

## Cain Edie-Michell - CV

### Employment/Education

- Fall Fall 2021 - Present **UC San Diego** S.E.W Assistant Professor (NTT)  
Mentor: Hans Wenzl
- Spring 2020 **Mathematical Sciences Research Institute** Postdoctoral Scholar  
Program: Quantum Symmetries
- Fall 2018 - Spring 2021 **Vanderbilt University** NTT Assistant Professor  
Mentor: [Dietmar Bisch](#)
- 2015-2018 **Australian National University** Doctor of Philosophy (Mathematics)  
Advisor: [Scott Morrison](#)  
Thesis: [The classification of categories generated by an object of small dimension](#)
- 2011 - 2014 **University of Otago** Bachelor of Science (Hons.)  
Advisor: Lisa Orloff Clark  
Thesis: [The ideal structure of Steinberg algebras](#)

### Publications

#### Published

1. *A complete classification of unitary fusion categories generated by an object of dimension  $\frac{1+\sqrt{5}}{2}$*   
In press at **International Mathematics Research Notices**  
<https://arxiv.org/abs/1904.08909>
2. *Equivalences of Graded Categories*  
**J. Pure Appl. Algebra** 225 (2021), no. 9  
<https://arxiv.org/abs/1711.00645>
3. *Classifying fusion categories  $\otimes$ -generated by an object of small Frobenius-Perron dimension*  
**Selecta Mathematica** 26 (2020), no. 2, Paper No. 24, 47  
<https://arxiv.org/abs/1810.05717>
4. *Simple current auto-equivalences of modular tensor categories*  
**Proceedings of the American Mathematical Society** 148 (2020), no. 4, 1415–1428  
<https://arxiv.org/abs/1902.09498>
5. *Fusion Rules for  $\mathbb{Z}/2\mathbb{Z}$  permutation gauging*  
with Corey Jones and Julia Plavnik  
**Journal of Mathematical Physics** 60 (2019), no. 10, 102302, 15 pp  
<https://arxiv.org/abs/1804.01657>
6. *Ideals of Steinberg Algebras of Strongly Effective Groupoids, with Applications to Leavitt Path Algebras*  
with Lisa Orloff Clark, Astrid an Huef, and Aidan Sims  
**Transactions of the American Mathematical Society** 371 (2019), no. 8, 5461–5486  
<https://arxiv.org/abs/1601.07238>

7. *The Brauer-Picard group of fusion categories coming from the ADE subfactors*

**International Journal of Math** 29 (2018), no. 5, 1850036, 43 pp

<https://arxiv.org/abs/1709.04721>

8. *Uniqueness Theorems for Steinberg Algebras*

with Lisa Orloff Clark

**Journal of Algebras and Representation Theory** 18 (2015), no. 4, 907–916

<https://arxiv.org/abs/1403.4684>

## Preprints

1. *Classification of  $\mathbb{Z}/2\mathbb{Z}$ -quadratic unitary fusion categories*

with Masaki Izumi and Dave Penneys

<https://arxiv.org/abs/2108.01564>

2. *Type II quantum subgroups of  $\mathfrak{sl}_n$ . I: Symmetries of local modules*

<https://arxiv.org/abs/2102.09065>

3. *Autoequivalences of the modular tensor categories of types A, B, C, and G*

<https://arxiv.org/abs/2002.03220>

## Expository Notes

1. *A Field Guide to Categories with  $A_N$  Fusion Rules*

with Scott Morrison

<https://arxiv.org/abs/1710.07362>.

## Funding

NSF Award DMS-2137775 : Quantum Subgroups of the Low Rank Lie Algebras (\$112,428)

AMS-Simons Travel Grant for 2019-2021 (\$4000)

## Talks

**Type II quantum subgroups for  $\mathfrak{sl}_n$**

Subfactor Seminar Vanderbilt

**Type II quantum subgroups for  $\mathfrak{sl}_n$**

Wales MPPM Zoom Seminar - Online

**Quantum Subgroups of Lie Algebras**

- UNSW Pure Math Seminar - Sydney, February 2021

**A classification of fusion categories generated by an object of dimension  $\frac{1+\sqrt{5}}{2}$**

- Algebra & Discrete Mathematics - UC Davis

**Oceanu bootstrapping for quantum  $\mathfrak{sl}_n$**

Subfactor Seminar - Vanderbilt, October 2020

**Classifying fusion categories generated by small objects**

Quantum Symmetries Student Seminar - Online , September 2020

**Oceanu bootstrapping for quantum  $\mathfrak{sl}_n$**

University Quantum Symmetries Lectures - Online, September 2020

**A classification of fusion categories generated by a small normal object**

MSRI Quantum Symmetries Seminar - Berkeley, March 2020

**Autoequivalences of the modular tensor categories of type  $A$ ,  $B$ ,  $C$ , and  $G$**

MSRI Introduction Seminar - Berkeley, February 2020

**A complete classification of unitary fusion categories generated by an object of dimension  $\frac{1+\sqrt{5}}{2}$**

Quantum Algebra Seminar University of Indiana - Bloomington, November 2019

**A complete classification of unitary fusion categories generated by an object of dimension  $\frac{1+\sqrt{5}}{2}$**

East Coast Operator Algebra Symposium OSU, October 2019

**Autoequivalences of modular tensor categories of type  $B$  and  $C$**

AMS Special Session on Hopf Algebras and Tensor Categories, January 2019

**Classifying fusion categories generated by an object of small dimension**

OSU Quantum Mathematics Seminar, November 2018

**Classifying small dimension bimodules of the hyperfinite type  $II_1$  factor**

Vanderbilt Subfactor Seminar, 31st August 2018.

**Unitary fusion categories generated by an object of small dimension**

ANU PhD defence, 18th April 2018.

**The Brauer-Picard groups**

Kioloa workshop, 16th November 2017.

**Planar algebras for the Drinfeld centres of the even parts of the  $ADE$  subfactors**

Vanderbilt Subfactor Seminar, 6th October 2017.

**Planar Algebra Presentations for the Drinfeld Centres of  $PSU(2)_q$**

UNSW Pure Mathematics Seminar, 8th September 2017.

**An almost classification of fusion categories generated by a normal object of dimension less than 2**

Special Session on Hopf Algebras and Tensor Categories at the XXII Coloquio Latinoamericano de Algebra in Quito, Ecuador, 7th August 2017.

**Equivalences of Graded Categories**

Quantum Symmetries: Subfactors and Planar Algebras, Maui, USA, 19th July 2017.

**The Brauer-Picard groups of the  $ADE$  fusion categories**

Hopf Algebras and Tensor Categories in San Diego, 3rd June 2017.

**Natural Transformations for Planar Algebras**

Quantum Mathematics Meeting, ANU, 10th March 2017.

**The Brauer-Picard groups of the  $ADE$  fusion categories**

AustMS Annual Meeting, ANU, 7th December 2016.

**Quantum Computing via Linear Algebra**

Graduate Student Seminar, ANU, 17th August 2016.

**The Brauer-Picard groups of the  $ADE$  fusion categories**

Quantum Mathematics Meeting, ANU, 6th May 2016.

**Classifying Quadratic Fusion Categories**

Workshop on topology and representation theory, Kioloa, Australia, 24th November 2015.

**An Introduction to Topological Groupoid Algebras**

Graduate Student Seminar, ANU, March 2015.

**The Ideal Structure of Steinberg Algebras**

Honours Seminar, University of Otago, New Zealand, October 2014.

## Teaching Experience

**MATH 1300: Accelerated Single-Variable Calculus I**

Instructor, Vanderbilt, Fall 2018.

**MATH 2420: Ordinary Differential Equations**

Instructor, Vanderbilt, Spring 2019.

**MATH 1300: Accelerated Single-Variable Calculus I**

Instructor, Vanderbilt, Fall 2019.

**MATH 3100: Analysis I**

Instructor, Vanderbilt, Fall 2020.

**MATH 2610: Ordinary Differential Equations**

Instructor, Vanderbilt, Spring 2021.

**MATH 142A: Introduction to Analysis**

Instructor, UCSD, Fall 2021.