

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.Phil. in Mathematics, September 2008.
Thesis Title: A study on Toeplitz matrices using C^* -algebras.
Thesis Advisor: M. N. Narayanan Namboodiri
- ◇ **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 Ravi A. Rao**, Normality of DSER elementary orthogonal group, *J. Pure Appl. Algebra* (2020), DOI: <https://doi.org/10.1016/j.jpaa.2019.106283>, arXiv:1703.04083 [math.AC].
 - [2] **A.A. Ambily**, Yoga of commutators in DSER elementary orthogonal group, *J. Homotopy Relat. Struct.* **14** (2019), no.2, 595 – 610.

- [3] **A.A. Ambily**, Normality and K_1 -stability of Roy's elementary orthogonal group, *J. Algebra*, **424** (2015), 522 – 539.
- [4] **A.A. Ambily and Ravi A. Rao**, Extendability of quadratic modules over a polynomial extension of an equicharacteristic regular local ring, *J. Pure Appl. Algebra*, **218** (2014), no.10, 1820 – 1837.

◇ **Non-commutative algebras**

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

◇ **Number Theory**

- [6] **S.D. Adhikari, A.A. Ambily and B. Sury**, Zero-sum problems with subgroup weights, *Proc. Indian Acad. Sci.(Math. Sci.)* **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.

PREPRINTS

- [1] **A.A. Ambily, Aparna Pradeep and Ravi A. Rao**, *Visualizing DSER Elementary Orthogonal group*, 2021.
- [2] **A.A. Ambily**, *Petrov's odd unitary group and Dickson–Siegel–Eichler–Roy elementary orthogonal group*, 2021.
- [3] **A.A. Ambily and Aparna Pradeep**, *Relative Local-Global Principle for DSER elementary orthogonal group*, 2021.

ONGOING WORKS

- [1] **A.A. Ambily and Aparna Pradeep** *Nilpotency of orthogonal K_1 group of a commutative ring*.
- [2] **A.A. Ambily and Aparna Pradeep**, *Equivalence of Normality and Quillen's Local-Global principle for DSER elementary orthogonal group*.

RESEARCH PROJECTS (BEING IMPLEMENTED/COMPLETED)

- ◇ Title: *Quadratic analogues of results on projective modules and the structure of orthogonal groups*, **Funding: RUSA, Govt.of India**, Role: Principal Investigator, Year: 2019-2020, ongoing (**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, ongoing (**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**).

REFEREE FOR JOURNALS. J. Pure and Appl. Algebra, Bull. Aust. Math. Soc., Proc. Indian Academy of Sciences, Indian Journal of Pure and Applied Maths.

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

- ◇ **RUSA Grant**, Govt. of India, 2019-2020.
- ◇ **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.

TEACHING EXPERIENCE

Courses Taught at Cochin University of Science and Technology (August 2015- 2021)		
Courses	Course Name (Course code)	Year
Ph.D. Course	Quadratic Forms over Fields	Odd Semester 2017
	Research Methodology	First Semester 2021
M.Phil Courses	Combinatorial Commutative Algebra	Odd Semester 2017
	Commutative Algebra	Odd Semester 2019
M.Sc Courses	Commutative Algebra	Even Semester 2016, 2020
	Real Analysis	Odd Semester 2017, 2015
	Complex Analysis I	Even Semester 2016, 2020
	Complex Analysis II	Odd Semester 2019, 2017, 2016, 2015
	Algebraic Structures	Even Semester 2016
	Linear Algebra	Odd Semester 2016
M.Sc Laboratory Courses	Computational Mathematical Laboratory I (C++)	Odd Semester 2015
	Computational Mathematical Laboratory II (Data Structures and Graph Algorithms)	Even Semester 2016
Integrated M.Sc Course	Linear algebra and Geometry	Semester V 2020
	Algebra II	Semester VI 2021

RESEARCH SUPERVISION

PH.D. SUPERVISION - Ms. Aparna Pradeep V.K. (August 2017 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. Ajay P Joseph, Algebraic Number Theory, 2021.
- ◇ Ms. Aparna Pradeep V.K., Lie Algebras, 2016.

SUMMER PROJECTS/OTHER PROJECTS SUPERVISION

- ◇ Akshay Dhan, B.S.-M.S. Student, IISER Tirupati, An algorithm for Serre's Problem on projective modules, 2020-2021.
- ◇ Akshay Dhan, B.S.-M.S. Student, IISER Tirupati, An algorithm to Quillen-Suslin Theorem, 2019.
- ◇ 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.
- ◇ **Convener**, Workshop on Differential Equations, 9 March 2019.
- ◇ **Coordinator for Department of Mathematics, CUSAT** for SASTRAYAAN program of Govt. of Kerala organized at Cochin University of Science and Technology in 2017.
- ◇ **Local Organizer, Indian Woman and Mathematics Regional workshop, IWM Kerala** 2018.
- ◇ **Convener, International Workshop on Leavitt Path Algebras and K-Theory**, July 2017.
- ◇ **Designed and maintaining the website** for Department of Mathematics, CUSAT since 2015-till date.
- ◇ Actively involved in the preparation of NAAC peer team visit during 2016.
- ◇ 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).
- ◇ 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.

CONFERENCES/EVENTS/WORKSHOPS ORGANIZED

- ◇ International Workshops/Conferences
 - 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)

- ◇ 20 April to 10 May, 2019 – School of Mathematics, Tata Institute of Fundamental Research (TIFR) MUMBAI, INDIA.
- ◇ 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.
- ◇ 20-28 November, 2017 – School of Mathematics, TIFR MUMBAI, INDIA.
- ◇ 5- 9 July, 2017 – Osaka University, JAPAN.
- ◇ 10-19 December, 2016 – School of Mathematics, TIFR MUMBAI, INDIA.
- ◇ 01-05 August, 2016 – Center for Research in Mathematics, Western Sydney University, AUSTRALIA.
- ◇ 16 May to 17 June, 2016 – Indian Statistical Institute (ISI), BANGALORE, INDIA.
- ◇ 31 March to 08 April, 2016 – School of Mathematics, TIFR MUMBAI, INDIA.
- ◇ 20-31 January, 2014 – School of Mathematics, TIFR MUMBAI, INDIA.
- ◇ 12 June-13 July, 2013 – School of Mathematics, University of Chinese Academy of Sciences, Beijing, CHINA.
- ◇ 06-14 November, 2012 – School of Mathematics, TIFR MUMBAI, INDIA.
- ◇ 01-14 November, 2011 – School of Mathematics, TIFR MUMBAI, INDIA.

SELECTED LIST OF INVITED TALKS/PRESENTATIONS

- ◇ International Workshops/ Conferences
 - **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.
- ◇ National Workshops/ Conferences/Training Programs
 - **Resource Person**, Summer Training Program in Mathematics STPM-2021, at S.B.College Changanassery, April 5-17, 2021.
 - **Invited Talk**, IWM Annual Conference 2021, held during March 22-23, 2021 in cooperation with IIT Dharwad.
 - **Invited Talk** on *Visualization of Roys Elementary Orthogonal Transformations* in the Commutative Algebra and Algebraic Geometry conference (CAAG 2019), at **IISER Bhopal**, 2-6 July, 2019.
 - **Talk** on *Normality of the DSER elementary orthogonal group* in CAAG 2017 at **IISER Pune**, December 05-08, 2017.
 - **Invited Speaker** at Seminar Series on “Unimodular Rows and Suslin Matrices” organized by the Department of Mathematics, **Institute of Science Mumbai**, on 06 September and 04 October, 2017.
 - Invited Lecture's in Young Talent Nurture program, at IIST, Trivandrum 24th May- 6th June, 2016.

- **Invited Talk** on *Extendability of Quadratic Modules* in CAAG 2015, **IIT Guwahati**, 05-09 February, 2015.
- **Colloquium talk** on *Normality and K_1 -stability of Roy's elementary orthogonal group* at School of Mathematics **TIFR Mumbai**, March 12, 2015.
- Contributed Talk at *Young Women and Mathematics-Symposium 2014*, IISER Pune, 25-27 July 2014.

COMPUTATIONAL MATHEMATICS WORKSHOPS/CONFERENCES ATTENDED

- ◇ International School on Computer Algebra, held at **IIT Gandhinagar**, 22-26 February, 2016.
- ◇ Computational Algebraic Geometry Workshop (ATMW: Advanced Training in Mathematics Workshop), held at **IIST Trivandrum**, 09-13 February, 2014.
- ◇ Computational Commutative Algebra and Algebraic Geometry (ATMW), held at **NIIT University Neemrana**, 16-28 January, 2012.

SELECTED LIST OF WORKSHOPS/CONFERENCES ATTENDED (Without Talk)

- ◇ International conference on Semigroup algebras and Applications ICSAA-2019 organised by the Department of Mathematics, **CUSAT, Cochin**, December 9-12, 2019.
- ◇ International Conference *The Prospects for Commutative Algebra* at **Osaka, Japan**, 10-14 July, 2017.
- ◇ International Research School *Recent Trends in Noncommutative Algebras*, at **IISER Pune**, India, 19-30 June, 2017.
- ◇ International conference on Semigroup algebras and Applications ICSAA-2015 organised by the Department of Mathematics, **CUSAT, Cochin**, September 17-19, 2015.
- ◇ Workshop on Syzygies and Free Resolutions, at **CMI Chennai**, 17-28 December, 2012.
- ◇ International Conference on *Commutative Algebra and Algebraic Geometry*, at Department of Mathematics, **Pondicherry University**, 05-09 March, 2012.
- ◇ ICM satellite conference on *Analytic and Combinatorial Number Theory*, at **IMSc Chennai**, 29 August-03 September, 2010.
- ◇ International Congress of Mathematicians (ICM 2010), held at **Hyderabad** 19-27 August, 2010.
- ◇ Advanced Training in Mathematics Schools (ATM Schools)
 - ATM Workshop on Schubert Varieties held at **IMSc Chennai**, 23 October - 4 November, 2017.
 - AIS School on Classical Groups, held at **IISER Pune**, 05-26 December, 2013.
 - ATM Workshop on Classical Algebraic K -theory, held at **TIFR Mumbai**, 15-24 July, 2013.
 - ATM School on Number Theory, held at **IMSc Chennai**, 15-27 February, 2010.
 - AIS School on Representation Theory, held at **ISI Bangalore**, 02-24 June, 2010.

REFERENCES

◇ Prof. Ravi A. Rao
 School of Mathematics
 Tata Institute of Fundamental Research
 Mumbai-400005, INDIA.
 Email: ravi@math.tifr.res.in

◇ Prof. B. Sury
 Statistics and Mathematics Unit
 Indian Statistical Institute
 RVCE Post, Bangalore-560059, INDIA
 Email: sury@isibang.ac.in

◇ Prof. V. Suresh
 Professor of Mathematics
 Department of Math & CS, MSC W401
 400 Dowman Dr., Emory University
 Atlanta, GA 30322, USA.
 Email: suresh.venapally@emory.edu

◇ Prof. Roozbeh Hazrat
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 Western Sydney University
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 Penrith, NSW 2751, AUSTRALIA
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