

AMBILY AMBATTU ASOKAN

CONTACT INFORMATION

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PERSONAL INFORMATION Indian Citizen DoB and Place: *14 May* 1985, Cochin, India

ACADEMIC POSITIONS

- ◇ **Assistant Professor**, at Department of Mathematics, Cochin University of Science and Technology, (03 August 2015-till date).
- ◇ **SERB Overseas Postdoctoral Research Fellow**, at Center for Research in Mathematics, Western Sydney University, Australia (05 January 2018-05 January 2019).
- ◇ **Visiting Fellow**, at School of Mathematics Tata Institute of Fundamental Research, Mumbai (August 2014-July 2015).

AWARDS

- ◇ **Young Scientist Award 2020**, Kerala State Council for Science, Technology and Environment, Govt. of Kerala (Grant up to INR 50 lakhs).
- ◇ **SERB Overseas Postdoctoral Fellowship**, Department of Science and Technology, Govt. of India, 2018-2019 (Grant of INR 26,67,350).

EDUCATION

- ◇ **Indian Statistical Institute** – Ph.D. in Mathematics, July 2014.
Thesis Title: K-Theory of Quadratic Modules : A Study of Roy's Elementary Orthogonal Group.
Thesis Advisor: B. Sury
- ◇ **Cochin University of Science and Technology** – M.Sc. in Mathematics, May 2007.
- ◇ **St. Peter's College Kolenchery, Kerala** – B.Sc. in Mathematics, April 2005.

RESEARCH INTERESTS

- ◇ Classical K-theory, Computational Algebra, Non-commutative algebras: Leavitt path algebras, Graph C*-algebras, Lie algebras, Combinatorial Number Theory.

PUBLICATIONS

- ◇ **Classical K-Theory**
 - [1] **A.A. Ambily and V.K Aparna Pradeep**, Comparison of Petrov's odd elementary hyperbolic unitary group and Dickson-Siegel-Eichler-Roy elementary orthogonal group, **Communications in Algebra (2023)**, DOI: <https://doi.org/10.1080/00927872.2023.2259473>
 - [2] **A.A. Ambily and V.K Aparna Pradeep**, Lie Algebra of the DSER elementary Orthogonal Group, **Indian Journal of Pure and Applied Mathematics (2023)**, DOI: <https://doi.org/10.1080/03081087.2022.2071819>.
 - [3] **A.A. Ambily and Ravi A. Rao**, Visualizing the Dickson-Siegel-Eichler-Roy Elementary orthogonal group, **Journal of Algebra and its Applications (2023)**, DOI: <https://doi.org/10.1142/S0219498824501858>

- [4] **A.A. Ambily and V.K. Aparna Pradeep**, Visualization for the Petrov's hyperbolic odd unitary group, **Linear and Multilinear Algebra** (2022), <https://doi.org/10.1080/03081087.2022.2071819>.
- [5] **A.A. Ambily and Ravi A. Rao**, Normality of DSER elementary orthogonal group, **Journal of Pure and Applied Algebra**, 224 (2020), no.7, DOI: <https://doi.org/10.1016/j.jpaa.2019.106283>.
- [6] **A.A. Ambily**, Yoga of commutators in DSER elementary orthogonal group, **Journal of Homotopy and Related Structures**. 14(2019), no.2, 595 – 610.
- [7] **A.A. Ambily**, Normality and K_1 -stability of Roy's elementary orthogonal group, **Journal of Algebra**, 424 (2015), 522 – 539.
- [8] **A.A. Ambily and Ravi A. Rao**, Extendability of quadratic modules over a polynomial extension of an equicharacteristic regular local ring, **Journal of Pure and Applied Algebra**, 218 (2014), no.10, 1820 – 1837.

◇ **Non-commutative algebras**

- [9] **A.A. Ambily, Roozbeh Hazrat and Huanhuan Li**, Simple flat Leavitt path algebras are von Neumann regular, **Communications in Algebra** 47 (2019), no.7, 2604 – 2616.

◇ **Number Theory**

- [10] **S.D. Adhikari, A.A. Ambily and B. Sury**, Zero-sum problems with subgroup weights, *Indian Academy of Sciences. Proceedings. Mathematical Sciences* 120(3) (2010), 259 – 266.

BOOK

- [1] *Leavitt Path Algebras and Classical K-Theory*, Editors - **A.A. Ambily, Roozbeh Hazrat, and B. Sury**, Indian Statistical Institute Series, **Springer, Singapore, 2020**, <https://doi.org/10.1007/978-981-15-1611-5>.

This is the outcome of the international workshop on Leavitt Path Algebras and K-Theory organized at Cochin University of Science and Technology in July 2017 funded by KSCSTE and NBHM.

- [2] *Semigroups, Algebras and Operator Theory*, Editors - **A.A. Ambily, and V.B. Kiran Kumar**, Springer Proceedings in Mathematics and Statistics, **Springer, Singapore, 2023**, <https://doi.org/10.1007/978-981-99-6349-2>.

RESEARCH PROJECTS (BEING IMPLEMENTED/COMPLETED)

- ◇ Title: *Structure Theory of Unitary Groups and its Generalizations*, **Funding: SURE, SERB Govt.of India**, Role: Principal Investigator, Year: 2023-2026, **(INR 16,10,400)**.
- ◇ Title: *Structure theory of classical groups and classical-like groups: Orthogonal groups and its generalizations*, **Funding: KSCSTE, Govt.of Kerala**, Role: Principal Investigator, Year: 2023-2026, **(INR 15,02,000)**.
- ◇ Title: *Quadratic analogues of results on projective modules and the structure of orthogonal groups*, **Funding: RUSA, Govt.of India**, Role: Co-Principal Investigator, Year: 2019-2020, co **(INR 21,11,800)**.
- ◇ Title: *Leavitt Path Algebras, Classifications via K-Theory*, **Funding: SERB Overseas Postdoctoral Fellowship, Department of Science and Technology, Govt.of India**, Role: Overseas Postdoctoral Fellow, Year: 2018-2019, completed **(INR 26,67,350)**.
- ◇ Title: *Leavitt Path Algebras, Classifications via K-Theory*, **Funding: Seed Money for New Research Initiatives from Cochin University of Science and Technology**, Role: Principal Investigator, Year: 2017-2019, completed **(INR 2,50,000)**.
- ◇ Title: *Classical Algebraic K-theory and algebraic groups*, **Funding: D.S.T. Indo-Russian project no. INT/RUS/RFBR/P-138**, Role: Member, Year: 2013-2015, completed **(INR 22,65,000)**.

COMPUTATIONAL MATHEMATICS AND PROGRAMMING SOFTWARE KNOWLEDGE

- ◇ Mathematical Softwares: Wolfram MATHEMATICA, GAP, Singular, CoCoA and Macaulay2.
- ◇ C++, DBMS, Data Structures and Graph Algorithms.

RESEARCH GRANTS AND FELLOWSHIPS

- ◇ **SERB SURE Grant 2023**, SERB, DST, Govt. of India.
- ◇ **Kerala State Young Scientist Research Grant 2023**, KSCSTE, Govt. of Kerala.
- ◇ **Kerala State Young Scientist Award 2020**, KSCSTE, Govt. of Kerala.
- ◇ **RUSA Grant**, Govt. of India, 2019-2020.
- ◇ **SERB Overseas Postdoctoral Fellowship**, Department of Science and Technology, Govt. of India, 2018-2019.
- ◇ **SEED Money for New Research Initiatives** from Cochin University of Science and Technology, 2017-2019.
- ◇ **Visiting Fellowship**, University of Chinese Academy of Sciences, June - July 2013.
- ◇ **CSIR JRF 2008**, **NBHM Ph.D. Fellowship 2008**, and **GATE 2008** (All India rank 79), **JRF and SRF**, Indian Statistical Institute.

RESEARCH SUPERVISION

PH.D. SUPERVISION

- ◇ Ms. Aparna Pradeep V.K. (PhD Awarded on 1 December 2023).
- ◇ Mr. Sugilesh H. (March 2023 onwards).
- ◇ Ms. Gayathry Pradeep (April 2021 onwards).
- ◇ Ms. Niza (July 2021 onwards).

M.PHIL. SUPERVISION

- ◇ Mr. Vishnu V.V., Some applications of Quillen-Suslin Theorem to Multidimensional Systems theory, 2021.
- ◇ Ms. Chitra Venugopal, Leavitt Path Algebras and Graph C^* -algebras, 2019.
- ◇ Ms. Ardra T. Joy, Dimension theory in commutative rings, 2019.
- ◇ Ms. Ancy Mathai, On Gröbner basis and its applications, 2018.
- ◇ Ms. Krishnendu R., A study on symplectic transvections, 2018.
- ◇ Ms. Rosna Paul, Combinatorial commutative algebra: A study on Dirac's theorem on Chordal graphs and Alexander duality, 2018.
- ◇ Ms. Aparna Pradeep V.K., A Clifford algebraic approach to special orthogonal groups, 2017.

M.SC. SUPERVISION

- ◇ Mr. Ajmal, M.Sc. Student (ASPIRE Fellow), University of Kerala, Lie Algebras, 2022.
- ◇ Ms. Gadha M, M.Sc. Student (INSPIRE Fellow), University of Calicut, An Elementary Introduction to Whitehead Group, 2022.
- ◇ Mr. Akshay Dhan, B.S.-M.S. Student, IISER Tirupati, An algorithm for Serre's Problem on projective modules, 2020-2021.
- ◇ Mr. Ajay P Joseph, Algebraic Number Theory, 2021.
- ◇ Ms. Aparna Pradeep V.K., Lie Algebras, 2016.

SUMMER PROJECTS SUPERVISION

- ◇ Mr. Adarsh S., B.S.-M.S. Student, IISER Tirupati, A study on Symplectic Groups, 2022.
- ◇ Mr. Akshay Dhan, B.S.-M.S. Student, IISER Tirupati, An algorithm to Quillen-Suslin Theorem, 2019.
- ◇ Ms. Riya P. Mamachan, B.S.-M.S. Student, IISER Tirupati, Representation of Finite Groups, 2019.
- ◇ Ms. Abhirami Menath, B.S.-M.S. Student, IISER Tirupati, Applications of Linear Algebra, 2019.

ADMINISTRATIVE EXPERIENCES (Selected Tasks)

- ◇ **Joint Coordinator** for **Regional Mathematical Olympiad (RMO)** 2017 - till date.
- ◇ **Collaborating Faculty** in the M.Tech. Marine Biotechnology programme sponsored by Department of Biotechnology, Government of India, offered at National Centre for Aquatic Animal Health, Cochin University of Science and Technology.
- ◇ **Department level coordinator**, Virtual Center for Advanced Research in Basic Sciences, CUSAT, May 2021-.
- ◇ **Coordinator for Department of Mathematics, CUSAT** for SASTRAYAAN program of Govt. of Kerala organized at Cochin University of Science and Technology in 2017.
- ◇ **Designed and maintaining the website** for Department of Mathematics, CUSAT since 2015-till date.
- ◇ The Secretary of Parent Teachers Association of Department of Mathematics, CUSAT (2016-2017, 2017-2018, 2019).
- ◇ Member of anti-ragging committee of Department of Mathematics, CUSAT (July 2016-December 2017, July 2022-).
- ◇ Course coordinator for M. Sc. Semester I (2016 Admission) during July 2016 - November 2016, M. Sc. Semester III (2016 Admission) during July 2017-November 2017, MPhil 2019, M.Sc. 2022 Admission Batch.

CONFERENCES/EVENTS/WORKSHOPS ORGANIZED

- ◇ International Workshops/Conferences
 - Organized jointly with V.B. Kiran Kumar **International Conference on Semigroups, Algebras and Operator Theory**, March 28-31, 2022, at Department of Mathematics, Cochin University of Science and Technology.
 - Organized **International Workshop on Leavitt Path Algebras and K-Theory**, July 1-3, 2017, at Department of Mathematics, Cochin University of Science and Technology, **funded by NBHM** (National Board for Higher Mathematics) and **KSCSTE** (Kerala State Council for Science, Technology, and Environment)
NBHM Grant of Rs. 2,10,000 and **KSCSTE Grant of Rs. 1,50,000.**
- ◇ National Workshops/Conferences
 - Organized **Workshop on Differential Equations** at Department of Mathematics, Cochin University of Science and Technology, March 9, 2019.
 - Organized **Indian Women and Mathematics (IWM) 2018**, January 2-3, 2018 - Regional Workshop on Research and Opportunities in Kerala, at Department of Mathematics, Cochin University of Science and Technology, **funded by NBHM** (National Board for Higher Mathematics) – **Grant of Rs. 3, 96, 000.**

ACADEMIC VISITS (SELECTED)

- ◇ 5 January, 2018 to 25 January, 2019 – Center for Research in Mathematics, Western Sydney University, SYDNEY, AUSTRALIA.
- ◇ 4-7 December, 2018 – University of Adelaide, ADELAIDE, AUSTRALIA.
- ◇ 16-28 July, 2018 – African Institute of Mathematical Sciences, CAPE TOWN, SOUTH AFRICA.
- ◇ 5- 9 July, 2017 – Osaka University, JAPAN.
- ◇ 01-05 August, 2016 – Center for Research in Mathematics, Western Sydney University, AUSTRALIA.
- ◇ 12 June-13 July, 2013 – School of Mathematics, University of Chinese Academy of Sciences, Beijing, CHINA.

SELECTED LIST OF INVITED TALKS/PRESENTATIONS (Abroad)

◇ International Workshops/ Conferences

- **Invited Talk** on *Elementary Subgroups of Orthogonal Groups* at *International Algebra Conference in the Philippines* (2023 IACP), **Philippines** on August 7-11, 2023.
- **Invited Talk** on *Roy's elementary orthogonal transformations* at Asia-Australia Algebra Conference, **Western Sydney University, Australia**, 21-25 January 2019.
- **Talk** “On von Neumann regularity of simple flat Leavitt path algebras” in the Annual Conference of Australian Mathematical Society, AustMS 2018, at **University of Adelaide, Australia**, 4-7 December, 2018.
- **Poster Presentation** on “Simple flat Leavitt path algebras are von Neumann regular” at CIMPA Research School on “Topics in Ring Theory”, **Cape Town, South Africa**, 16-28 July 2018.
- **Invited Talk** on *Normality of the DSER elementary orthogonal group*, in the *International Conference in K-Theory*, held at **Western Sydney University, Australia**, 01-05 August, 2016.

REFERENCES

◇ Prof. V. Suresh

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◇ Prof. Roozbeh Hazrat

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◇ Prof. B. Sury

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