
- Summer 2021 **UT Austin summer mini-courses. Co-organizer**, *University of Texas at Austin (online)*.  
Co-organized by Arun Debray, Amy Li, Richard Wong, and myself.
- F2019-present **Basic Algebraic Geometry Seminar. Co-organizer**, *University of Texas at Austin*.  
Semester-long learning seminar on algebraic geometry, co-organized by Desmond Coles and myself. Topics from past semesters have included Serre duality and the Riemann-Roch theorem, stacks and moduli of curves, étale cohomology and the étale fundamental group.

### Outreach

- Fall 2021 **Directed Reading Program (DRP). Co-organizer**, *University of Texas at Austin*.  
The Directed Reading Program (DRP) is a program which pairs undergraduate students with graduate students for a semester-long independent study.
- S2021-present **Volunteer high-school tutor**, *Precalculus, Art of Problem Solving (online)*.
- Spring 2020 **Sunday Morning Math Groups. Graduate student volunteer**, *University of Texas at Austin*.  
Outreach program consisting of supervised problem-solving sessions and guest lectures, aimed at students in grades 6-12.
- Spring 2017 **Penn Emerging Scholars Program. Workshop leader**, *University of Pennsylvania*.  
Outreach weekly workshop designed to introduce college freshmen and sophomores to areas of discrete mathematics, computer science, and logic.

### Languages

**English** (fluent); **French** (fluent); **Spanish** (intermediate).