

# Martin T. Luu

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## Research interests

Langlands dualities, dualities of quantum field theories, and their interrelation.

## Employment

2016–present Tenure-Track Assistant Professor, University of California, Davis  
2014–2016 Tenure-Track Assistant Professor, University of Illinois at Urbana-Champaign  
2011–2014 Szegő Assistant Professor, Stanford University

## Education

2011 Ph.D. Princeton University  
2006 M.Sci. in Mathematics, University College London (Faculty Medal winner)

## Publications

### BOOKS

1. [Deformation Theory and Local-Global Compatibility of Langlands Correspondences](#)  
*Memoirs of the AMS*, Volume 238 (2015), No. 1123, 101 pp  
[Link](#).

### JOURNAL ARTICLES

1. [Rigidity of Kac-Schwarz operators](#)  
*Letters in Mathematical Physics*, 110 (2020), 911-924  
[Link](#).

2. [Spectral Curve Duality beyond the Two-Matrix Model](#)  
*Journal of Mathematical Physics*, 60 (2019), 8 pp.  
[Link](#).
3. [Feigin-Frenkel Image of Witten-Kontsevich Points](#)  
*International Mathematics Research Notices*, doi.org/10.1093/imrn/rnz390  
[Link](#).
4. [Langlands Parameters of Quivers in the Sato Grassmannian](#) (with Matej Penciak)  
*Communications in Mathematical Physics*, 357 (2018), 775 - 789  
[Link](#).
5. [KP Flows and Quantization](#)  
*Journal of Mathematical Physics*, 57 (2016)  
[Link](#).
6. [Local Langlands Duality and a Duality of Conformal Field Theories](#)  
*Communications in Number Theory and Physics*, 10 (2016), 1-22  
[Link](#).
7. [Fourier Duality of Quantum Curves](#) (with Albert Schwarz)  
*Mathematical Research Letters*, 23 (2016), 1109-1135  
[Link](#).
8. [Duality of 2D Gravity as a Local Fourier Duality](#)  
*Communications in Mathematical Physics*, 338 (2015), 251-265  
[Link](#).
9. [Crystalline Cohomology of Superschemes](#)  
*Journal of Geometry and Physics*, 121 (2017), 83 - 92  
[Link](#).

#### PREPRINTS

1. Normal forms of Heisenberg connections  
[Link](#).
2. Iterated integrals on affine curves (with Albert Schwarz)  
[Link](#).
3. Drinfeld-Sokolov Flows and the Local Geometric Langlands Correspondence  
[Link](#).

#### Talks

##### CONFERENCE TALKS

Lisbon University – July 2019:

“Irregular Singularities and Quantum Field Theory”

Université Paris VII – March 2017 :

“Irregular Connections, Character Varieties and Physics”

AMS Fall Central Sectional Meeting, Minneapolis – October 2016:  
Special Session “Representation Theory, Automorphic Forms and Related Topics“

University of Illinois at Urbana Champaign – November 2014:  
“University of Illinois Langlands Day”

AMS Fall Central Sectional Meeting, Eau-Claire – September 2014 :  
Special Session “Number Theory”

UC Santa Cruz – November 2012:  
“Bay Area Algebraic Geometry and Number Theory Day”

#### SEMINAR TALKS

University of California, Davis – December 2018 :  
QMAP Seminar

University of California, Davis – February 2017 :  
Algebra and Discrete Math Seminar

Duke University – November 2015:  
Number Theory Seminar

University of Chicago – April 2015  
Number Theory Seminar

Northwestern University – April 2015:  
Number Theory Seminar

Purdue University – April 2015:  
Number Theory Seminar

University of Illinois at Urbana-Champaign – November 2014:  
Math-Physics Seminar

University of Illinois at Urbana-Champaign – November 2013:  
Number Theory Seminar

UC Santa Cruz – November 2013:  
Algebra and Number Theory Seminar

MIT – December 2011  
Number Theory Seminar

UC Santa Cruz – November 2011  
Algebra and Number Theory Seminar

UC Berkeley – October 2011  
Number Theory Seminar

Stanford University – October 2011  
Number Theory Seminar

## Service

### UC DAVIS MATHEMATICS DEPARTMENT

- 2019 - 2020 Undergraduate Program Committee (UPC)
- 2019 - 2020 Lecturer Search/Evaluation Committee
- 2019 - 2020 Ad hoc committee member for MAT 16ABC course re-design (mathematics for data science)
- 2018 - 2019 Postdoc (KAP) Search Committee
- 2018 - 2019 AI Mentoring Committee
- 2018 Qualifying exam committee member for Robert Scherer
- 2017 Organizer of the Algebra and Discrete Math Seminar (spring quarter)
- 2017 - 2018 Colloquium and Distinguished Lecture Series co-organizer
- 2017 - 2018 Events and Display Committee

### UNIVERSITY SERVICE AT UC DAVIS

- 2020 Moderator at “31st Undergraduate Research, Scholarship & Creative Activities Conference” at UC Davis
- 2020 Judge at “UC Davis Grad Slam” competition
- 2019 Moderator at “30th Undergraduate Research, Scholarship & Creative Activities Conference” at UC Davis
- 2018-2019 UC Davis Graduate Studies Internal Fellowship Reviewer:
  1. Achievement Rewards for College Scientists Awards
  2. Outstanding Graduate Student Teaching Assistant Award
- 2017-2018 UC Davis Graduate Studies Internal Fellowship Reviewer

### CONFERENCE ORGANIZATION:

- 2021 (expected) Co-organizer of conference “The Mathematics of Quantum Field Theory” at UC Davis
- 2015 Co-organizer of special session “The Langlands Program and related Topics” at AMS Fall Central Sectional Meeting
- 2014 Organizer of 1-day conference on the Langlands Program at the University of Illinois at Urbana-Champaign

### REFEREEING:

Algebra & Number Theory  
Communications in Mathematical Physics  
International Journal of Modern Physics B

## SERVICE AT THE UNIVERSITY OF ILLINOIS

2014-2016 Co-organizer Number Theory Seminar, Election Committee, Algebraic Number Theory Comprehensive Exam Committee

## Teaching

### TEACHING AWARDS AND ACTIVITIES

2015 Included in the University of Illinois at Urbana-Champaign List of Teachers ranked as excellent  
2012 Curriculum Development at Stanford: Participant in week long “Course Design and Effective Teaching Program” by Stanford University’s Center for Teaching and Learning

### AT UC DAVIS

Math 298 (Reading course): Modular Curves

Math 250C: Algebra (covers Representation theory and homological algebra)

Math 125A: Real Analysis

Math 115A: Number Theory

Math 22A: Linear Algebra

Math 16B: Calculus

Math 16A: Calculus

### SUPERVISED UNDERGRADUATE RESEARCH

Supervised numerous undergraduate student research projects at UC Davis, including the following:

- Supervised Jake Parkhurst (UC Davis undergrad) for his senior thesis “On the existence of a Euclidean algorithm in number rings with infinitely many units” (summer and fall 2018)
- Supervised Wei Luo (UC Davis undergrad) for his research project “Tau functions of Drinfeld-Sokolov hierarchies” (2018 - 2019)
- Supervised Jiangcheng Yu (UC Davis undergrad) for his research project “The Levelt-Turrittin algorithm for meromorphic systems of differential equations” (summer and fall 2018)

### TEACHING AT THE UNIVERSITY OF ILLINOIS

Math 595: Elliptic Curves and Modular Forms (Graduate topics course)

Math 530: Algebraic Number Theory (Graduate course)

Math 453: Elementary Number Theory

TEACHING AT STANFORD UNIVERSITY

Math 196: Undergraduate Colloquium

Math 121: Modern Algebra II (Galois Theory)

Math 120: Modern Algebra I (Groups and Rings)

Math 109: Applied Group Theory

Math 106: Functions of a Complex Variable

Math 51: Linear Algebra and Differentiable Calculus of Several Variables

Math 20: Calculus

Math 19: Calculus

TEACHING AT PRINCETON UNIVERSITY

Math 201: Multivariable Calculus