Henry Tucker

University of California, San Diego
Department of Mathematics
9500 Gilman Drive #0112
La Jolla, Calif. 92093-0112

Office: AP&M 6311
Phone: (858) 534-3961
Email: `hjtucker@ucsd.edu`
Homepage: `www.math.ucsd.edu/~hjtucker`

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

2016 - 2019   University of California, San Diego
Position: NSF Research Training Group Postdoctoral Fellow
Supervisor: Dan 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/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, *to appear*, Pacific J. Math. (`arXiv:1510.05696`)

Preprints:

   Non-commutative near-group fusion categories (with Masaki Izumi), *in progress*

   Modular data for near-group fusion categories (with Marcel Bischoff), *in progress*

   Extra-special fusion categories (with Daniel Copeland & Hans Wenzl), *in progress*

   Pseudo-unitary self-dual fusion categories of rank 4 (with Ryan Johnson, Siu-Hung Ng, David Penneys, Jolie Roat, Scott Morrison, & Matthew Titsworth), *to appear as an appendix*

Lectures

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)

<table>
<tr><td></td><td>14th Annual Spring Institute on Noncommutative Geometry and Operator Algebras (NCGOA)
Hausdorff Research Institute for Mathematics
Universität Bonn, Germany</td></tr>
<tr><td>April 2016</td><td>"Fusion categories: their invariants and classification"
Mathematics Colloquium
California State University, Dominguez Hills</td></tr>
<tr><td>April 2016</td><td>"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</td></tr>
<tr><td>April 2016</td><td>"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</td></tr>
<tr><td>Jan. 2016</td><td>"Categories of Cuntz algebra endomorphisms and their Frobenius-Schur indicators"
Functional Analysis Seminar
University of California, Los Angeles</td></tr>
<tr><td>Jan 2016.</td><td>"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</td></tr>
<tr><td>Fall 2015</td><td>"Fusion categories and their invariants"
USC Student Algebra Seminar</td></tr>
<tr><td>July 2015</td><td>"Frobenius-Schur indicators for near group fusion categories and Gauss sums"
Seattle Non-commutative Algebra Day
University of Washington, Seattle</td></tr>
<tr><td>May 2015</td><td>"Frobenius-Schur indicators for near group fusion categories and affine general linear groups"
Hopf Algebras and Tensor Categories Mini-Meeting
University of Southern California</td></tr>
<tr><td>Apr. 2015</td><td>"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</td></tr>
<tr><td>Feb. 2015</td><td>"Frobenius-Schur indicators for near group fusion categories"
Algebra and Number Theory Seminar
Louisiana State University</td></tr>
<tr><td>Spring 2015</td><td>"Frobenius-Schur indicators for compact groups," in two parts
USC Hopf Working Seminar</td></tr>
<tr><td>Spring 2015</td><td>"Representation theory of compact groups"
USC Student Algebra Seminar</td></tr>
<tr><td>Nov. 2014</td><td>"Frobenius-Schur indicators for near group fusion categories"
Hopf Algebras and Actions Seattle Workshop (Lie Theory NSF Workshop series)
University of Washington, Seattle</td></tr>
<tr><td>Fall 2014</td><td>2-week Mini-course on Hopf Algebras and Tensor Categories
USC Student Algebra Seminar</td></tr>
<tr><td>Spring 2014</td><td>"Subfactors and fusion categories," in two parts</td></tr>
</table>

	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.

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:

Acta Mathematica Sinica

Contemporary Mathematics

Journal of Pure & Applied Algebra

Communications in Algebra

Algebras & Representation Theory

Organizational activities:

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) (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:

Calculus I and II

Multivariable Calculus

Calculus I for engineering & physical science

Multivariable Calculus for engineering & physical science (two-quarter sequence)

As teaching assistant:

Calculus I and II

Multivariable Calculus

Linear Algebra and Differential Equations

Pre-calculus

Abstract Algebra (undergraduate)

Number Theory (undergraduate)

Algebra (graduate)

Grants, Fellowships, Awards

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`