

## CURRICULUM VITAE

### Samantha Brooker

School of Mathematical and Statistical Sciences  
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## Education

*Ph.D. in Theoretical Mathematics* (2024)

Arizona State University

Advisor: Dr. Jack Spielberg

Thesis: *Spectral Triples on a Non-standard Presentation of Effros-Shen AF Algebras*

*B.A. in Mathematics and Applied Computing* (March 2018)

University of Denver

Advisor: Dr. Frédéric Latrémolière

## Publications

3. S. Brooker and J. Spielberg. *Relative graphs and relative Toeplitz graph algebras*. 14 pages, (Accepted 2022), to appear in *Journal of Operator Theory*, arXiv: 2207.10829.
2. Konrad Aguilar, S. Brooker, Frédéric Latrémolière, and Alejandra López. *An ideal convergence*. Notices of the AMS **68**, no. 8 (2021): 1269-1281.
1. Konrad Aguilar and S. Brooker. *Quantum metrics from traces on full matrix algebras*. *Involve: A Journal of Mathematics* **12**, no. 2 (2019): 329-342.

## Awards and Grants

**2024** *Joint Mathematics Meetings Graduate Student Travel Grant (American Mathematical Society)*

**2023-24** *Graduate Completion Fellowship (ASU Graduate College)*

**2023** *Funded research stay at ICMS (International Centre for Mathematical Sciences)*

**2023** *NSF Travel Support to Leuven, Belgium for Young Mathematicians in  $C^*$ -Algebras conference*

**2022** *NSF Travel Support to Oslo, Norway for Young Mathematicians in  $C^*$ -Algebras conference*

**2019, 2018** *Block Grant (ASU Graduate College)*

**2017** *Eleanor Campbell Award for Excellence in Mathematics (University of Denver)*

**2017** *Joint Mathematics Meetings MAA Student Travel Grant*

**2016** *2016 Summer Research Grant (University of Denver Undergraduate Research Center)*

## Research Experience

*Dissertation: Spectral triples on a non-standard presentation of Effros-Shen AF algebras.*

Advisor: Dr. Jack Spielberg

**2021-present** *Textile systems and 2-graphs, Women in Operator Algebras II.*

Project leader: Dr. Elizabeth Gillaspay

**2019-2022** *Relative Toeplitz graph  $C^*$ -algebras, funded by the ASU Graduate College Summer Block Grant.*

Advisor: Dr. Jack Spielberg

**2016 - 2018** *Finite-dimensional quantum metric spaces, funded, in part, by the University of Denver Undergraduate Research Center Summer Research Grant*

Advisor: Dr. Konrad Aguilar

Faculty Partner: Dr. Frédéric Latrémolière

## Seminar and Conference Presentations

### Invited talks

- 2024 *ILAS Special Session on Linear Algebra, Matrix theory, and its Applications* at the Joint Mathematics Meetings.
- 2023 *Analysis Seminar* at Pomona College.
- 2023 *AMS Spring Central Sectional Meeting: Special Session on Advances in Operator Algebras* at Creighton University.
- 2022 *East Coast Operator Algebras Symposium* at Michigan State University.
- 2022 *KnOttawa Summer School* at Kansas State University.
- 2022 *Functional Analysis Seminar* at UC San Diego.
- 2022 *AMS Spring Central Sectional Meeting: Special Session on Recent Developments in Operator Algebras* hosted virtually at Purdue University.
- 2021 *Operator Algebras Seminar (virtual)* at Purdue University.

### Contributed talks

- 2024 *Great Plains Operator Theory Symposium*, at University of Nebraska, Lincoln.
- 2023 *Great Plains Operator Theory Symposium*, at Ohio State University in Columbus, Ohio.
- 2022 *Young Mathematicians in  $C^*$ -Algebras*, at University of Oslo.
- 2022  *$C^*$ -Algebras Seminar*, at Embry-Riddle Aeronautical University.
- 2021  *$C^*$ -Algebras Seminar*, at Arizona State University.
- 2021 *GOALS Seminar (virtual)*.
- 2020  *$C^*$ -Algebras Seminar*, at Arizona State University.
- 2018 *Great Plains Operator Theory Symposium*, at Miami University in Oxford, Ohio.
- 2018 *Joint Mathematics Meetings: AMS Contributed Paper Session on Research in Geometry, Groups, and Representations by Undergraduate and Post-Baccalaureate Students*.
- 2017 *University of Denver Undergraduate Research Symposium*. Poster.
- 2017 *Nebraska Conference for Undergraduate Women in Mathematics*, at University of Nebraska, Lincoln. Poster.
- 2017 *Joint Mathematics Meetings: MAA Undergraduate Poster Session*. Poster.
- 2016 *Young Mathematicians Conference*, at Ohio State University.

### Conference Participation

- 2023 *Young Mathematicians in  $C^*$ -Algebras*, at KU Leuven.
- 2021 *Women in Operator Algebras II* at Banff International Research Station.
- 2020 *Groundwork for Operator Algebras Lecture Series (virtual)* at Michigan State University.
- 2020 *Joint Mathematics Meetings* in Denver, CO.
- 2019 *Workshop on New Geometry of Quantum Dynamics* at The Fields Institute.
- 2019 *Great Plains Operator Theory Symposium* at Texas A&M University.
- 2017 *Graduate Research Opportunities for Women* at Northwestern University.
- 2016 *Nebraska Conference for Undergraduate Women in Mathematics* at University of Nebraska, Lincoln.

## Teaching

- **Instructor – Arizona State University (2020-2023)**  
 Calculus II for Engineers – taught 6 times, including on campus, remote synchronous, and ASU Online (asynchronous)  
 Calculus I for Engineers – taught 4 times, including remote synchronous and ASU Online (asynchronous)
- **Teaching Assistant – GOALS (Groundwork for Operator Algebras Lecture Series) (2021)**  
 Developed problem sets for 18 early graduate students in a two-week summer lecture series on  $C^*$ - and von Neumann algebras. Organized and facilitated daily problem sessions, providing guidance and encouragement to students working in small groups.
- **Teaching Assistant – Arizona State University (2018-2020)**  
 Calculus II recitations (taught twice), Calculus III recitations (taught twice).

### Service

- 2021, 2022** *Panelist* for the School of Mathematical and Statistical Sciences graduate recruitment event at Arizona State University
- 2021-2022** *Mentor*, ASU School of Mathematical and Statistical Sciences Peer Mentoring program
- 2021-2022** *Co-organizer* of GOALS Alumni Seminar
- 2021** *Panelist* for the School of Mathematical and Statistical Sciences TA Seminar at Arizona State University
- 2021** *Supervisor* of Honors Enrichment Project with S. Malhi at Barrett Honors College at Arizona State University