Curriculum Vitae
Ronalda Benjamin

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

Affiliation:	Stellenbosch University	**Position**:	Senior Lecturer
Department:	Mathematical Sciences (Mathematics Division)	**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

➢ Senior Lecturer in Mathematics, Stellenbosch University (1 January 2024 – till date)

➢ Lecturer in Mathematics, Stellenbosch University (1 January 2016 – 30 December 2023)

➢ 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 (-2024)

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 - 2024)
  - 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)

- The order Lozanovsky spectrum of a positive operator, Conference on Ordered Structures with Applications (COSA) 2024, Marrakech, Morocco (5-9 February 2024)
- 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)

- FAOTSA24 Workshop, AIMS Muizenberg, South Africa (17-19 March 2024)
- SAMS National Congress, University of Johannesburg, South Africa (5-7 December 2023)
- 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

- 3 – 10 December 2023: University of Johannesburg (Host: Dr Francois Schulz)
- 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 (2024)
- 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:
    - o Functional Analysis and Operator Theory South Africa 2024 (FAOTSA24) Workshop, AIMS Muizenberg, 17-19 March 2024
    - o Functional Analysis and Operator Theory South Africa 2022 (FAOTSA22) Workshop, Berg-en-Dal Conference Centre, Kruger National Park, 30 September-3 October 2022
    - o International Positivity X Conference, University of Pretoria, 8-12 July 2019
    - o African Women in Mathematics Conference, Stellenbosch University, 2-5 July 2019
- ❖ Co-organiser of the SAMS Special Session on Functional Analysis and Operator Theory:
    - o Stellenbosch University, 6-8 December 2022

- o   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
  - o   Complex Analysis and Operator Theory
  - o   Acta Mathematica Scientia
  - o   FILOMAT
  - o   Journal of Mathematical Analysis and Applications
  - o   Positivity
- ❖ Serves on the Faculty of Science's Social Impact Committee as of January 2019
- ❖ Acted as external examiner for the following universities:
  - o   University of Pretoria (2021 - 2024)
  - o   University of Johannesburg (2018, 2020, 2022)
  - o   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)
- ❖ Mentor on the SU STEM MentHER programme (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 Universiy: *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.