

Rachael M. Norton

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EMPLOYMENT

Assistant Professor , St. Olaf College	2023–present
Visiting Assistant Professor , Macalester College	2022–23
Assistant Professor , Fitchburg State University	2019–22
Postdoctoral Lecturer , Northwestern University	2017–19

EDUCATION

Ph.D., Mathematics , University of Iowa Advisor: Dr. Paul S. Muhly Thesis: <i>Pick interpolation, displacement equations, and W^*-correspondences</i>	2017
Graduate Certificate in College Teaching , University of Iowa	2015
M.S., Mathematics , University of Iowa	2013
B.A., Mathematics, Spanish , Bowdoin College <i>magna cum laude</i> , Phi Beta Kappa	2010
IFSA Butler Study Abroad Program, Mendoza, Argentina	2008

TEACHING EXPERIENCE

Instructor , St. Olaf College	
Real Analysis I	Spring 2024, Fall 2023
Complex Analysis	Spring 2024
Calculus I	Fall 2023
Instructor , Macalester College	
Algebraic Structures	Spring 2023
Linear Algebra	Fall 2022
Applied Multivariable Calculus I	Spring 2023, Fall 2022
Instructor , Fitchburg State University	
Applied Statistics	Fall 2021, Spring 2021, Fall 2020
Honors Applied Statistics	Spring 2021
Geometry	Spring 2021, Spring 2020
Introduction to Mathematical Thought	Fall 2020
Calculus I	Spring 2020, Fall 2019

Instructor, Northwestern University

MENU Linear Algebra and Multivariable Calculus - 3	Spring 2019 ¹
MENU Linear Algebra and Multivariable Calculus - 2	Winter 2019 ¹
MENU Linear Algebra and Multivariable Calculus - 1	Fall 2018 ¹
Linear Algebra	Winter 2018
Differential Calculus of Multivariable Functions	Spring 2018 ¹ , Winter 2018
Differential Calculus of One Variable Functions	Winter 2019, Fall 2017

Instructor, University of Iowa

Qualifying Exam Preparation Seminar in Analysis	Summers 2016, 2014
Trigonometry	Fall 2016
College Algebra	Fall 2014

Teaching Assistant, University of Iowa

Graduate Introduction to Analysis II	Spring 2016
Graduate Introduction to Analysis I	Fall 2015
Fundamental Properties of Spaces and Functions I	Spring 2015
Calculus (variety of courses)	Fall 2011 – Fall 2013

North American Language and Culture Assistant,
Valle-Inclán High School, Pontevedra, Spain

2010 – 11

RESEARCH INTERESTS

operator algebras, groupoids, Cartan subalgebras of C^* -algebras, operator theory, noncommutative function theory, W^* -correspondences, Nevanlinna-Pick interpolation

PUBLICATIONS

- R. Norton**, S. Reznikoff, and S. Wright. Cartan subalgebras arising from subgroupoids of twisted k -graph C^* -algebras. *In progress*.
- A. Duwenig, E. Gillaspay, **R. Norton**. Analyzing the Weyl construction for dynamical Cartan subalgebras. *International Mathematics Research Notices* (2021), rnab114, <https://doi.org/10.1093/imrn/rnab114>.
- A. Duwenig, E. Gillaspay, **R. Norton**, S. Reznikoff, and S. Wright. Cartan subalgebras for non-principal twisted groupoid C^* -algebras, *Journal of Functional Analysis* **279(6)** (2020).
- R. Norton**. Comparing Two Generalized Noncommutative Nevanlinna-Pick Theorems. *Complex Analysis and Operator Theory* **11(4)** (2017), 875 – 894.
- R. Norton**. Pick interpolation, displacement equations, and W^* -correspondences. PhD thesis, The University of Iowa (2017).
- R. Angeles-Canul, **R. Norton**, M. Opperman, C. Paribello, M. Russell, and C. Tamon. Perfect State Transfer, Integral Circulants, and Join of Graphs. *Quantum Info. Comput.* **10** (2010), 325 – 342.

PRESENTATIONS

Invited Talks

Certain Cartan subalgebras of twisted groupoid C^ -algebras*

Special Session on Analysis and Differential Equations at Undergraduate Institutions, April 2023
AMS Spring Eastern Sectional Meeting, online

¹Course Coordinator. Responsible for overseeing all course sections, instructors, and teaching assistants.

<i>Cartan subalgebras of twisted groupoid C^*-algebras including higher rank graph C^*-algebras</i>	AMS Special Session on Advances in Operator Algebras, Joint Mathematics Meetings (JMM), Boston, MA	January 2023
	Noncommutative Analysis at the Technion, Haifa, Israel	June 2022
<i>A gentle introduction to Cartan subalgebras of twisted groupoid C^*-algebras</i>	Faculty Seminar, St. Olaf College	December 2022
<i>Cartan subalgebras of twisted groupoid C^*-algebras and applications to higher rank graph C^*-algebras</i>	Subfactor Seminar, Vanderbilt University	April 2021
<i>Cartan subalgebras of non-principal twisted groupoid C^*-algebras</i>	Colloquium, University of Montana	March 2021
<i>Cartan subalgebras of twisted groupoid C^*-algebras</i>	AMS Special Session on Advances in Operator Algebras, JMM, online	January 2021
<i>Twisted groupoid C^*-algebras and their Cartan subalgebras</i>	Everytopic Seminar, Brandeis University	December 2020
<i>A Nevanlinna-Pick theorem in the context of the weighted Hardy algebra over a W^*-correspondence</i>	AMS Special Session on Recent Advances in Function and Operator Theory, JMM, Denver, CO	January 2020
<i>A guide to generalized Nevanlinna-Pick theorems</i>	Midwest Women in Mathematics Symposium, University of Iowa	April 2019
<i>Interpolation: real world applications and the Nevanlinna-Pick theorem</i>	Undergraduate Seminar, Fitchburg State University	February 2019
	Undergraduate Math Society Seminar, Northwestern University	October 2018
<i>A Mathematician's Guide to Designing a Roller Coaster</i>	Colloquium, St. Olaf College	December 2022
	Freshman Seminar in Mathematics, Fitchburg State University	May 2021
	Colloquium, Southern New Hampshire University	September 2018
	Undergraduate Seminar, Washington College	February 2018
	Colloquium, Hampden-Sydney College	February 2017
	Undergraduate Seminar, Lawrence University	February 2017
	Colloquium, Santa Clara University	January 2017
	Undergraduate Lunch Seminar, Bowdoin College	November 2016
<i>Investigating Pick interpolation in the setting of free noncommutative function theory</i>	AMS Special Session on Free Convexity and Free Analysis, JMM, San Diego, CA	January 2018
<i>Pick interpolation and the displacement equation</i>	Multivariable Operator Theory Conference, Technion, Haifa, Israel	June 2017
<i>Comparing Nevanlinna-Pick Theorems</i>	Faculty Seminar, Salisbury University	February 2017
	Faculty Seminar, Bowdoin College	November 2016
	Operator Algebras Seminar, Purdue University	September 2016
<i>A Comparison of Nevanlinna-Pick Theorems</i>	AMS Special Session on Advances in Operator Algebras, JMM, Atlanta, GA	January 2017
<i>Comparing Two Generalized Nevanlinna-Pick Theorems</i>	Iowa-Nebraska Functional Analysis Seminar, Des Moines, IA	April 2016
<i>Displacement Theory and W^*-correspondences</i>	AMS Special Session on Advances in Free Analysis, JMM, Seattle, WA	January 2016

Contributed Talks

<i>Pick interpolation in the context of W^*-correspondences</i>	Great Plains Operator Theory Symposium (GPOTS), Texas Christian University	May 2017
<i>Comparing Nevanlinna-Pick Theorems</i>	Operator Theory Seminar, University of Iowa	August 2016
<i>A Comparison of Generalized Nevanlinna-Pick Theorems</i>	GPOTS, University of Illinois Urbana-Champaign	May 2016
<i>A New Nevanlinna-Pick Type Theorem</i>	Operator Theory Seminar, University of Iowa	April 2016
<i>Displacement Theory in the Context of W^*-correspondences</i>	GPOTS, Purdue University	May 2015

SERVICE

Professional Service

Reader, Honors Theses		2023
Panelist, Faculty Perspectives Creating Inclusive OER, Northeast OER Summit		April 2023
Committee Member, Student Community Committee		2022
Co-organizer, Elizabeth Haskins Mathematics Contest for High School Students		2021
Advisor, Massachusetts Eta Chapter of Pi Mu Epsilon		2021–22
Co-organizer, AMS Special Session at the Joint Mathematics Meetings 2021		2020–21
Committee Member, Leading For Change Committee (Students Subcommittee)		2020–21
Committee Member, Mathematics Department Hiring Committee		2019–21
Chair		2020–21
Committee Member, Crocker Center Advisory Board		2019–20
Volunteer, Falcons Supporting Falcons Initiative		2020
Co-founder and Co-organizer, Northwestern Emerging Scholars Program		2018–19
Co-organizer, Women in Math Lunch, Northwestern University		2017–19
Math Graduate Board, University of Iowa		
Chair		2016
Social Co-chair		2013
Sonia Kovalevsky High School Mathematics Day, University of Iowa		
Co-organizer		2013
Fundraising Co-chair		2012–16

Community Outreach

Teacher, Math Circles of Chicago, Chicago, IL		2017–19
Spanish Interpreter, University of Iowa Mobile Clinic, Iowa City, IA		2013–17

PROFESSIONAL DEVELOPMENT AND INVITATION-ONLY WORKSHOPS

Women in Operator Algebras III, Banff International Research Station		June 2023
Anti-Racism Pedagogy and Community-Engaged Teaching Workshop, Fitchburg State University (online)		August 2021
Multivariable Operator Theory and Function Spaces in Several Variables, Casa Matemática Oaxaca (online)		August 2021
Workshop on Recruiting and Retaining Community-Engaged ALANA/ BIPOC Faculty (online)		September 2020
Workshop on Advancing Equity through Publicly Engaged Scholarship (online)		September 2020

Summer Research for Women in Mathematics, Mathematical Sciences Research Institute July 2019
 Women in Operator Algebras, Banff International Research Station November 2018
 Project NExT Fellow, Mathematical Association of America 2017–18
 Math Circles of Chicago Teachers Workshop, Chicago, IL August 2017, July 2018

GRANTS AND HONORS

Remixing Open Textbooks through an Equity Lens (ROTEL) Grant (\$3000), 2021
 Fitchburg State University
 Award for Excellence in Teaching by a Postdoctoral or Visiting Faculty Member, 2019
 Northwestern University Department of Mathematics
 Linzer Grant for Faculty Innovation in Diversity and Equity, Northwestern University 2019
 (\$3800 to fund the Northwestern Emerging Scholars Program in AY 2019–20)
 Ballard and Seashore Dissertation Fellowship, University of Iowa 2016
 “Thank-A-Teacher” letter, University of Iowa 2011, 2014, 2016
 Outstanding Teaching Assistant Award, University of Iowa 2013

MEMBERSHIPS

American Mathematical Society