Henry Tucker

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Education

2010 - 2016	Ph.D. Mathematics, University of Southern California *Advisor:* M. Susan Montgomery *Dissertation:* "Frobenius-Schur indicators for near-group and Haagerup-Izumi fusion categories"
2006 - 2010	B.A. Mathematics, University of California, Berkeley *Advisor:* Robert F. Coleman *Thesis:* "The classification of exceptional polynomials over finite fields"
2007	National Outdoor Leadership School, Alaska *Certifications:* Outdoor Educator and Leave No Trace Trainer
2004 - 2006	South Carolina Governor's School for Science and Mathematics *Advisor:* Phelesia Jones-Cooper *Thesis:* "Developing a fullerene single-molecule transistor via a regioselective synthetic strategy"

Employment

2019 - 2022	Univeristy of California, Riverside *Position:* Visiting Assistant Professor *Supervisor:* Feng Xu
2016 - 2019	University of California, San Diego *Position:* NSF Research Training Group Postdoctoral Fellow *Supervisor:* Daniel Rogalski
Summer 2016	Kyoto University *Position:* Japan Society for the Promotion of Science (JSPS) Fellow *Host Researcher:* Masaki Izumi
2010 - 2016	University of Southern California *Positions:* Teaching Assistant; Research Assistant; Departmental Fellow *Research Sponsors:* Susan Montgomery; Robert Guralnick

Publications

In print or to appear:

Integral modular categories of Frobenius-Perron dimension pq^n (with Jingcheng Dong), Algebr. Rep. Theory 19 (2016) no. 33 (arXiv:1408.3053)

Eigenvalues of rotations and braids in spherical fusion categories (with Daniel Barter & Corey Jones), J. Algebra 515 (2018), pages 52–76 (arXiv:1611.00071)

Frobenius-Schur indicators for near group fusion categories, Pacific J. Math. 303 (2019), no. 1, pages 337–359. (`arXiv:1510.05696`)

Algebraic realization of noncommutative near-group fusion categories (with Masaki Izumi), Algebra & Number Theory 15 (2021), no. 5, pages 1077âĂŞ-1093. (`arXiv:1908.01655`)

Appendix: A multiplicity bound for $\mathbb{Z}/2\mathbb{Z}$-quadratic categories (with Ryan Johnson, Siu-Hung Ng, David Penneys, Jolie Roat, & Matthew Titsworth), pages 46–52 in Classification of $\mathbb{Z}/2\mathbb{Z}$-quadratic unitary fusion categories, by Cain Edie-Michell, Masaki Izumi, and David Penneys, *preprint* (`arXiv:2108.01564`)

In progress:

Modular invariants from Drinfel'd centers of Tambara-Yamagami categories (with César Galindo, Siu-Hung Ng, and Julia Plavnik)

Frobenius-Schur indicators and Drinfel'd doubles for families of quadratic fusion categories

Modular data for near-group fusion categories and the modular graft (with Marcel Bischoff)

Extra-special fusion categories

Lectures

Oct. 2021	"Frobenius-Schur indicators for some families of quadratic fusion categories." Special Session on Tensor Categories & Applications" AMS Fall Western Sectional Meeting (online; formerly at Univ. of New Mexico)
Sept. 2021	"Frobenius-Schur indicators for some families of quadratic fusion categories." Sesión de simetrías cuánticas VI Congreso Latinoamericano de Matemáticos (online; formerly in Montevideo, Uruguay)
Sept. 2021	"Frobenius-Schur indicators for quadratic fusion categories and their DrinfelâĂŹd centers" University Quantum Symmetries Lectures ($U_q(\mathfrak{sl})$) Online seminar (`https://www.coreyjonesmath.com/quantum-symmetries-seminar`)
July 2021	"Frobenius-Schur indicators for some families of quadratic fusion categories." Special Session on Quantum Symmetries 2021 Mathematical Congress of the Americas (online; formerly in Buenos Aires, Argentina)
June 2021	"Frobenius-Schur indicators for some families of quadratic fusion categories." Session on Hopf Algebras and Related Topics Canadian Mathematical Society 75th+1 Anniversary Summer Meeting
March 2021	"Frobenius-Schur indicators for some families of quadratic fusion categories." Special Session on Hopf Algebras, Tensor Categories, and Related Homological Methods AMS Spring Eastern Sectional Meeting (online; formerly at Brown University)
Jan. 2021	"Frobenius-Schur indicators for some families of quadratic fusion categories." AMS Special Session on Homological Aspects of Quantum Symmetries and Related Topics 2021 Joint Mathematics Meetings (online; formerly at Washington, DC)
Nov. 2019	"Modular invariants for Drinfel'd centers of Tambara-Yamagami fusion categories" Special Session on Geometry and Representation Theory of Quantum Algebras AMS Fall Western Sectional Meeting University of California, Riverside

Aug. 2019   "Algebraic realization of noncommutative near-group fusion categories"
Seminario de Grupo de Teoría de Lie
Facultad de Matemática, Astronomía, Física y Computación (FaMAF)
Universidad Nacional de Córdoba, Argentina

May 2019   "Frobenius-Schur Indicators and the Classification of Fusion Categories via Categorification"
MathConnections 2019
University of California, Riverside

Mar. 2019   "Hopf-Galois objects as module categories over equivariantization tensor categories"
Special Session on Hopf Algebras and Their Applications
AMS Spring Southeastern Sectional Meeting
Auburn University, Alabama

Jan. 2019   "Modular data for centers of near-group fusion categories via modular graft"
AMS Special Session on Quantum Symmetries: Subfactors and Fusion Categories
2018 Mathematics Research Communities Session
2019 Joint Mathematics Meetings, Baltimore, Maryland

Sept. 2018   "Extra special 2-groups in the classification of quadratic fusion categories"
Algebra Seminar
University of Southern California

June 2018   "Frobenius-Schur indicators for fusion categories arising from subfactors"
Operator Algebra Seminar
University of California, Riverside

Apr. 2018   "Kac quasi-Hopf algebras for group-theoretical fusion categories"
Special Session on Hopf algebras, Tensor categories, and homological algebra
AMS Spring Eastern Sectional Meeting
Northeastern University, Boston, Massachusetts

Mar. 2018   "Classification and invariants for fusion categories"
Rocky Mountain Algebraic Combinatorics Seminar
Colorado State University, Fort Collins

Mar. 2018   "Classification and invariants for fusion categories (a survey)"
Workshop: Recent developments in noncommutative algebra and related areas
University of Washington, Seattle

Jan. 2018   "Classifying fusion categories by categorification of rings"
Workshop on Tensor categories, Hopf algebras and quantum groups
Philipps-Universität Marburg, Marburg, Germany

Jan. 2018   "Extra-special fusion categories"
AMS Special Session on Noncommutative algebras and invariant theory
2018 Joint Mathematics Meetings, San Diego, California

Nov. 2017   "Near group fusion categories: classification and realizations"
Algebra & Combinatorics Seminar
Texas A&M University

Oct. 2017   "Fusion categories and their invariants"
Algebra Seminar
State University of New York at Buffalo

Aug. 2017   "Classification of fusion categories via invariants"
Sesión temática sobre Álgebras de Hopf y Categorías Tensoriales

	XXII Coloquio Latinoamericano de Álgebra Pontificia Universidad Católica del Ecuador, Quito, Ecuador
July 2017	"Modular data and Drinfel'd centers for near-group fusion categories" Summer School on Fusion Categories Nanjing University, China
Apr. 2017	"Drinfel'd centers of quadratic categories and their associated modular data" Special Session on Noncommutative Algebraic Geometry and Related Topics AMS Spring Western Sectional Meeting Washington State University, Pullman
Apr. 2017	"Rotations and braids in spherical fusion categories" USC Hopf Algebras Workshop University of Southern California, Los Angeles
Apr. 2017	"Invariant rigidity from eigenvalues of rotations and braids in spherical fusion categories" Special Session on Fusion Categories and Applications AMS Spring Central Sectional Meeting Indiana University, Bloomington
Jan. 2017	"Eigenvalues for rotations and braids in spherical fusion categories" Workshop on structure of operator algebras: subfactors & fusion categories Programme on Operator Algebras: Subfactors & their Applications Isaac Newton Institute for Mathematical Sciences, Cambridge, U.K.
Jan. 2017	"Eigenvalues for rotations and braids in spherical fusion categories" AMS Special Session on New Developments in Noncommutative Algebra and Rep'n Theory 2017 Joint Mathematics Meetings, Atlanta, Georgia
Oct. 2016	"Fusion categories and their invariants" Algebra Seminar University of California, San Diego
Oct. 2016	"Non-commutative near group fusion categores" Special Session on Quantum Algebra AMS Fall Western Sectional Meeting University of Denver
Sept. 2016	"Frobenius-Schur indicators and modular data" Conference on Hopf Algebras and Tensor Categories Chern Institute of Mathematics Nankai University, Tianjin, China
August 2016	"Frobenius-Schur indicators and modular data for singly-generated fusion categories" Special seminar University of Tsukuba, Japan
August 2016	"Frobenius-Schur indicators and modular data" BIRS-CMO Workshop on Modular Categories Casa Matemática Oaxaca, Mexico
July 2016	"Frobenius-Schur indicators and modular data for singly-generated fusion categories" Kyoto Operator Algebra Seminar Research Institute for Mathematical Sciences Kyoto University, Japan
July 2016	"Frobenius-Schur indicators and modular data for singly-generated fusion categories"

Seminars on Tensor Categories and Related Topics
Nagoya University, Japan

May 2016   "Frobenius-Schur indicators and modular data for singly-generated fusion categories"
14th Annual Spring Institute on Noncommutative Geometry and Operator Algebras (NCGOA)
Hausdorff Research Institute for Mathematics
Universität Bonn, Germany

April 2016   "Fusion categories: their invariants and classification"
Mathematics Colloquium
California State University, Dominguez Hills

April 2016   "Operator algebra methods for classification of fusion categories"
Hopf Algebras and Actions Seattle Workshop, Part II (Lie Theory NSF Workshop series)
University of Washington, Seattle

April 2016   "Non-degenerate quotients of pivotal tensor categories"
Special Session on Fusion Categories and Topological Phases of Matter
AMS Spring Western Sectional Meeting
University of Utah, Salt Lake City

Jan. 2016   "Categories of Cuntz algebra endomorphisms and their Frobenius-Schur indicators"
Functional Analysis Seminar
University of California, Los Angeles

Jan 2016.   "Frobenius-Schur indicators for near group and Haagerup-Izumi fusion categories"
AMS Session on Associative and Nonassociative Algebras and Rings, I
2016 Joint Mathematics Meetings, Seattle, Washington

Fall 2015   "Fusion categories and their invariants"
USC Student Algebra Seminar

July 2015   "Frobenius-Schur indicators for near group fusion categories and Gauss sums"
Seattle Non-commutative Algebra Day
University of Washington, Seattle

May 2015   "Frobenius-Schur indicators for near group fusion categories and affine general linear groups"
Hopf Algebras and Tensor Categories Mini-Meeting
University of Southern California

Apr. 2015   "Integral modular categories of Frobenius-Perron dimension pq^n"
Special Session on New Developments in Noncommutative Algebra
AMS Spring Western Sectional Meeting
University of Nevada, Las Vegas

Feb. 2015   "Frobenius-Schur indicators for near group fusion categories"
Algebra and Number Theory Seminar
Louisiana State University

Spring 2015   "Frobenius-Schur indicators for compact groups," in two parts
USC Hopf Working Seminar

Spring 2015   "Representation theory of compact groups"
USC Student Algebra Seminar

Nov. 2014   "Frobenius-Schur indicators for near group fusion categories"
Hopf Algebras and Actions Seattle Workshop (Lie Theory NSF Workshop series)
University of Washington, Seattle

Fall 2014	2-week Mini-course on Hopf Algebras and Tensor Categories USC Student Algebra Seminar
Spring 2014	"Subfactors and fusion categories," in two parts USC Hopf Working Seminar
Spring 2014	"Introduction to subfactors" USC Student Algebra Seminar
Fall 2013	"Frobenius-Schur indicators for pivotal categories," in two parts USC Hopf Working Seminar
Fall 2013	"Fusion categories" USC Student Algbebra Seminar
Spring 2013	"Frobenius-Schur indicators for Hopf algebras" USC Student Algebra Seminar

Invited Workshops, etc.

Aug. 2021	Participant w/ funding, 2021 Young Mathematicians in C^* Algebras Westfälische Wilhelms-Universität Münster, Germany
Jan. 2020	Participant w/ funding, Introductory Workshop: Quantum Symmetries MSRI Program on Quantum Symmetries Mathematical Sciences Research Institute, Berkeley, California
June-July 2019	Teaching Assistant, Mini-course on finite-dimensional Hopf algebras & their rep'ns CIMPA Research School on Quantum Symmetries Universidad de los Andes, Bogotá D.C., Colombia
June 2018	Participant, GeoffFest 2018: Vertex operator algebras, number theory, and related topics A conference in honor of Geoffrey Mason California State University, Sacramento
Jan. 2017	Participant, Programme on Operator Algebras: Subfactors & their Applications Isaac Newton Institute for Mathematical Sciences, Cambridge, UK
August 2016	Participant, BIRS-CMO Workshop on Modular Categories (16w5049) Casa Matemática Oaxaca, Mexico (jt. pres. w/ Banff Int'l Research Station for Mathematical Innovation and Discovery)
August 2016	Participant, Mathematical Society of Japan Seasonal Institute Operator Algebras & Mathematical Physics Summer School and Conference Tohoku University, Sendai, Japan
May-Jun 2016	Visitor, Von Neumann Algebras Trimester Program Hausdorff Research Institute for Mathematics Universität Bonn, Germany
June 2014	Member, 2014 AMS Mathematics Research Community, Snowbird, Utah *Topic:* Mathematics of Quantum Phases of Matter and Quantum Information
April 2014	Participant, Subfactors and Fusion Categories Workshop (14w5083) Banff International Research Station, Banff, Alberta
May 2013	Participant, Workshop on Fusion Categories Institut de Mathématiques de Bourgogne Université de Bourgogne, Dijon, France
Oct 2012	Fall 2012 AMS Travel Grant Recipient Special Session on Quantum Groups and Noncommutative Algebraic Geometry AMS Fall Southeastern Sectional Meeting Tulane University, New Orleans, Louisiana

Professional Service

Memberships:

American Mathematical Society

Association for Women in Mathematics

National Association of Mathematicians

Referee work:

Journal of Pure & Applied Algebra

Algebra & Number Theory

Communications in Algebra

Algebras & Representation Theory

Acta Mathematica Sinica

Contemporary Mathematics

Organizational activities:

Jan. 2022	Co-organizer, AMS Special Session on Hopf Algebras and Tensor Categories (with Siu-Hung Ng & Julia Plavnik) 2022 Joint Mathematics Meetings, Seattle, Washington
Jan. 2021	Co-organizer, AMS Special Session on Hopf Algebras and Tensor Categories (with Siu-Hung Ng & Julia Plavnik) 2021 Joint Mathematics Meetings (online; formerly in Washington, DC)
Jan. 2019	Co-organizer, AMS Special Session on Hopf Algebras and Tensor Categories (with Siu-Hung Ng & Julia Plavnik) 2019 Joint Mathematics Meetings, Baltimore, Maryland
Apr. 2018	Co-organizer, Special Session on Tensor Categories and Diagrammatic Methods (with Marcel Bischoff) Spring 2018 AMS Southeastern Sectional Meeting Vanderbilt University, Nashville, Tennessee
Jan. 2018	Co-organizer, AMS Spec. Sess. on Hopf algebras in honor of Susan Montgomery (with Siu-Hung Ng & Lance Small) 2018 Joint Mathematics Meetings, San Diego, California
Nov. 2017	Co-organizer, Spec. Sess. on Tensor Categories: Bridging Algebra, Topology, & Physics (with Paul Bruillard & Julia Plavnik) Fall 2017 AMS Western Sectional Meeting University of California, Riverside
June 2017	Co-organizer, Hopf Algebras & Tensor Categories in San Diego (with Susan Montgomery & Dan Rogalski) Summer 2017 NSF West Coast Lie Theory Workshop UC San Diego, La Jolla, California

Jan. 2017	Co-organizer, AMS Special Session on Hopf algebras and their actions (with Susan Montgomery & Siu-Hung Ng) 2017 Joint Mathematics Meetings, Atlanta, Georgia
May 2015	Co-organizer, Hopf Algebras and Tensor Categories Mini-Meeting (with Susan Montgomery and Guangbin Zhuang) University of Southern California, Los Angeles, Calif.
Spring 2015	Organizer, Student Algebra Seminar University of Southern California, Los Angeles, Calif.
Jan 2015	Co-organizer, AMS Special Session on Quantum Info. and Fusion Categories (SS 58A) 2014 Mathematics Research Communities Session (with Paul Bruillard and Amanda Young) 2015 Joint Mathematics Meetings, San Antonio, Texas
Spring 2012	Organizer, Student Algebra Seminar University of Southern California, Los Angeles, Calif.

Teaching Experience

As instructor of record at UC Riverside:

Introduction to Optimization (Math 120)

Graph Theory & Combinatorics (Math 126)

Multivariable Calculus (Math 10A and 10B)

Linear Algebra (Math 31)

Calculus I for the Life Sciences (Math 7A)

Introduction to Functions I (Math 6A)

College Algebra for Business & Social Sciences (Math 4)

As instructor of record at UC San Diego:

Calculus I and II (Math 10A and 10B)

Multivariable Calculus (Math 10C)

Calculus I and II for Engineering & Physical Science (Math 20A and 20B)

Multivariable Calculus for Engineering & Physical Science (Math 20C and 20E)

As teaching assistant at USC:

Calculus I and II (Math 125 and 126)

Multivariable Calculus (Math 226)

Linear Algebra and Differential Equations (Math 225)

Pre-calculus (Math 117)

Abstract Algebra (Math 410)

Number Theory (Math 430)

Graduate Abstract Algebra (Math 510A-B)

Grants, Fellowships, Awards

2021	AMS Mathematical Congress of the Americas Travel Grant
2019	UC San Diego Non-Senate Faculty Professional Development Funding recipient
2018	AMS Travel Grant for 2018 International Congress of Mathematicians
2016-2018	AMS-Simons Travel Grant
2016	Harris Research Prize, USC Dept. of Mathematics
Summer 2016	NSF East Asia and Pacific Summer Institute Fellow
Summer 2014	AMS Mathematics Research Community
Oct 2012	AMS Travel Grant
Fall 2012	USC Departmental Merit Fellowship
Spring 2012	USC Departmental Merit Fellowship
Summer 2011	USC Summer Fellowship

Technical Skills

Programming languages:

Python, Java, C++, HTML/CSS, JavaScript, LATEX, Applesoft BASIC, Apple Logo.

Software:

Sage, Mathematica, Octave/MATLAB, Magma, GNU Emacs, GIMP/Adobe Photoshop, Pro Tools

References

1. Susan Montgomery, University of Southern California – `smontgom@usc.edu`

2. Siu-Hung (Richard) Ng, Louisiana State University – `rng@math.lsu.edu`

3. Peter Schauenburg, Université de Bourgogne – `peter.schauenburg@u-bourgogne.fr`

4. Hans Wenzl, University of California, San Diego – `hwenzl@ucsd.edu`

5. Daniel Rogalski, University of California, San Diego (for teaching) – `drogalski@ucsd.edu`

6. Julia Plavnik, Indiana University, Bloomington – `jplavnik@indiana.edu`

7. James Zhang, University of Washington, Seattle – `zhang@math.washington.edu`

8. Aaron Lauda, University of Southern California – `lauda@usc.edu`