

Shen Lu

University of Colorado Boulder
Department of Mathematics

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Education

- 2018–present **Ph.D. Mathematics (anticipated May 2021)**, *University of Colorado Boulder*, Boulder, Colorado.
- 2015–2018 **M.A. Mathematics**, *University of Colorado Boulder*, Boulder, Colorado.
- 2011–2015 **B.S. Mathematics**, *Lebanon Valley College*, Annville, Pennsylvania.
Graduated summa cum laude. Double majored in Actuarial Science.

Research Experience

- 2017–present **Doctoral Research**, *Department of Mathematics, University of Colorado Boulder*,
Research Advisor: Dr. Judith Packer.
Investigated equivalence bimodules over noncommutative solenoids and their connections to p -adic numbers.
- 2016 **First-Year Graduate Student Research**, *Department of Mathematics, University of Colorado Boulder*,
Research Advisor: Dr. Sean O'Rourke.
Studied critical points of random polynomials and random matrices.
- 2014 **Research Experiences for Undergraduates**, *Lebanon Valley College*, *Research Advisor: Dr. Barry Smith.*
Studied patterns in quotients and remainders of the Euclidean algorithm with special inputs.

Teaching Experience

Instructor, *University of Colorado Boulder.*

Primary instructor for one section (30 students) of a multi-section coordinated course each semester. Responsibilities included: design and implement active learning activities, prepare and deliver lectures, develop and administer assessments.

Calculus I	Fall 2016, Spring 2017, Summer 2017
Calculus II	Spring 2018
Calculus III	Fall 2019

Teaching Assistant, *University of Colorado Boulder.*

Teaching assistant for 1-3 sections of a multi-section coordinated course each semester. Responsibilities included: implement active learning through weekly group-based recitation projects, grade assessments, mentor undergraduate learning assistants.

Precalculus	Fall 2015, Spring 2016
Calculus II	Fall 2017, Spring 2019
Calculus III	Spring 2020, Fall 2020

- 2020–2021 **Calculus III Assistant Coordinator**, *University of Colorado Boulder*,
Assisted the coordinator in all operational tasks of a multi-section course involving teams of instructors, graduate teaching assistants, and undergraduate learning assistants. Responsibilities included: setup and maintenance of course webpage, WebAssign online homework, Canvas gradebook; curriculum development through updating assessment items, creating supplemental course material, and modifying active learning activities; weekly meetings with instructors on content and learning objectives; weekly meetings with teaching assistants and learning assistants on pedagogy and implementation of recitation projects. Additional responsibilities for fall 2020 included adapting all active learning activities and manipulatives for online teaching and learning.
- 2017–2019 **Co-Instructor MATH 5905: Mathematics Teacher Training**, *Department of Mathematics, University of Colorado Boulder*.
Co-taught departmental weekly teacher training seminar for first- and second-year graduate students. Focused on fostering the development of key competencies for effective college level instruction in mathematics. Topics included: theory and practice of teaching and learning, effective assessment and evaluation, inclusive curriculum design, student engagement and motivation, group work facilitation, classroom management and more.

Certificates

- 2021 **Certificate in College Teaching**, *University of Colorado Boulder*.
Requirements include: minimum two-semesters of teaching at CU-Boulder, 20 Graduate Teacher Program workshops, 20-hours of Discipline-Specific workshops, receiving two videotape consultations as a classroom instructor, completion of Kolb LSI and Wingspread Faculty Teaching Inventory, faculty observation and evaluation of teaching, completion of a teaching portfolio, and completion of training from the Office of Discrimination and Harassment.
- 2020 **Faculty Institute for Inclusive Teaching: Certificate of Completion**, *University of Denver*.
Requirements include completing eight content modules: inclusive teaching, creating an inclusive curriculum, identifying inclusive learning outcomes, designing inclusive assessment, evaluation, facilitating inclusive discussion, group processes, responding to bias, microaggression, understanding power, privilege, and oppression, taking care of self and community.

Awards

- 2020 **Burton W. Jones Teaching Excellence Award**, *University of Colorado Boulder*.
2017 **Best Should Teach Silver Award**, *University of Colorado Boulder*.
2013 **Mathematics Achievement Award**, *Lebanon Valley College*.

Grants

- 2019 **Adele V. Leonhardy Memorial Scholarship**, *University of Colorado Boulder*.
The scholarship is awarded annually to outstanding students who plan careers in teaching mathematics.
- 2018 **Frances C. Stribic/Graduate School Summer Fellowship**, *University of Colorado Boulder*.
- 2013 **The Arnold Grant for Student-Faculty Research Projects**, *Lebanon Valley College*.

Publications

S. Lu, **Constructing equivalence bimodules between noncommutative solenoids: a two-pronged approach.**

Available at <https://arxiv.org/abs/2103.02179>

C. Doran, S. Lu, B. Smith, **New algorithms for modular inversion and representation by the form $x^2 + 3xy + y^2$,** *Involve*, Vol. 10 (2017), No. 4, pp. 541 - 544.

Talks and Presentations

- 2021 *Irrational noncommutative solenoids and their finitely generated projective modules.* Contributed talk at Arizona State University, C*-Seminar; February 17.
- 2020 *Constructing finitely generated projective modules for noncommutative solenoids.* Invited speaker at Joint Mathematics Meetings, AMS Special Session on Fractal Geometry, Dynamical Systems, and Applications; January 18.
Minimal dynamical systems and C-algebras.* Invited speaker at the Metropolitan State University of Denver, Math Colloquium; October 2.
Lance Chapter 2: Multipliers and morphisms. Contributed talk at University of Colorado Boulder, Functional Analysis seminar; September 24.
Induced representations. Contributed talk at University of Colorado Boulder, Functional Analysis seminar; October 15.
Equivalence bimodules. Contributed talk at University of Colorado Boulder, Functional Analysis seminar; October 29.
Constructing equivalence bimodules between noncommutative solenoids: a two-pronged approach. Contributed talk at UK Operator Algebras Virtual Christmas Seminar: 3 Minute Thesis; December 17.
- 2019 *Noncommutative solenoids and their finitely generated projective modules.* Contributed talk at University of Colorado Boulder, Functional Analysis seminar; October 17.
- 2014 *A New Algorithm For Computing Inverses in Modular Arithmetic.* Poster presented (with C. Doran) at Joint Mathematics Meetings, MAA Undergraduate Poster Session; January 17.
A New Algorithm for Computing Inverses in Modular Arithmetic. Contributed talk (with C. Doran) at MAA EPaDel sectional meeting at University of Scranton; April 26.

Other Conference Participation

- 2020 Canadian Operator Symposium, Online; May 25-29.
Special Week on Operator Algebras, Online; August 10-14.
- 2019 Great Plains Operator Theory Symposium, Texas A&M University; May 28-June 1.
YMC*A
- 2018 Great Plains Operator Theory Symposium, Miami University; May 29-June 2

2017 Great Plains Operator Theory Symposium, Texas Christian University; May 22-26

Leadership and Service

2017–2019 **Lead Graduate Fellow**, *University of Colorado Boulder*.

Participated in robust teacher training by the Center for Teaching and Learning and carried out leadership role in the mathematics department. Responsibilities for the department included: designing, implementing, and assessing new graduate student orientation and prospective graduate student welcome weekend; fostering community within the department through organizing weekly teatime for math department faculty, graduate students, and staff; co-instructing weekly mathematics teacher training seminar for first- and second-year graduate students.

2016–present **Diversity Committee Member**, *Department of Mathematics, University of Colorado Boulder*.

Organized and engaged in departmental events with particular focus on supporting underrepresented groups within the mathematics community. Participated in professional development programs and trainings for fostering a supportive environment for the success of each individual in the department. Co-organizer on:

- Diversity Statement Workshop, with Florencia Orosz Hunziker, November 24, 2020.
- Challenge Course Experience, with Sarah Arpin, September 12, 2020 (virtual), September 14, 2019, and September 15, 2018
- CHAT+ on “A Word from... Abigail Thompson” by Abigail Thompson, with Sarah Arpin, February 26th, 2020.
- LGBTQ Safe Zone: LGBTQ Inclusion Presentation, November 6th, 2019 and March 20, 2017.
- Wait Your Turn: Interrupting Sexism, with Albany Thompson, November 26, 2018.

Professional Development

2020 LGBTQ+Math Day, November 18th, hosted online by Fields Institute for Research in Mathematical Sciences.

CHAT+: Identifying and combating racism in our community, June 24, Department of Mathematics, University of Colorado Boulder

Diversity Summit: Intersectionality: Humanity in Action, February 25, University of Colorado Boulder

2019 Spring Diversity and Inclusion Summit, February 12, University of Colorado Boulder.

2018 Fall Diversity and Inclusion Summit, November 13-14, University of Colorado Boulder.

Graduate Teacher Program Spring Conference and Collaborative Preparing Future Faculty Network (COPFFN), January 26-27, University of Colorado Boulder.

Bringing Theory to Practice Seminar Be The Change: practicing inclusive excellence for student success and faculty well-being, January 10, University of Colorado Boulder.

2017 Field of Dreams Conference, November 2-5, The Center for the National Math Sciences Alliance.

Graduate Teacher Program Lead Fellow Training, May 16-20, University of Colorado Boulder.

CHAT+ on how we can better support marginalized groups in our department, March 8, Department of Mathematics, University of Colorado Boulder

Graduate Teacher Program Spring Conference and Collaborative Preparing Future Faculty Network (COPFFN), January 12-13, University of Colorado Boulder.

2016 Inquiry Based Learning Workshop, August 17-19, University of Colorado Boulder.

Effective Bystander Intervention Training, March 30, University of Colorado Boulder.

Professional Affiliations

American Mathematical Society (AMS)

Mathematical Association of America (MAA)

Pi Mu Epsilon: U.S. Honorary National Mathematics Society

References

References available on request