

Indu Rasika U Churchill

Curriculum Vitae

Department of Mathematics, SUNY at Oswego, Oswego, NY 13126

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EDUCATION -

Ph.D. in Pure and Applied Mathematics from **University of South Florida**, Tampa, FL, August 2017. Dissertation Advisors: Mohamed Elhamdadi and Abdenacer Makhlouf

Title: *Contributions to Quandle Theory: A Study of f -Quandles, Extensions, and Cohomology.*

M.A. in Mathematics from **University of South Florida**, Tampa, FL, December 2013.

B.Sc. Special (First class honors) in Mathematics from **University of Kelaniya**, Sri Lanka, May 2009. Thesis Advisor: R. A. D. Piyadasa

Title: *The equality of Schrödinger's theory and Heisenberg's S -matrix theory.*

EMPLOYMENT -

- **Assistant Professor**, State University of New York at Oswego, NY - 08/2018 - present
- **Visiting Assistant Professor**, State University of New York at Oswego, NY - 08/2017 - 07/2018
- **Instructor of Record**, University of South Florida, FL - 08/2016 - 07/2017
- **Graduate Teaching Associate**, University of South Florida, FL - 01/2012 - 07/2016.
- **Assistant Lecturer**, University of Kelaniya, Sri Lanka - 09/2009 - 11/2011

RESEARCH INTERESTS -

Mathematics: Knot Theory, Quandles, Algebra, Algebraic Topology, Discrete Mathematics, Combinatorics, Topology, Braid Groups, Hopf Algebra, Finite Fields, Graph Theory.

Teaching and learning: Active and collaborative learning, Undergraduate research and advising, and Student mentoring.

PUBLICATIONS - (* = student co-authors)

9. *Classification of f -quandles and their low dimensional Cohomology*, (with M. Elhamdadi, Nicolas van Kampen*), Accepted to SPAS2017 Volume 2- Algebraic Structures and Applications (2019).
8. *Erratum: Singular knots and involutive quandles*, (with M. Elhamdadi, M. Hajij, and S. Nelson), Journal of Knot Theory and Its Ramifications, Vol. 27, No.14 (2018).
7. *The Cocycle Structure of Alexander f -Quandles on Finite Fields*, (with M. Elhamdadi, N. Fernando), Journal of Knot Theory and Its Ramifications, Vol. 17, No. 10 (2018).
6. *Ternary and n -ary f Distributive Structures*, (with M. Elhamdadi, M. Green, and A. Makhlouf), Open Mathematics, Vol 16, No. 1, 2018.

5. *Contributions to Quandle Theory: A Study of f -Quandles, Extensions, and Cohomology*, Thesis (Ph.D.) - University of South Florida. 2017. 96 pp. ISBN: 978-0355-04173-6.
4. *Singular Knots and Involutive Quandles*, (with M. Elhamdadi, M. Hajj, and S. Nelson), *Journal of Knot Theory and Its Ramifications*, Vol. 26, No. 14 (2017).
3. *f -Racks, f -Quandles, their Extensions and Cohomology*, (with M. Elhamdadi, M. Green, and A. Makhlouf), *Journal of Algebra and its Applications*, Vol. 16, No. 11, 2017.
2. *Visualization of dihedral groups and their subgroups*, (with K.K.W.A.S. Kumara, R. Sanjeewa), 12th Annual Research Symposium, University of Kelaniya, Sri Lanka (2011), pg 158-pg159.
1. *The equality of Schrödinger's theory and Heisenberg's S -matrix theory*, (with R.A.D. Piyadasa), proceedings of the Research Symposium 2010 - Faculty of Graduate Studies, University of Kelaniya. (2010), pg 88 – 89.

IN PREPARATION -

4. *2-Cocycle Invariant and Oriented Singular Knots*, (with M. Elhamdadi, Nicolas van Kampen*), to be submit in November 2019.
3. *Classification of f -quandles of prime order*, (with A. B. Abdeljelja, M. Elhamdadi), In Progress.
2. *Quandles and f -Quandles in Dickson Polynomials*, (with M. Elhamdadi, N. Fernando), In Progress.
1. *Counting f -racks and f -quandles*, (with G. Churchill), In Progress.

AWARDS AND RECOGNITIONS -

- MAA Project NExT (New Experiences in Teaching) Fellow 2019. Selected as one of 100 fellows in the Silver '19 cohort of this professional development program for recent Ph.D.s in the mathematical sciences.
- Student Travel Grant 2017, award for presenting at the “2017 meeting of the Florida Section MAA,” Bradenton campus of the State College of Florida, Florida.
- Tharp Scholarship, Department of Mathematics, University of South Florida, FL (2014, 2015, 2016).
- Student Travel Grant 2015, University of South Florida, Tampa, Florida.
- Student Travel Grant 2016, Denison University, Granville, Ohio.

GRANTS -

- AMS Simons Travel Grant- submitted 03/06/2019
- SUNY at Oswego Research Fund for Chemistry and Math/Science Students Award - Summer 2019.

UNDERGRADUATE RESEARCH PROJECTS -

- Summer 2019 with Nicolas van Kempen - “2-Cocycle Invariant and Oriented Singular Knots” (Research Fund for Chemistry and Math/Science Students Award). Nicolas did a poster presentation for RISE (Research and Individualized Student Experiences) at SUNY Oswego on September 13, 2019.
- *Cocycle Invariant and Oriented Singular Knots*, with Nicolas van Kempen*, MAA Seaway sectional meetings, Ithaca College, NY in November 2019.

MATHEMATICS PRESENTATIONS & TALKS (INCLUDING UP COMING)-

11. *2-Cocycle Invariant and Oriented Singular Knots*, AMS Joint Meetings, Denver, Colorado, January 18, 2020.
10. *f-quandles*, AMS Joint Meetings, Baltimore, Maryland, January 19, 2019.
9. *An Introduction to Knot Theory, the Reidemeister Moves, & Quandles*, SUNY Oswego, April 18, 2018.
8. *An Introduction to Knot Theory, Quandles, and f-Quandles*, SUNY Oswego, July 20, 2017.
7. *A twist on Quandle*, MAA Florida Sectional meeting, State College of Florida, FL, Feb. 17-18, 2017.
6. *Quandles and Twisted-Quandles*, UnKnot Conference III, Denison University, Granville, Ohio, July 31 - August 3, 2016.
5. *Knot Theory through Quandles*, Graduate Student Session: Great Talks for a General Audience: Coached Presentations by Graduate Students, Part A, presented in MAA MathFest , Washington, DC Aug 5-8 2015.
4. *Knot Theory and DNA: unknotting numbers and topoisomerases by I. K. Darcy and D. W. Sumners*, presented in Discrete Seminar, USF, December 01, 2014.
3. *Rewriting Systems for Coxeter Groups by Susan M. Hermiller*, presented in Combinatorial and Geometric group Theory class, USF, April 22, 2014.
2. *Visualization of Dihedral Groups and their subgroups*, 12th Research Symposium, University of Kelaniya, Sri Lanka, 2011.
1. *Visualization of Dihedral groups*, 11th Annual Research Symposium, University of Kelaniya, Sri Lanka, 2010.

MEDIA

- Project NExT and our experiences with the program, Tea for Teaching podcast (with Jessalyn Bolkema, Sarah Hanusch, Zoë Misiewicz, John Kane, Rebecca Mushtare), teaforteaching.com, to be aired in November, 2019.

GENERAL-AUDIENCE PRESENTATIONS

- Faculty Research Fair, Department of mathematics, SUNY at Oswego, Fall 2018.

TEACHING EXPERIENCE -

Assistant Professor-SUNY Oswego

- MAT 210, Calculus I (two sections - Fall 2019)
- MAT 330, Introduction to Abstract Algebra (Spring 2019, Fall 2019)
- MAT 230, Matrix Algebra (two sections - Fall 2018)
- MAT 104, College Algebra (Fall 2018, two sections - Spring 2019)

Visiting Assistant Professor-SUNY Oswego

- MAX 101, Intermediate Algebra (two sections - Fall 2017)
- MAT 104, College Algebra (two sections - Fall 2017)
- MAT 120, PreCalculus (three sections - Spring 2018)
- MAT 307, Fundamentals of Geometry (Spring 2018)

Instructor of Record -University of South Florida.

- MAC 2281, Engineering Calculus I (Spring 2017)
- MAC 1147, Pre-Calculus and Trigonometry (mass class of 150 students, Fall 2016)

Graduate Teaching Associate -University of South Florida.

- MAS 3105, Linear Algebra
- MAC 2281, Engineering Calculus I
- MAC 2283, Engineering Calculus III
- MAC 2241, Life Science Calculus I
- MAC 2233, Business Calculus
- MAC 1105, College Algebra
- MAC 1147, Pre Calculus and Trigonometry

Description: Capable of using MyMathLab, MyLabPlus, WebAssign, ALEKS softwares and inclass i-clickers

Assistant Lecturer - University of Kelaniya, Sri Lanka.

- Elementary Ordinary Differential Equations
- Discrete Mathematics I/ II

SERVICE TO UNIVERSITY & PROFESSION-

- College Algebra Supervisor and Coordinator at SUNY Oswego for Fall18 and Spring 19.
- College Algebra Supervisor at SUNY Oswego for the Fall 2019.
- Matrix Algebra Supervisor at SUNY Oswego for the 2018/2019 school year
- Member of PRT Committee - 2019/2020
- Dept. Representative to SUNY Binghamton Calculus Reform Project, March 2018.
- Served as a judge for the Genius Olympiad Competition, Summer 2019, held at SUNY Oswego.
- Reviewer for Open Mathematics - De Gruyter
- Reviewer for zbMATH
- Reviewer for AMS mathscinet
- Reviewer for Topology and its Applications(TAIA)

PROFESSIONAL MEMBERSHIPS-

- Full member, Sigma Xi SUNY at Oswego chapter of the society, 2018 - present
- Member, American Mathematical Society (AMS), 2012 - present
- Member, Mathematical Association of America (MAA), 2012 - present

LANGUAGES - American English, Sinhalese (native)