

Curriculum Vitae

Ronalda Benjamin

Phone (work): +2721 808 3284

E-mail: ronalda@sun.ac.za

Personal web page: <https://ronalda-benjamin.com>

*I am a South African mathematician
working in the general area of Functional Analysis.*

Affiliation: Stellenbosch University
Department: Mathematical Sciences
(Mathematics Division)

Position: Lecturer
Appointed: January 2016

Research interests:

- Banach algebras
- Fredholm theory in Banach algebras
- Spectral theory in general (ordered) Banach algebras

(NRF Y-rated researcher since November 2022.)

Educational background

1995 – 2001: De Tuinen Primary School, Worcester

2002 – 2006: Breërivier High School, Worcester

2007 – 2015: Stellenbosch University, Stellenbosch

- BCom Mathematical Sciences (cum laude), December 2009
Majors: Mathematics & Mathematical Statistics
- BSc (Hons) Mathematics (cum laude), December 2010
- MSc in Mathematics (cum laude), March 2013
Thesis Title: [Continuity of Drazin and generalized Drazin inversion in Banach algebras](#)
Supervisor: Professor Sonja Mouton
- PhD in Mathematics, March 2016
Doctoral Dissertation Title: [Fredholm theory in ordered Banach algebras](#)
Promoter: Professor Sonja Mouton

Employment Experience

- Lecturer in Mathematics, Stellenbosch University (1 January 2016 – till date)
 - Post-doctoral Researcher, Leiden University (1 September 2016 – 31 May 2017)
 - Junior Lecturer in Mathematics, Stellenbosch University (1 January 2013 – 30 June 2013)
-

Scholarships, Awards and Grants

As a student at Stellenbosch University

- 2007: Amongst the university's top 30 first year students
SAIPA prize for the best BCom student in Financial Accounting 188
- 2009: Rector's Award for Succeeding Against the Odds
- 2010: G.B.B. Rubbi prize for achievement in third-year Mathematics
Rector's Award for Succeeding Against the Odds
Rector's Award for Excellent Academic Achievement
Wilhelm Frank Scholarship
- 2011: G.B.B. Rubbi prize for achievement in Honours Mathematics
Rector's Award for Succeeding Against the Odds
Rector's Award for Excellent Academic Achievement
- 2012: Eric Broden Trust
Ernst & Ethel Erikson Trust

2007-2009: Undergraduate Merit Bursary 2010-2015: Postgraduate Merit Bursary 2013-2015: NRF Scholarship

As a research mathematician at Stellenbosch University

- 2016: DRD Research Grant for Research Abroad
- 2017: DST-NRF Research Development Grant
- 2018: Early Career Academic Development Grant (-2020)
- 2022: Subcommittee B Project Funding for Young Researchers (-2023)

Other

- Special Award for Meritorious Academic Achievement from a historically disadvantaged context (received at the Premier's Residence, Leeuwenhof) (2006)
 - Dux Award of Breërivier High School (2006)
 - Finalist in the Sport Woman of the Year category, Boland USSASA Sports Banquet (2006)
 - Sport Woman of the Year Award, Breërivier High School (2006), De Tuinen Primary School (2001)
-

Teaching

In the Department of Mathematical Sciences at Stellenbosch University

- **Second Year Mathematics**

- Mathematics 214: Advanced Calculus for natural science students (2018)
- Engineering Mathematics 214/778: Differential Equations and Linear Algebra (2019 - 2023)
- Engineering Mathematics 242/778: Series, Partial Differential Equations and Fourier Transforms (2017, 2019, 2020 – convenor, 2021 – convenor, 2022 - convenor)

- **Third Year Mathematics**

- Financial Mathematics 378: Financial Mathematics (2013 - first semester)
- Mathematics 378: Foundations of Abstract Mathematics II: Term 4 (2020 - 2023)

- **Honours Mathematics**

- Functional Analysis and Measure Theory 712 (2016, 1st term of 2018 – 2019, 2023)
 - Introduction to Hilbert Spaces and C*-algebras (2020, 2023)
-

Research

Publications

1. (with S. Mouton) *Fredholm theory in ordered Banach algebras*. Quaest. Math. 39 (2016), 643-664.
2. (with S. Mouton) *The upper Browder spectrum property*. Positivity 21 (2017), 575-592.
3. (with S. Mouton) *A note on the lower Weyl and Lozanovsky spectra of a positive element*. Positivity 22 (2018), 533-549.
4. *Spectral mapping theorems for the upper Weyl and upper Browder spectra*. Quaest. Math. 41(2018), 951-961.
5. (with N. Laustsen and S. Mouton) *r-Fredholm theory in Banach algebras*. Glasgow Math. J. (2019), 615-627.
6. (with S. Mouton) *r-Fredholm theory in ordered Banach algebras*. Positivity 24 (2020), 373-393.
7. (with F. Schulz) *Spectrally additive maps on Banach algebras*. Acta Math. Hungar. 170 (2023), 194-208.
8. (with C. Budde) *A note on the order Lozanovsky spectrum for positive operators*. Complex Anal. Oper. 17, 61 (2023). <https://doi.org/10.1007/s11785-023-01374-4>

Research Talks

(in reverse chronological order)

- [Mapping properties for the upper Weyl and upper Browder spectra](#), FAOTSA23 Workshop, Wits Rural Facility, South Africa (3-7 July 2023)
- [r-Fredholm theory in general ordered Banach algebras](#), Banach algebras and Applications 2022, University of Granada, Spain (18-23 July 2022)
- [r-Fredholm theory in ordered Banach algebras](#), SAMS National Congress, University of Cape Town, South Africa (2-4 December 2019)

- [The Lozanovsky spectrum of a positive element](#), NWU Mathematics Workshop 2019: Functional Analysis and its Applications, North West University, South Africa (25-27 September 2019)
- [Connections between Fredholm theory and positivity in general ordered Banach algebras](#), Banach algebras and Applications 2019, University of Manitoba, Canada (11-18 July 2019)
- [A spectral mapping theorem for the upper Weyl spectrum](#), Positivity X, University of Pretoria, South Africa (8-12 July 2019)
- [The connected hull of the upper Weyl spectrum](#), African Women in Mathematics Conference, Stellenbosch University, South Africa (2-5 July 2019)
- [The lower Weyl spectrum of a positive element](#), SAMS National Congress, Rhodes University, South Africa (3-5 December 2018)
- [Spectral mapping theorems for the upper Weyl and upper Browder spectra](#), SAMS National Congress, North West University, South Africa (20-22 November 2017)
- [Connections between Fredholm theory and positivity in general ordered Banach algebras](#), Mini-workshop in Functional Analysis, Leiden University, The Netherlands (2-4 May 2017)
- [The upper Browder spectrum property](#), AGFA und IAA Workshop, Heinrich Fabri Institut Blaubeuren, Germany (15-17 December 2016)
- [The upper Browder spectrum property: ordered Banach algebras with disjunctive products](#), SAMS National Congress, University of Witwatersrand, South Africa (4-6 November 2015)
- [Fredholm theory in ordered Banach algebras](#), NWU-PUK Mathematics Workshop: Functional Analysis and its applications, North West University, South Africa (23-26 September 2015)

Invited research talks

(in reverse chronological order)

- [Fredholm theory in ordered Banach algebras \(*results to date*\)](#), Departmental Research Seminar Talk, University of the Free State, South Africa (28 August 2023)
- [The connected hull of the upper Weyl spectrum](#), University of Johannesburg (online) seminar (21 September 2021)
- [The upper Weyl spectrum of an arbitrary ordered Banach algebra element](#), AIMS Mathematical Sciences Student Academic Conference, AIMS South Africa (11-12 July 2019)
- [The upper Browder spectrum property in ordered Banach algebras](#), University of Zambia, Zambia (6 July 2018)
- [Some aspects of the upper Weyl and upper Browder spectra](#), University of Zambia, Zambia (5 July 2018)
- [Upper Weyl and upper Browder theory](#), University of Zambia, Zambia (4 July 2018)
- [Interplay between Fredholm theory and positivity in ordered Banach algebras](#), 2nd Conference of West African Women in Mathematics, University of Ibadan, Nigeria (25-27 June 2018)
- [Connections between Fredholm theory and positivity in general ordered Banach algebras](#), AIMS Journal Club, AIMS South Africa (28 November 2017)
- [Fredholm theory in general ordered Banach algebras](#), Leipzig University, Germany (26 April 2017)
- [Connections between Fredholm theory and positivity in general ordered Banach algebras](#), Technische Universität Dresden, Germany (25 April 2017)

Seminars, conferences and workshops attended

(in reverse chronological order)

- SAMS National Congress, Stellenbosch University, South Africa (6-8 December 2022)
- FAOTSA22 Workshop, Kruger National Park, South Africa (30 September – 3 October 2022)
- SAMS National Congress, *Online event* (29 November – 1 December 2021)
- SAMS National Congress, *Online event* (2 December 2020)
- Vector lattices and applications: In honour of Professor Koos Grobler's seventy fifth birthday, The View Boutique Hotel, Johannesburg, South Africa (23 March 2018)

- Functional Analysis Seminar on “*Partially ordered vector spaces and their operators*”, Leiden University, The Netherlands (February - June 2017) – I gave a three-hour seminar lecture on ‘*Geometric duality of cones*’ on 28 April 2017
- 4th Heidelberg Laureate Forum, Heidelberg, Germany (18-23 September 2016)
- 3rd Annual Science Teaching and Learning Event, Mathematical Science Building, Stellenbosch University, South Africa (16-17 May 2016)
- Workshop on Ordered Banach algebras, Leiden University, The Netherlands (21-25 July 2014)
- NWU-PUK Mathematics Workshop: Abstract Analysis, North West University, South Africa (18-21 September 2013)
- SAMS National Congress, Stellenbosch University, South Africa (31 October – 2 November 2012)
- AMS/SAMS Satellite Conference on Abstract Analysis, University of Pretoria, South Africa (5-7 December 2011)
- Joint Congress of the South African and American Mathematical Societies, Nelson Mandela University, South Africa (29 November - 3 December 2011)

Research visits

- 23 – 30 August 2023: University of the Free State (Host: Dr Christian Budde)
- 28 – 30 March 2022: University of Pretoria (Host: Dr Christopher Schwanke)
- 29 June – 6 July 2018: University of Zambia (Host: Dr Kelvin Muzundu)

Research supervision

MSc students

- Sonick Mumba, University of Zambia – supervised with Dr Kelvin Muzundu (2022)
- Aliyu Jamiu, Stellenbosch University (in progress)

PhD students

- Dimby Rabearivony, Stellenbosch University – co-supervisor with Prof Sonja Mouton (in progress)
- Sonick Mumba, Stellenbosch University (in progress)

Postdocs

- Miles Askes, Stellenbosch University (2023-2024)

Service

Professional Activities

- ❖ Member of the local organising committees of the following conferences/workshops:
 - Functional Analysis and Operator Theory South Africa 2022 (FAOTSA22) Workshop, Berg-en-Dal Conference Centre, Kruger National Park, 30 September-3 October 2022
 - International Positivity X Conference, University of Pretoria, 8-12 July 2019
 - African Women in Mathematics Conference, Stellenbosch University, 2-5 July 2019
- ❖ Co-organiser of the SAMS Special Session on Functional Analysis and Operator Theory:
 - Stellenbosch University, 6-8 December 2022
 - University of Cape Town, 2-4 December 2019
- ❖ Member of the Functional Analysis Steering Committee (2021 – till date)
- ❖ Reviewer for Mathematical Reviews as of March 2019
- ❖ Refereed papers for

- Complex Analysis and Operator Theory
- Acta Mathematica Scientia
- ❖ Serves on the Faculty of Science's Social Impact Committee as of January 2019
- ❖ Acted as external examiner for the following universities:
 - University of Pretoria (2021 - 2023)
 - University of Johannesburg (2018, 2020, 2022)
 - University of Cape Town (2018 - 2021)

Motivational and mathematics advising

(in reverse chronological order)

- ❖ Guest speaker at the Advancing Knowledge Non-Profit Company (AK NPC) Women in Mathematics Mini-Convention held at Capetonian Hotel, Cape Town (23 August 2023)
- ❖ Guest speaker at the 6th Annual Life Orientation Teacher Awards held at the PnP Head Quarters, Kenilworth, Cape Town (5 October 2022)
- ❖ Guest speaker at UWC's Women in Mathematics Mini-Convention held at Capetonian Hotel, Cape Town (25 August 2022)
- ❖ Invited to address the Grade 12 learners/inmates at Brandvlei Correctional Services, Worcester (20 October 2021)
- ❖ Mentor on the [AIMS Ghana Girls in Mathematical Sciences Program](#) (2021)
- ❖ Guest speaker at the SUNCEP Learning Enhancement Strategic Plan Workshop, Stellenbosch University: *The first year Mathematics student: Needs and Gaps* (16 November 2019)
- ❖ Guest speaker at the Cape Winelands Education District Math Conference 2019 (for Grades 1 - 9 Mathematics teachers) held at Montana High School, Worcester (7 September 2019)
- ❖ Guest speaker at the academic awards evening of De Tuinen Primary School (8 November 2018)
- ❖ Guest speaker at UWC's Women in Mathematics Mini-Convention held at Capetonian Hotel, Cape Town (8 August 2018)
- ❖ Invited to speak to the matriculants of Breërivier High School (19 July 2018)
- ❖ Addressing teachers and learners at the National Science Week 2017 held at Oliver Tambo Community Hall, Khayelitsha, Cape Town (10 August 2017)
- ❖ Guest speaker at UWC's Women in Mathematics Mini-Convention held at Capetonian Hotel, Cape Town (3 August 2017)
- ❖ Delivered two motivational talks at the National Science Week 2015 held at AIMS, Muizenberg (4 August 2015)
- ❖ Edited the Mathematics study guide for Grade 8's - [Pythagoras 8](#) - written by Katie Muller and Lorraine van Niekerk (2013)
- ❖ Guest speaker at the academic awards evening of Breërivier High School (20 October 2011)

Other

- ❖ Coordinator of the SU [STEM MentHER](#) programme (2023 - till date)
- ❖ Founder of the [Rising Above](#) project
- ❖ Editor for [Wisaarkhu](#) (2019 - till date)

Community recognition

2020: Breede Valley Municipality themed one of their three boardrooms after me. This honour recognises (academic) achievement despite the odds and aims to inspire and encourage others to pursue their dreams.