John Charles ("J.C.") Saunders

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Education

Feb.-Mar. 2021	**TOP II** (Teaching Online Program II), University of Calgary, Canada
Feb. 2021	**TOP I** (Teaching Online Program I), University of Calgary, Canada
2013–2018	**PhD**, Pure Mathematics, University of Waterloo, Canada Thesis: Problems in Combinatorial and Analytic Number Theory Supervisors: Dr. Kevin Hare, Dr. Yu-Ru Liu
2016–2017	**Graduate Certificate**, Certificate in University Teaching, University of Waterloo, Canada
2011–2013	**MMath**, Pure Mathematics, University of Waterloo, Canada. Research Paper: Jumping Champions: Most Common Gaps Between Primes Supervisor: Dr. Michael Rubinstein
2007–2011	**Bachelor of Science with Honours**, Mathematics and Statistics, Philosophy Acadia University, Canada Thesis: Minkowski Dimension and Content of Fractals Supervisor: Dr. Franklin Mendivil

Positions Holding/Held

2022–present	**Assistant Professor**, Department of Mathematical Sciences, Middle Tennessee State University, Murfreesboro, Tennessee, USA
2020–2022	**Postdoctoral Associate**, Department of Mathematics and Statistics, University of Calgary, Canada Supervisor: Dr. Dang Khoa Nguyen

Positions Holding/Held Continued

Jan. 2021 –Dec. 2021	**Sessional Instructor**, Department of Mathematics and Statistics, University of Calgary, Canada for Math 249/265 Introductory Calculus: first year introductory calculus course held online via. Desire2Learn and Zoom platforms, and for Math 211 Linear Methods I
2018–2020	**Postdoctoral Fellow**, Department of Mathematics, Ben-Gurion University of the Negev, Israel Supervisor: Dr. Daniel Berend
May 2017 –Aug. 2017	**Instructor**, University of Waterloo, Canada for PMath 340 Elementary Number Theory: third year pure math course introducing students to the subject of number theory
Sept. 2011 –Dec. 2016	**Teaching Assistant**, University of Waterloo, Canada for various lower-level and upper year math courses: answered students' course and
Sept. 2017 –Apr. 2018	homework questions in the tutorial centre, marked and proctored assignments, tests, and exams, and presented problems and solutions to students during labs
Jan. 2011 –Apr. 2011	**Teaching Assistant**, Acadia University, Canada marked assignments for a first year matrix algebra course
Sept. 2010 –Apr. 2011	**Tutor**, Tutoring Services, Acadia University, Canada helped calculus students with their homework questions
May 2010 –Aug. 2010	**Research Assistant**, Acadia University, Canada Did mathematical research in fractal geometry in preparation for my honours thesis with an **NSERC USRA**
Sept. 2009 –Dec. 2009	**Teaching Assistant**, Acadia University, Canada Regulated, checked and answered students' questions in using the online homework system WeBWorK
May 2009 –Aug. 2009	**Project Assistant**, Acadia University, Canada Worked on an online homework system called WeBWorK for first and second year calculus courses

Professional Activities and Service

- Referee for International Journal of Applied and Computational Mathematics

- Referee for the Allahabad Mathematical Society

- Referee for the Canadian Journal of Mathematics

- Referee for AIMS Mathematics

- Examining Committee of Pedro Sobrevilla's Oral PhD Candidacy Exam, Supervisor: Dr. Renate Scheidler

- Steering Committee, 5th Fellows Forum, Azrieli Fellows Program, Azrieli Foundation.

- Chair, Session II, 2nd Fellows Forum, Azrieli Fellows Program, Azrieli Foundation.

- Referee for The Journal of Combinatorial Mathematics and Combinatorial Computing.

Awards and Scholarships

- Azrieli International Postdoctoral Fellowship, 2018, 2019
- Queen Elizabeth II Graduate Scholarship in Science and Technology, 2017
- University of Waterloo's President Graduate Scholarship, 2017
- Queen Elizabeth II Graduate Scholarship in Science and Technology, 2016
- University of Waterloo's President Graduate Scholarship, 2016
- NSERC CGS M, 2012, $17,500$
- Waterloo's President's Graduate Scholarship, 2012
- Ontario Graduate Scholarship, 2012 (declined)
- NSERC Undergraduate Student Research Award, 2010
- Dean's List Scholarship, 2010
- Douglas and Frances Snow Scholarship, 2010
- Hamilton Memorial Scholarship, 2010
- White Memorial Scholarship, 2010
- Preston Warren Prize in Philosophy, 2010
- Douglas and Frances Snow Scholarship, 2009
- Lina Mae Silver Scholarship (Mathematics), 2008
- Board of Governors Entrance Scholarship, 2007
- Charles A. Eaton Memorial Scholarship, 2007

Research Interests

Analytic number theory, algebraic number theory, combinatorial number theory, elementary number theory, random graph theory, probability, combinatorics.

Papers

Publications

- Liu, Yu-Ru, and **J.C. Saunders**. "Sieve methods in random graph theory." Graphs and Combinatorics 39.3 (2023): 39.

- Bell, Jason, Keira Gunn, Dang Khoa Nguyen, and **J.C. Saunders**. "A general criterion for the Polya-Carlson dichotomy and application." *Transactions of the American Mathematical Society* 376.06 (2023): 4361-4382.

- **Saunders, J.C.**. "The number of k-tons in the coupon collector problem." *Journal of Applied Probability* (2023): 1-14.

- **Saunders, J.C.** "The Euler totient function on Lucas sequences." *International Journal of Number Theory* 19.02 (2023): 293-330.

- Ching, Hsin-Yun, Rigoberto Flórez, Florian Luca, Antara Mukherjee, and **J.C. Saunders**. "Primes and composites in the determinant Hosoya triangle." *The Fibonacci Quarterly* 60.5 (2022): 56-110.

- Florez, Rigoberto, and **J.C. Saunders**. "Irreducibility of generalised Fibonacci polynomials." *Integers* 22 (2022): 1-16.

- Barak-Pelleg, Dina, Daniel Berend, and **J.C. Saunders**. "A model of random industrial SAT." *Theoretical Computer Science* 910 (2022): 91-112.

- Hare, Kevin, and **J.C. Saunders**. "Generalised Fibonacci sequences constructed from balanced words." *Journal of Number Theory* 231 (2022): 349-377.

- **Saunders, J.C.** "Density of sequences of the form $x_n = f(n)^n$ in $[0,1]$." *Acta Arithmetica* 201 (2021): 165-175.

- **Saunders, J.C.** "Diophantine equations involving the Euler totient function." *Journal of Number Theory* 209 (2020): 347-358.

- Hare, Kevin G., and **J.C. Saunders**. "On (a,b) pairs in random Fibonacci sequences." *Journal of Number Theory* 190 (2018): 352-366.

- **Saunders, J.C.** "Mahler measure of "almost" reciprocal polynomials." *Bulletin of the Australian Mathematical Society* (2018): 1-7.

- **Saunders, J.C.** "Sums of digits in q-ary expansions." *International Journal of Number Theory* 11.02 (2015): 593-611.

- Mendivil, Franklin, and **J.C. Saunders** "On Minkowski measurability." *Fractals* 19.4 (2011): 455-467.

Conferences

- (2023) The Euler totient function on Lucas sequences, oral presentation of my published paper The Euler totient function on Lucas sequences. Integers Conference 2023, University of Georgia, Athens, GA, USA.

- (2023) The Euler totient function on Lucas sequences, oral presentation of my published paper The Euler totient function on Lucas sequences. Southern Regional Number Theory Conference 2023, Louisiana State University, Baton Rouge, LA, USA.

- (2021) The Euler totient function on Lucas sequences, oral presentation of my published paper The Euler totient function on Lucas sequences. Alberta Number Theory Days XIII, Banff International Research Station, Banff, AB, Canada.

- (2020) Random Fibonacci sequences from balancing words, oral presentation of my published paper Generalised Fibonacci sequences constructed from balanced words. The Nineteenth International Conference on Fibonacci Numbers and Their Applications, online.

- (2019) Diophantine equations involving the Euler totient function, oral presentation of my published paper Diophantine equations involving the Euler totient function. JA (Journées Arithmétiques) XXXI, Istanbul University, Istanbul, Turkey.

- (2018) Sieve methods in random graph theory, oral presentation of my published paper Sieve methods in random graph theory. CNTA (Canadian Number Theory Association), Laval University, Quebec, QC, Canada.

- (2018) On (a, b) pairs in random Fibonacci sequences, oral presentation of my published paper On (a, b) pairs in random Fibonacci sequences. The Eighteenth International Conference on Fibonacci Numbers and Their Applications, Dalhousie University, Halifax, NS, Canada.

- (2017) On (a, b) pairs in random Fibonacci sequences, oral presentation of my published paper On (a, b) pairs in random Fibonacci sequences. AMMCS-CAIMS (Applied Mathematics, Modeling and Computational Science-Canadian Applied and Industrial Mathematics Society), Wilfrid Laurier University, Waterloo, ON, Canada.

- (2016) Sieve methods in random graph theory, poster presentation of my arxiv paper Sieve methods in random graph theory. CMS (Canadian Mathematical Society), Niagara Falls, ON, Canada.

- (2016) On (a, b) pairs in random Fiboancci sequences, oral presentation of my published paper On (a, b) pairs in Random Fibonacci Sequences. CNTA (Canadian Number Theory Association), University of Calgary, Calgary, AB, Canada.

- (2016) On (a, b) pairs in random Fibonacci sequences, poster presentation of my published paper On (a, b) pairs in random fibonacci sequences. ACMES 2 (Algorithms and Complexity in Mathematics, Epistemology, and Science): Computational Discovery, Western University, London, ON, Canada.

- (2015) Sums of digits in q-ary expansions, oral presentation of my published paper Sums of digits in q-ary expansions. AMMCS-CAIMS (Applied Mathematics, Modeling and Computational Science-Canadian Applied and Industrial Mathematics Society), Wilfrid Laurier University, ON, Canada.

- (2014) Sums of digits in q-ary expansions, oral presentation of my published paper Sums of digits in q-ary expansions. CNTA (Canadian Number Theory Association), Carleton University, Ottawa, ON, Canada.

- (2010). Minkowski dimension and content of fractals. Oral presentation of my Honours Undergraduate Thesis Research at APICS (Atlantic Provinces Council on the Sciences) Mathematics, Statistics, and Computer Science Conference, St. Mary's University, Halifax, NS, Canada.

Visiting Seminar Presentations

- (2023) Primes and composites in the determinant Hosoya triangle, oral presentation of my published paper Primes and composites in the determinant Hosoya triangle, Number Theory Seminar, University of Waterloo, Waterloo, ON, Canada.

- (2023) The Euler totient function on Lucas sequences, oral presentation of my publsihed paper The Euler totient function on Lucas sequences, Departmental Seminar, Xavier University, New Orleans, LA, USA.

- (2023) The Euler totient function on Lucas sequences, oral presentation of my publsihed paper The Euler totient function on Lucas sequences, Number Theory Seminar, University of Waterloo, Waterloo, ON, Canada (online).

- (2022) The Euler totient function on Lucas sequences, oral presentation of my published paper The Euler totient function on Lucas sequences, Number Theory Seminar, Dalhousie University, NS, Canada.

- (2020) Random Fibonacci sequences from balancing words, oral presentation of my published paper Generalised Fibonacci sequences constructed from balanced words, Number and Representation Theory seminar, University of Toronto, ON.

- (2020) Random Fibonacci sequences from balancing words, oral presentation of my published paper Generalised Fibonacci sequences constructed from balanced words, Number Theory seminar, Queen's University, ON, Canada.

- (2019) Diophantine equations involving the Euler totient function, oral presentation of my published paper Diophantine equations involving the Euler totient function, Number Theory Seminar, Dalhousie University, NS, Canada.

- (2019) Diophantine equations involving the Euler totient function, oral presentation of my published paper Diophantine equations involving the Euler totient function, Number Theory Seminar, University of Waterloo, ON, Canada.

- (2016) On (a, b) Pairs in random Fibonacci sequences, oral presentation of my published paper On (a, b) pairs in random Fibonacci sequences, Number Theory Seminar, York University, ON, Canada.

- (2014) Sums of digits in q-ary expansions, oral presentation of my published paper Sums of digits in q-ary expansions. Departmental Seminar, Acadia University, NS, Canada.

- (2014) Sums of digits in q-ary expansions, oral presentation of my published paper Sums of digits in q-ary expansions. Number Theory Seminar, Dalhousie University, NS, Canada.

Extra-curricular Activities

Sept. 2020 –present	**Peer Helper**, Events and Education and Male Allyship Team, University of Calgary Women's Resource Centre
	helped promote feminist and gender-related issues at the university by helping run events, attending diversity trainings, and holding office hours. Received **Certificate of Appreciation: Silver Award, 2020-2021** as a Peer Helper.
Mar.2019 –Mar.2020	**Volunteer**, Beetroot-Food distribution Be'er Sheva
	helping collect and sort food in the urban market in Be'er Sheva, Israel and distribute to the less fortunate in Be'er Sheva, Israel on a weekly basis
2012–2018	**Leader**, University of Waterloo's autism/Asperger's Support Group
	took initiative and started an autism support club at the university for students with autism and Asperger's where we do various activities on a weekly basis
Nov. 2017 –Apr. 2018	**Volunteer**, Wilfrid Laurier University's CWT (Centre for Women and Trans People)
	helped promote feminist and gender-related issues at the university by helping run events and holding office hours
Jan. 2017 –Apr. 2017	**Volunteer**, University of Waterloo's Women Centre
	helped promote feminist and gender-related issues at the university by helping run events and holding office hours
Nov. 2012	Gave a presentation on describing my experience in growing up and living with high-functioning autism for the Autism Ontario Waterloo Chapter
July 2011 –Aug. 2011	**Volunteer**, Cape Breton Autism Society, Canada
	helped run programming activities for teenagers with autism by interacting and encouraging the teenagers
Sept. 2010 –Apr. 2011	**Vice-President**, Acadia University's Philosophy Society, Canada
	helped the President of the Society choose philosophical topics to talk about to interested students on a weekly basis
Sept. 2009 –Apr. 2010	**President**, Acadia University's Philosophy Society, Canada
	picked and chose philosophical topics to talk about to interested students on a weekly basis