

# Dr. Sourav Tarafder

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## Publications

### Refereed Papers in Journals

- 2026 • Arunavo Ganguly & Sourav Tarafder, *Transcending Classical Boundaries: Choice and its Equivalences*, **Annals of Pure and Applied Logic**, **177(7)**: 103739.
- Santiago Jockwich Martinez, Sourav Tarafder, & Giorgio Venturi, *A Note on the Axiom of Choice in an Iterative Paraconsistent Set Theory*, **Logic Journal of the IGPL**, **34(3)**.
- 2024 • Santiago Jockwich Martinez, Sourav Tarafder, & Giorgio Venturi, *ZF and its interpretations*. **Annals of Pure and Applied Logic**, **175(6)**: 103427.
- 2023 • Sourav Tarafder & Giorgio Venturi, *Independence proofs in non-classical set theories*. **The Review of Symbolic Logic**, **16(4)**, pp. 979 – 1010.
- 2022 • Sourav Tarafder, *Non-classical foundations of set theory*. **The Journal of Symbolic Logic**. **87(1)**, pp. 347 – 376.
- Sourav Tarafder & Giorgio Venturi, *ZF between classicality and non-classicality*. **Studia Logica**. **110**, pp. 189 – 218.
- Santiago Jockwich Martinez, Sourav Tarafder, & Giorgio Venturi, *Ideal objects for set theory*. **Journal of Philosophical Logic**. **51**, pp. 583 – 602.

- 2021 • Benedikt Löwe, Robert Paßmann, & Sourav Tarafder, *Constructing illoyal algebra-valued models of set theory*. **Algebra Universalis**, **82**, 46.
- 2015 • Benedikt Löwe & Sourav Tarafder, *Generalized algebra-valued models of set theory*. **The Review of Symbolic Logic**, **8**(1), pp. 192 – 205.

### Refereed Papers in Conference Proceedings

- 2016 • Sourav Tarafder & Mihir Kr. Chakraborty, *A paraconsistent logic obtained from an algebra-valued model of set theory*. Beziau, J. Y., Chakraborty, M. K. and Dutta, S., editors, **New Directions in Paraconsistent Logic**, 5th WCP, Kolkata, India, February 2014, **Springer Proceedings in Mathematics & Statistics**, Vol. **152**. New Delhi: Springer, pp. 165 – 183.
- 2015 • Sourav Tarafder, *Ordinals in an algebra-valued model of a paraconsistent set theory*. In Banerjee, M. and Krishna, S., editors. **Logic and Its Applications**, 6th International Conference, ICLA 2015, Mumbai, India, January 8 – 10, 2015, **Lecture Notes in Computer Science**, Vol. **8923**. Berlin: Springer-Verlag, pp. 195 – 206.

### Submitted for Publication

- 2026 • Santiago Jockwich Martinez, Sourav Tarafder, & Giorgio Venturi, *The internal modal logic of forcing*.

### Book Chapters

- 2025 Sourav Tarafder, *Basic Mathematics Beyond Classcality*. In: Antos, C., Barton, N., Venturi, G. (eds) **The Palgrave Companion to the Philosophy of Set Theory**. **Palgrave Companions**. Palgrave Macmillan, Cham, Switzerland, pp. 227 – 243.
- 2020 Soma Dutta & Sourav Tarafder, *Consequence-inconsistency interderivability in paraconsistent logics and paraconsistent set theory*. In: Sarukkai S., Chakraborty M. (eds) **Handbook of Logical Thought in India**, Springer, New Delhi, India, pp. 1255 – 1288.

### Others

- 2019 • Sourav Tarafder. Abstract of the PhD thesis: *Non-classical set theories and logics associated with them*. **The Bulletin of Symbolic Logic**, **25**(4), p. 451.
- Sourav Tarafder. Abstract of the contributed talk: *Foundation of mathematics in a class of paraconsistent set theories* (presented in the 2019 European Summer Meeting of the Association for Symbolic Logic: Logic Colloquium 2019, Prague, Czech Republic), **The Bulletin of Symbolic Logic**, **25**(4), p. 526.

## Research Projects

|             |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | <b>Upcoming Project</b>                                                                                                                                                                                                                                                                                                                                                                                          |
| 2026 – 2030 | <p>Project Title: Forcing and Intensionality<br/> Designation: International project partner (Co-PI)<br/> Principal Investigator: Dr. Santiago Jockwich Martinez<br/> Name of the Grant: Early Career Research Grant (Fripro)<br/> Sanction Number: 360115<br/> Sanctioning Agency: Norwegian Research Council<br/> Pursued at: University of Oslo, Norway</p>                                                   |
|             | <b>Earlier Projects</b>                                                                                                                                                                                                                                                                                                                                                                                          |
| 2023 – 2026 | <p>Project Title: Unifying Universes: A New Take on NF<br/> Designation: Associate Researcher<br/> Principal Investigator: Dr. Santiago Jockwich Martinez<br/> Name of the Grant: New Generation Grant<br/> Sanction Number: 2022/06486-1<br/> Sanctioning Agency: Fundacao de Amparo a Pesquisa do Estado de Sao Paulo (FAPESP), Brazil<br/> Pursued at: University of Campinas, Brazil</p>                     |
| 2023 – 2024 | <p>Project Title: Non-Classical Set Theories<br/> Designation: Principal Investigator<br/> Name of the Grant: Intramural Research Grant (Seed Money)<br/> Sanction Number: IMSXC2023-24/008<br/> Sanctioning Agency: St. Xaviers College (Autonomous), Kolkata<br/> Pursued at: St. Xaviers College (Autonomous), Kolkata, India</p>                                                                             |
| 2018 – 2021 | <p>Project Title: Genericity and Arbitrariness. Or How to Speak of the Unspeakable<br/> Designation: Associate Researcher<br/> Principal Investigator: Dr. Giorgio Venturi<br/> Name of the Grant: Jovem Pesquisador Grant<br/> Sanction Number: 2016/25891-3<br/> Sanctioning Agency: Fundacao de Amparo a Pesquisa do Estado de Sao Paulo (FAPESP), Brazil<br/> Pursued at: University of Campinas, Brazil</p> |

## Research Visits

|      |                                                                                                                                                                                                                                                                         |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2025 | <ul style="list-style-type: none"> <li>• <i>Department of Mathematics</i>, University of Hamburg, Germany, 1 August – 2 August, 2025.</li> <li>• <i>Institute of Philosophy and Human Sciences</i>, University of Campinas, Brazil, 14 June – 28 June, 2025.</li> </ul> |
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|             |                                                                                                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | <ul style="list-style-type: none"> <li>• <i>Institute of Philosophy and Human Sciences</i>, University of Campinas, Brazil, 11 January – 27 January, 2025.</li> </ul> |
| 2023        | <i>Department of Philosophy, Classics, History of Art and Ideas (FIKK)</i> , University of Oslo, Norway, 8 November, 2023 – 17 November, 2023.                        |
| 2019 – 2020 | <i>Institute of Philosophy and Human Sciences</i> , University of Campinas, Brazil, 16 October, 2019 – 15 October, 2020.                                              |
| 2018        | <i>The Institute of Mathematical Sciences</i> , Chennai, India, 2 June – 16 June, 2018.                                                                               |
| 2017        | <i>The Institute of Mathematical Sciences</i> , Chennai, India, 19 June – 31 June, 2017.                                                                              |
| 2016        | <i>The Institute of Mathematical Sciences</i> , Chennai, India, 23 October – 1 November, 2016.                                                                        |
| 2015        | <i>The Institute of Mathematical Sciences, Chennai</i> , India, 10 June – 23 June, 2015.                                                                              |
| 2014        | <i>University of Amsterdam</i> , Amsterdam, The Netherlands, 1 June – 10 June, 2014.                                                                                  |
| 2013        | <i>University of Hamburg</i> , Hamburg, Germany, 1 June – 30 June, 2013.                                                                                              |
| 2012        | <i>Isaac Newton Institute for Mathematical Sciences, Cambridge University</i> , Cambridge, England, 21 April – 27 May, 2012.                                          |
| 2010 – 2011 | <i>Institute for Logic, Language and Computation, University of Amsterdam</i> , Amsterdam, The Netherlands, 1 September, 2010 – 31 August, 2011.                      |

## Fellowships and Grants Awarded

### Research Grants

|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2025 | <ul style="list-style-type: none"> <li>• Short term research grant: supported by Generation Program Research Grant: Unifying Universes: A new take on NF, financed by the Sao Paulo Research Foundation (FAPESP), for a research visit to the Institute of Philosophy and Human Sciences, University of Campinas, Brazil; 14 June, 2025 - 28 June, 2025.</li> <li>• Short term research grant: supported by Generation Program Research Grant: Unifying Universes: A new take on NF, financed by the Sao Paulo Research Foundation (FAPESP), for a research visit to the Institute of Philosophy and Human Sciences, University of Campinas, Brazil; 11 January, 2025 - 27 January, 2025.</li> </ul> |
| 2023 | Short term research grant: linked to Marie Skłodowska-Curie Postdoctoral Fellowship (UCAN), Grant agreement No. 101110740) financed by the European Union for a short term research visit to the University of Oslo, Norway, 8 November, 2023 - 17 November, 2023.                                                                                                                                                                                                                                                                                                                                                                                                                                   |

- 2019 | Pesquisador visitante grant, FAPESP, Brazil; visiting researcher at the Institute of Philosophy and Human Sciences, University of Campinas, São Paulo, Brazil; 16 October, 2019 - 15 October, 2020.
- 2012 | Visiting Fellowship; Isaac Newton Institute for Mathematical Sciences, Cambridge University; 21 April, 2012 – 27 May, 2012.
- 2010 | Erasmus Mundus External Cooperation Window (EMECW 13) fellowship; visiting Ph.D. student at the Institute for Logic, Language and Computation, University of Amsterdam; 1 September, 2010 – 31 August, 2011.
- 2009 | Council for Scientific and Industrial Research, National Eligibility Test (CSIR – NET) fellowship; Doctoral student; Department of Pure Mathematics, University of Calcutta; 15 October, 2009 – 14 October, 2014.

### Travel Grants

- 2019 | Travel grant from the *University Grant Commission (UGC)*, India, to present a contributed talk in the 16th CLMPST, Prague, Czech Republic, 5 – 10 August, 2019.
- 2014 | Travel grant from the *Indo-European Research Training Network in Logic (IERT-NiL)* for a short term research visit to the Institute for Logic, Language and Computation, University of Amsterdam, Amsterdam, The Netherlands.
- 2013 | Travel grant from the *National Board for Higher Mathematics (NBHM)*, India, for a short term research visit to the University of Hamburg, Hamburg, Germany and the Institute for Logic, Language and Computation, University of Amsterdam, Amsterdam, The Netherlands.
- 2012 | Travel grant from the *University of Calcutta*, India, for a short term research visit to the Isaac Newton Institute for Mathematical Sciences, Cambridge, UK.

## Invited Talks and Paper Presentations

- 2025 |
  - *Modal Logic of Set Theory*, 24th Annual Meet of Calcutta Logic Circle 2023, organized by Calcutta Logic Circle in collaboration with Department of Mathematics, Ramakrishna Mission Residential College, Narendrapur, India, August 30 - 31, 2025.
  - *Set Theories in Parallel Universes*, ML Seminar: Forschungsseminar Mathematische Logik, organized by Department of Mathematics, University of Hamburg, Germany, August 1, 2025.

- 2024
- *Axiomatic Set Theory*, National Workshop on Mathematical Logic and Applications (NWMLA- 2024), organized by Department of Mathematics, Gauhati University, Guwahati, Assam, India in collaboration with Sivatosh Mookerjee Science Centre, Asutosh Mookerjee Memorial Institute, Kolkata, India, December 26 – 28, 2024.
  - *Algebra-Valued Models of Non-Classical Set Theories: A Focus on Paraconsistency*, Workshop on Paraconsistent Reasoning (An assembly of researchers from India and abroad), In memory of Professor Newton da Costa, organized by Calcutta Logic Circle in collaboration with Department of Mathematics, Ramakrishna Mission Residential College, Narendrapur, India, August 17 – 18, 2024.
  - *Algebra-Valued Models 1: Non-Classical Foundation*, Kickoff Workshop of a New Generation Project, organized by the Institute of Philosophy and Human Sciences (IFCH), University of Campinas, São Paulo, Brazil, August 1 – 2, 2024.
  - “ = ” and “  $\in$  ” in logic and set theory, International Seminar on Relevance of Predicate Logic and Mathematical Logic in Today’s Life, organized by the Department of Philosophy, Sonarpur Mahavidyalaya, Kolkata, India, July 19, 2024.
  - *Is classicality mandatory to develop basic mathematics?* National Seminar on Algebra, Analysis, Discrete Mathematics and their Application, organised by Sri Chaitanya College, Habra, Ashok Nagar, India April 3, 2024.
  - *Cardinality in a parallel universe and a question*, World Logic Day Celebration by ALI 2024, organized by the Association for Logic in India and supported by Madras School of Economics and The Institute of Mathematical Sciences, Chennai, India, January 20, 2024.
- 2023
- *A road towards models of non-classical set theories*, Workshop on Algebra-Valued Models and Their Applications, organized by IFIKK, University of Oslo, Norway, 9 November - 10 November, 2023.
  - *Basic mathematics beyond classicality*, 22nd Annual Conference of Calcutta Logic Circle 2023, organized by Calcutta Logic Circle in collaboration with Ramakrishna Mission Residential College (Autonomous), Narendrapur, India, 12 August - 14 August, 2023.
  - *Basic mathematics beyond classicality*, 22nd Annual Conference of Calcutta Logic Circle 2023, organized by Calcutta Logic Circle in collaboration with Ramakrishna Mission Residential College (Autonomous), Narendrapur, India, 12 August - 14 August, 2023.
  - *Do we need numbers to count?*, A Seminar on “Mathematics - Understanding the Fundamentals”, organized by the Department of Mathematics, Taki Government College, Taki, India, 8 May, 2023.
- 2021
- *Constructing illoyal algebra-valued models of set theory*, Annual Conference of the Australasian Association for Logic, will be virtually hosted by the University of Queensland and the University of Melbourne, Australia. 23 June - 25 June, 2021.

- *What is a set?*, A National Webinar on “A Few Basic Foundational Aspects of Mathematics”, organized by the Department of Mathematics, Sree Chaitanya College, Habra, India, 18 June & 25 June, 2021.
  - *ZF between classicality and non-classicality*, UNICAMP-Konstanz Philosophy of Set Theory Seminar, organized jointly by the University of Campinas, Brazil and the University of Konstanz, Germany, 11 March - 24 June, 2021.
  - *Quotient models for a class of non-classical set theories*, 9th Indian Conference on Logic and its Applications (ICLA 2021), organized online by the Association for Logic in India, 4 March - 7 March, 2021.
  - *Models of non-classical set theories*, organized by the Association for Logic in India under the Conseil International de Philosophie et des Sciences Humaines (CIPSH), UNESCO, on the occasion of World Logic Day, 14 January, 2021.
- 2019
- *Cardinality in a model of paraconsistent set theory*, Studies in mathematical logic, University of São Paulo, Brazil, 5th - 6th December, 2019.
  - *Foundations of mathematics in a model of paraconsistent set theory*, Logic Colloquium, 2019, European Summer Meeting of the Association for Symbolic Logic, Prague, Czech Republic, 11th August - 16th August, 2019.
  - *Constructing illoyal algebra-valued models of set theory*, 16th International Congress on Logic, Methodology and Philosophy of Science and Technology, Prague, Czech Republic, 5th August - 10th August, 2019.
  - *Paraconsistent set theory*, Pre-conference workshop, 8th Indian Conference on Logic and its Applications (ICLA 2019), Department of Computer Science and Engineering, Indian Institute of Technology (IIT), Delhi, India, 1st March - 5th March, 2019.
- 2017
- *Logic of an algebra  $\mathbf{A}$  and the logic of  $\mathbf{V}^{(\mathbf{A})}$* , 19th Annual Seminar on Logic and its Applications, Department of Pure Mathematics, University of Calcutta, Kolkata, India, 13th October - 15th October, 2017.
- 2016
- *A three-valued paraconsistent logic  $\mathbf{LPS}_3$* , Merging Borders in Logic and Philosophy of Mathematics, Department of Philosophy, University of North Bengal, North Bengal, India, 17th November, 2016.
- 2015
- *A paraconsistent set theory*, International Seminar on History and Philosophy of Mathematics II: Pluralism in Mathematics, Ramakrishna Mission Institute of Culture, Gol Park, Kolkata, India, 10th December - 12th December, 2015.
  - *Natural numbers in a model of some paraconsistent set theory*, Annual Meet of Calcutta Logic Circle: Logic and its Applications, Indian Institute of Bio-Social Research and Development, Kolkata, India, 6th November - 8th November, 2015.
  - *Non-classical set theories and logics associated with them*, Institute of Mathematical Sciences, Chennai, India, 23rd June, 2015.

- *Ordinals in an algebra-valued model of a paraconsistent set theory*, 6th Indian Conference on Logic and its Applications, Indian Institute of Technology (IIT), Bombay, India, 8th January - 10th January, 2015.
- 2014
  - *A glimpse of paraconsistent logic(s) and  $\mathbf{LPS}_3$* , International Seminar on History and Philosophy of Mathematics 2014, Bose Institute, Kolkata, India, 20th February - 22nd February, 2014.
  - *A paraconsistent logic obtained from an algebra-valued model of set theory*, 5th World Congress on Paraconsistent Logic, Indian Statistical Institute, Kolkata, India, 13th February - 17th February, 2014.
- 2013
  - *A new three valued paraconsistent logic*, International Seminar on Logic and Cognition (SLC 2013), Jadavpur University, Kolkata, India, 30th October - 1st November, 2013.
  - *The logic  $\mathbf{LS}_3$  and its comparison with other three-valued paraconsistent logics*, 13th Asian Logic Conference (ALC 2013), Sun Yat-sen University, Guangzhou, China, 16th September - 20th September, 2013.
  - *The Boolean-valued model construction with algebras of non-standard logics*, Postgraduate Workshop on Alternative Set Theory, University of Amsterdam, Amsterdam, The Netherlands, 22nd June - 24th June, 2013.
- 2012
  - *Set theory*, Annual Meet on Logic and its Application: Celebrating the Alan Turing Year, Indian Institute of Bio-Social Research and Development, Kolkata, India, 29th September - 1st October, 2012.
  - *Algebra-valued models of set theories*, Semantics and Syntax: A Legacy of Alan Turing, Isaac Newton Institute for Mathematical Science, Cambridge University, Cambridge, UK, 9th January - 6th July, 2012.
  - *Foundation of mathematics*, Reading Russell on the Centenary of Principia Mathematica (1910 - 1913), Rabindra Bharati University in Collaboration with Indian Council of Philosophical Research, Kolkata, India, 24th January - 25th January, 2012.
  - Delivered a talk in students session in the *4th Indian School on Logic and its Applications (ISLA)*, Sikkim Manipal University, Manipal, 9 January – 20 January, 2012.
- 2011
  - Delivered a talk in *Logic and its Application*, Annual meet of Calcutta Logic Circle, Indian Institute of Bio-Social Research and Development, Kolkata, India, 2 September – 4 September, 2011.

## Conferences, Seminars, and Workshops Organized

- 2025 Program Committee member of the *11th Indian Conference on Logic and its Applications*, (a biennial event of the Association for Logic in India), organized by Indian Statistical Institute, Kolkata, India, February 3 – 5, 2025.
- 2024
  - Joint Convenor of the *23rd Annual Meet of Calcutta Logic Circle on Logic and its Application*, organized by Calcutta Logic Circle in collaboration with the Department of Mathematics, Ramakrishna Mission Residential College, Narendrapur, India, November 9 – 10, 2024.
  - Joint Convenor of the *Workshop on Paraconsistent Reasoning* (An assembly of researchers from India and abroad), In memory of Professor Newton da Costa, organized by Calcutta Logic Circle in collaboration with the Department of Mathematics, Ramakrishna Mission Residential College, Narendrapur, India, August 17 – 18, 2024.
  - Program Committee member of the *10th Indian School on Logic and its Application*, (a biennial event of the Association for Logic in India), organized by Indian Institute of Technology, Goa, India, June 3 – 7, 2024.
- 2023 *22nd Annual Conference of Calcutta Logic Circle, 2023*, organized by Calcutta Logic Circle in collaboration with Ramakrishna Mission Residential College (Autonomous), Narendrapur, India, August 12 – 14, 2023.
- 2022 *21st CLC Annual Meet*, Calcutta Logic Circle, Online International Conference, 14 January – 17 January, 2022.
- 2017 *19th Annual Seminar on Logic and its Applications*, Department of Pure Mathematics, University of Calcutta, Kolkata, India, 13 October – 15 October, 2017.
- 2015
  - *International Seminar on History and Philosophy of Mathematics II: Pluralism in Mathematics*, Ramakrishna Mission Institute of Culture, Gol Park, Kolkata, 10 December – 12 December, 2015.
  - *Logic and its Application*, IBRAD, Kolkata, 6 November – 8 November, 2015.
- 2014
  - *Logic and its Application*, IBRAD, Kolkata, 17 October – 19 October, 2014.
  - I was an International BRICS Committee member in the Organizing Committee of the *5th World Congress on Paraconsistent Logic*, Indian Statistical Institute, Kolkata, 13 February – 17 February, 2014.
- 2013 *Logic and Cognition; Celebrating 25 years of Calcutta Logic Circle*, Jadavpur University, Kolkata, 30 October – 1 November, 2013.
- 2012 *Logic and Its Application, Celebrating the Alan Turing Year*, IBRAD, Kolkata, 29 September – 1 October, 2012.
- 2011 *Logic and its Application*, IBRAD, Kolkata, 2 September – 4 September, 2011.

## Positions Held

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|------------------------|------------------------------------------------------------------------------------------------------------------|
| 2014 – Till<br>date    | Assistant Professor, Business Mathematics and Statistics, Department of Commerce, St. Xavier's College, Kolkata. |
| 2019 – 2020            | Visiting Researcher, Institute of Philosophy and Human Sciences, University of Campinas, São Paulo, Brazil.      |
| Session<br>2014 – 2015 | Guest Faculty, M. Phil. course, School of Cognitive Science, Jadavpur University.                                |
| Session<br>2013 – 2014 | Guest Faculty, M. Sc. in Mathematics, Department of Mathematics, Presidency University.                          |
| Session<br>2013 – 2014 | Guest Faculty, M.Phil. course, School of Cognitive Science, Jadavpur University.                                 |
| 2011 – 2014            | Senior Research Fellow (CSIR – NET), Department of Pure Mathematics, University of Calcutta.                     |
| 2009 – 2011            | Junior Research Fellow (CSIR – NET), Department of Pure Mathematics, University of Calcutta.                     |
| 2008 – 2009            | Lecturer, B. Tech. Division, Pailan College of Management and Technology.                                        |

## Area of Interests

- Foundation of mathematics
- Classical and non-classical set theories
- Classical logic
- Non-classical logics, specially paraconsistent logic
- Infinite game theory

## Recognition and Honor

- Executive Committee Member of the “Association for Logic in India” (India).
- Member of the “Calcutta Logic Circle” (India).