Ranjitha Raviprakash

Postdoctoral Researcher

Employment

08/'26– **Postdoc Scholar**, *University of the Western Cape*, Cape Town, South Africa

06/'25–07/'26 **Postdoc Scholar**, *University of KwaZulu-Natal*, Durban, South Africa

08/'20–05/'25 **Graduate Assistant**, *New Mexico State University*, Las Cruces, United States

Research Visits

2026 Oct **Krea University**, *Sri City, India*
Research visit hosted by Professor Prathamesh T V H.

Sep **Chennai Mathematical Institute**, *Chennai, India*
Research visit hosted by Professor Parameswaran Sankaran.

Aug **Azim Premji University**, *Bengaluru, India*
Research visit hosted by Professor Ramanujam R.

Jun **University of Salerno**, *Fisciano, Italy*
Research visit hosted by Professor Luca Spada.

Education

2020–2025 **Doctor of Philosophy**, *New Mexico State University*, Las Cruces, United States
Research field: Mathematics
Thesis topic: McKinsey-Tarski algebras: An alternative pointfree approach to topology
Advisor: Guram Bezhanishvili

2017–2020 **Master of Science**, *University of New Mexico*, Albuquerque, United States
Field of study: Pure Mathematics
Research topic: Riemannian Geometry
Advisor: Dimiter Vassilev

2013–2015 **Master of Science**, *Bangalore University*, Bengaluru, India
Field of study: Applied Mathematics

2010–2013 **Bachelor of Science**, *Bangalore University*, Bengaluru, India
Fields of study: Mathematics, Chemistry, Physics

Research Interests

Topology, point-free topology, lattice theory, duality theory, foundations of mathematics

Publications

Published / In press

[1] G. Bezhanishvili, S. D. Melzer, R. Raviprakash, A. L. Suarez. *Local compactness does not always imply spatiality*. Questions Answers Gen. Topology. To appear. https://arxiv.org/abs/2508.01645

[2] G. Bezhanishvili, R. Raviprakash, A. L. Suarez, J. Walters-Wayland. *McKinsey-Tarski algebras and Raney extensions*. Appl. Categ. Structures **34**, 14 (2026). https://doi.org/10.1007/s10485-026-09849-z

[3] G. Bezhanishvili, R. Raviprakash, A. L. Suarez, J. Walters-Wayland. *The Funayama envelope as the T_D-hull of a frame*. Theory Appl. Categ. **44** (2025), Paper No. 33, 1106-1147. https://arxiv.org/abs/2501.14162

[4] G. Bezhanishvili, R. Raviprakash. *Local compactness in MT-algebras*. Topology Proc. **66** (2025), 15-48. https://doi.org/10.25071/takj8m72

[5] G. Bezhanishvili, R. Raviprakash. *McKinsey-Tarski algebras: An alternative pointfree approach to topology*. Topology Appl. **339** (2023), Paper No. 108689, 30pp. https://doi.org/10.1016/j.topol.2023.108689

Preprints

[6] S. D. Melzer, C. Rathilal, R. Raviprakash. *A choice-free approach to Wallman compactifications*. (2026). https://arxiv.org/abs/2606.05832

Conference Talks

2026 Jul Contributed talk. *TD-coreflection pointfreely and its generalization to other separation axioms*. TACL 2026, Jagiellonian University in Kraków, Poland.

Feb Invited talk. *Pointfree thinking*. Pillay@80 conference, Riverside Hotel, Durban North, South Africa.

2025 Dec Presented joint work with Sebastian Melzer. *Locally compact and sober, but not quite enough points*. Seminar on Domain Theory and Its Application, Tianyuan Mathematics Research Center, Yunnan, China.

Oct Invited talk. *Local compactness does not always imply spatiality*. ITAC Special Session, National Congress of the Mexican Mathematical Society, Meritorious Autonomous University of Puebla, Puebla, Mexico.

Sep Invited talk. *Proximity morphisms for MT-algebras*. ADEANS VI, Zulu Nyala Lodge, Hluhluwe, South Africa.

May Contributed talk. *The Funayama envelope as the TD-hull of a frame*. BLAST 2025, University of Colorado, Boulder, United States.

2024 Jul Contributed talk. *McKinsey-Tarski algebras*. TACL 2024, University of Barcelona, Spain.

Apr Contributed talk. *Local Compactness in MT-algebras*. BLAST 2024, University of North Texas, Denton, United States.

2023 Oct Invited talk. *Compactness in MT-algebras*. ITAC Special Session, National Congress of the Mexican Mathematical Society, Autonomous University of San Luis Potosí, Mexico (via zoom).

May Contributed talk. *McKinsey-Tarski algebras: An alternative approach to point-free topology*. BLAST 2023, University of North Carolina, Charlotte, United States.

2022 Sep Contributed talk. *Key concepts of an alternate approach to pointfree topology*. AMS Special Session, University of Texas, El Paso, United States.

Workshops and Seminar Talks

2026 Aug *Topology Without Points: Frames and McKinsey–Tarski Algebras*. Azim Premji University, Bengaluru, India.

Mar *Trisecting an angle using origami*. International Day of Mathematics, South Africa (via teams).

2025 Oct *MT-algebras and Raney extensions*. Algebra Seminar, University of Guadalajara, Mexico

Oct *Hofmann and Mislove meet McKinsey and Tarski, but they stay sober*. CoE-MaSS Seminar Series, University of the Witwatersrand, Johannesburg, South Africa (via zoom).

Aug *McKinsey-Tarski algebras*. NITheCS Seminar, University of KwaZulu-Natal, Durban, South Africa.

2024 Dec *Survey on McKinsey-Tarski algebras*. Frame Theory Workshop, Chapman University, Los Angeles, United States.

2022 Nov *Separation axioms in pointfree topology*. Foundations Seminar, New Mexico State University, Las Cruces, United States.

2021 Sep *Duality theory*. Foundations Seminar, New Mexico State University, Las Cruces, United States.

Tutorial Talks

2026 Feb *How to reason about spaces without points*. African Institute for Mathematical Sciences, Cape Town, South Africa.

2024 Nov *McKinsey-Tarski algebras: An alternative approach to pointfree topology*. Meeting on Interactions between Topology, Algebra, and Categories, Metropolitan Autonomous University, Mexico City, Mexico.

Attended Summer & Winter Schools

2026 Jul TACL Summer School, Jagiellonian University in Kraków, Poland.

2025 Dec IWSLA, BITS Pilani, Goa, India.

- Courses on Lean (Theorem Proving) and on Forcing (Set Theory)

2024 Jun TACL Summer School, University of Barcelona, Spain.

2022 Jun TACL Summer School, University of Coimbra, Portugal.

Teaching Experience

[1] **Madras School of Economics**

Instructor

- *Verification for Big Data*, 2026 October–November.

[2] **University of KwaZulu-Natal**

Co-supervisor

- *Lindelöf Spaces and the Influence of Separation Axioms in Topology*, Honours thesis.

Instructor

- *Order and Lattices*, 2026 February–June.
- *Foundations*, 2025 August–December (Substitute).

[3] **New Mexico State University**

Instructor of Record

- *Trignometry and Pre-Calculus*, Spring 2025, Fall&Spring 2022–2024.
- *Calculus II*, Summer 2023.
- *Calculus I*, Summer 2022.
- *College Algebra*, Spring 2022.
- *Interm. Algebra*, Fall&Summer 2021.

Teaching Assistant

- *Calculus I*, Spring 2022.
- *Appl. of Calc. I*, Fall&Spring 2021.
- *Interm. Algebra*, Spring 2021.
- *Calculus II*, Fall 2020.

[4] **University of New Mexico**

Teaching Assistant

- *Calculus II*, 2018–2019.
- *Calculus I*, 2017–2018.

Awards, Grants & Scholarships

2026 *DSTI-NRF CoE-MaSS Postdoctoral Fellowship*, South Africa.

2025 *CoE-MaSS Grant for 2025 Research-in-Teams Project*, South Africa.

2023 *Joseph E. Kist Award*, Department of Mathematical Sciences, New Mexico State University, Las Cruces, United States.

2022–2023 *Graduate Success Scholarship*, New Mexico State University, Las Cruces, United States.

2023 *NSF Travel Grant*

2022 *Anna Schrufer Kist Endowed Scholarship*, New Mexico State University, Las Cruces, United States.

2010–2013 *C.V. Raman Scholarship*, Karnataka Science and Technology Scholarship, India.

Professional service

Peer Review

2026 Reviewer for *Order*

2026 Reviewer for *Advances in Modal Logic*

Outreach

[1] External examiner for an honors thesis, University of Johannesburg.

[2] Judge for undergraduate honors thesis presentations, University of KwaZulu-Natal.

[3] Liaison, STEM MentHER program.

[4] Contributor to the project *We Are Like a Sisterhood: Co-creating a Community of Practice with Women Graduate Students in Mathematics*.

Skills

Technical skills

◇ Theorem proving: Lean.

◇ Programming: MATLAB.

◇ Numerical methods: Euler method, Runge-Kutta method, Fourier transform, Laplace transform, nonlinear least squares.

◇ Software/Packages: Matplotlib, MatCont.