

# CURRICULUM VITAE

**Thomas M. Fiore**

Department of Mathematics and Statistics

University of Michigan-Dearborn

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## 1. Education

**Ph.D. — Mathematics** **August 2005**  
UNIVERSITY OF MICHIGAN, Ann Arbor, MI  
Advisor: Igor Kriz

**B.Phil. — German** **August 1999**  
**B.S. — Mathematics** **August 1999**  
UNIVERSITY OF PITTSBURGH, Pittsburgh, PA

## 2. Teaching and Research Interests

Teaching: All Mathematics and Statistics Classes

Research: Higher Category Theory, K-Theory, Abstract Homotopy Theory, and  
Mathematical Music Theory

## 4. Employment History/Fellowships

**Full Professor** **September 2020 to present**  
**Associate Professor** **September 2013 to August 2020**  
**Assistant Professor** **September 2009 to August 2013**  
Department of Mathematics and Statistics  
UNIVERSITY OF MICHIGAN-DEARBORN, Dearborn, Michigan

**Humboldt Fellow** **September 2015 to July 2016**  
Fakultät für Mathematik  
UNIVERSITÄT REGENSBURG, Regensburg, Germany

**Profesor Visitante** **September 2007 to August 2008**  
Departament de Matemàtiques  
UNIVERSITAT AUTÒNOMA DE BARCELONA, Bellaterra, Spain

**L.E. Dickson Instructor** **September 2005 to August 2007**  
Department of Mathematics **and September 2008 to August 2009**  
UNIVERSITY OF CHICAGO, Chicago, IL

## 5. Honors and Awards

2011 Merten M. Hasse Prize of the Mathematical Association of America for article [8a], jointly awarded to all three authors

(The Hasse Prize is awarded only once every two years at the national level)

## 6. Scientific and Professional Societies Memberships

Society for Mathematics and Computation in Music (Member)

American Mathematical Society (Member)

Mathematical Association of America (Member every other year)

## 7. Teaching Activities

### a) Teaching at the University of Michigan-Dearborn for Past 6 Years

Term	Course Number	Course Title	Cr. Hrs	Num. of Students
Winter 21	Stat 301	Biostatistics I	3	TBD
	Stat 325	Applied Statistics I	4	TBD
	Math 425/525	Mathematical Statistics	3	TBD
Fall 20	Math 215	Calculus III	4	32
	Math 325	Probability Theory	3	24
Winter 20	Leave of Absence			
Fall 19	Math 227, Sec. 5	Linear Algebra	3	29
	Math 325	Probability Theory	3	35
Summer I 19	Stat 535	Data Analysis and Modelling	3	25
Winter 19	Leave of Absence			
Fall 18	Math 215	Calculus III	4	31
	Math 227, Sec. 3	Linear Algebra	3	27
	Math 227, Sec. 4	Linear Algebra	3	30
Summer I 18	Math 227	Linear Algebra	3	28
Winter 18	Math 4000	Topology and Data (Capstone)	3	14
	Math 425/525	Mathematical Statistics	3	22
Fall 17	Math 216, Sec. 2	Differential Equations	3	30
	Math 216, Sec. 3	Differential Equations	3	27
	Math 325	Probability Theory	3	18
Summer I 17	Math 227	Linear Algebra	3	20

Winter 17	Math 205, Sec. 1	Calculus III for Engineers	3	22
	Math 205, Sec. 3	Calculus III for Engineers	3	32
	Math 425/525	Mathematical Statistics	3	17
Fall 16	Math 216, Sec. 1	Differential Equations	3	29
	Math 216, Sec. 2	Differential Equations	3	27
	Math 325	Probability Theory	3	23
Winter 16	Sabbatical			
Fall 15	Sabbatical			
Winter 15	Math 205	Calculus III for Engineers	4	32
	Math 425/525	Mathematical Statistics	3	9
Fall 14	Math 115, Sec. 5	Calculus I	4	29
	Math 216, Sec. 1	Differential Equations	3	20
	Math 325	Probability Theory	3	12
Winter 14	Math 216, Sec. 2	Differential Equations	3	28
	Math 492	Topology	3	17
	Math 499	Independent Study	1	2
Fall 13	Math 215, Sec. 1	Calculus III	4	28
	Math 216, Sec. 1	Differential Equations	3	26
	Math 325	Probability Theory	3	12

## b) Other Teaching Experience

<b>University of Michigan-Ann Arbor, Recent Teaching Experience</b>				
<b>Term</b>	<b>Course Number</b>	<b>Course Title</b>	<b>Cr. Hrs</b>	<b>Num. of Students</b>
Summer 20	Math 215	Calculus III	4	26
Winter 20	Stat 485	Assisted with Statistics Capstone Seminar of Professor Ben Hansen (I did GSI office hours, grading)	3	80
Summer 19	Math 215	Calculus III	4	30
Winter 19	Stat 485	Assisted with Statistics Capstone Seminar of Professor Ben Hansen (I did GSI office hours, grading)	3	80

<b>University of Chicago, Teaching Experience as a Post Doc</b>				
<b>Term</b>	<b>Course Number</b>	<b>Course Title</b>	<b>Cr. Hrs</b>	<b>Num. of Students</b>
Summer 09	REU	Mathematical Music Theory		15

Spring 09	Math 263	Algebraic Topology	3	21
Fall 08	Math 254	Abstract Algebra	3	15
Summer 07	REU	Mathematical Music Theory		15
Spring 07	Math 201 Math 274	Math. Methods for Phys. Sci. II Differentiable Manifolds	3 3	27 11
Summer 06	REU	Mathematical Music Theory		15

<b>University of Michigan-Ann Arbor, Teaching Experience as a Graduate Student</b>				
<b>Term</b>	<b>Course Number</b>	<b>Course Title</b>	<b>Cr. Hrs</b>	<b>Num. of Students</b>
Fall 03	Math 116	Calculus II	4	~ 25
Fall 02	Math 215	Four Recitations of Calculus III	4	~100
Winter 01	Math 115	Calculus I	4	~20
Fall 00	Math 105	Precalculus: Data, Functions, Graphs	4	~25

### **c) Curriculum Development in Past 6 Years**

- Stats 535 Data Analysis and Modelling, Summer 2019 (turned it into programming course in R and Python with data analysis and regression)
- Data-based R Labs for Math 227 Linear Algebra, Fall 2018
- Math 4000: Topology and Data Capstone, Winter 2018 (revised my previous topology course to include topological data analysis and student capstone projects)
- Curated Online Homework Sets (WeBWorK) and for many courses: Calculus III, Differential Equations, Linear Algebra, Probability Theory, and Mathematical Statistics, throughout past years
- Collated, curated, and used a list of Geogebra visualizations for Calculus III (visualizations were authored by others)

### **d) Graduate/Undergraduate Student Supervision**

**Undergraduate Research Projects (many linked on my website)**

- Emma Bidwell, Patrick DeBonis, and Siri Mellem, The voiced *Tonnetz* and the J-group, with illustrations in Schubert's B-flat major Sonata, Summer 2018, UM-Dearborn REU
- Cameron Berry, Hexatonic systems and dual groups in mathematical music theory, Winter 2014, UM-Dearborn. Published in *Involve: A Journal of Mathematics*, Volume 11, Number 2, pages 253-270, 2018.
- Cody Bouse, Decade by decade comparison of chords in American popular music, Winter 2014, UM-Dearborn.
- Amanda Bower, Category theory and Galois theory, Fall 2012, UM-Dearborn. Published in the *Rose-Hulman Undergraduate Mathematics Journal*, Volume 14, Number 1, Spring 2013.
- Amanda Bower, The fundamental group and Brouwer's Fixed Point Theorem, Winter 2012, UM-Dearborn.
- Brad Trotter, Word theory and the musical scale, UChicago, 2009.
- Christopher Wood, Abstracting tonality: triads and uniform triadic transformations in an atonal context, UChicago, 2009.
- Kenneth Oshita, The hexatonic systems under neo-Riemannian theory: an exploration of the mathematical analysis of music, UChicago, 2009.
- Adam Koss, A comparison of the graphs of the chromatic and diatonic scales, UChicago, 2009.
- Padraic Bartlett, Triads and topos theory, UChicago, 2007.
- Hannah Gordon, The neo-Riemannian group, UChicago, 2007.
- John Sternberg, Conceptualizing music through mathematics and the generalized interval system, UChicago, 2006.

## 8. Research Activities

### A. Publications

#### a) Books

[1] **Thomas M. Fiore.** *Pseudo Limits, Biadjoints, and Pseudo Algebras: Categorical Foundations of Conformal Field Theory*, Memoirs of the AMS, 182, No. 860, 2006. 171 pages.

[2] Editors José M. Iñesta, Darrell Conklin, Rafael Ramírez-Melendez, with **Thomas M. Fiore** as Editor-in-Chief. *Machine Learning and Music Generation*, Routledge, 2018. 112 pages.

The chapters in this book were originally published in the *Journal of Mathematics and Music*, Volume 10, Issue 2 (July 2016).

## **b) Papers Published or Accepted for Publication in Refereed Journals**

[3] **Thomas M. Fiore** and Ramon Satyendra. “Generalized Contextual Groups,” *Music Theory Online*, Volume 11, Number 3, 2005. 29 pages.

[4] **Thomas M. Fiore**. “On the Cobordism and Commutative Monoid with Cancellation Approaches to Conformal Field Theory,” *Journal of Pure and Applied Algebra*, Volume 209, Number 3, 583–620, 2007. 37 pages.

[5] **Thomas M. Fiore**. “Pseudo Algebras and Pseudo Double Categories,” *Journal of Homotopy and Related Structures* Volume 2, Number 2, 119–170, 2007. Mac Lane Memorial Volume. 51 pages.

[6] **Thomas M. Fiore**, Po Hu, and Igor Kriz. “Laplaza Sets, or How to Select Coherence Diagrams for Pseudo Algebras,” *Advances in Mathematics*, Volume 218, Number 6, 1705–1722, 2008. 17 pages.

[7] **Thomas M. Fiore**, Dorette Pronk, and Simona Paoli. “Model Structures on the Category of Small Double Categories,” *Algebraic and Geometric Topology*, Volume 8, Number 4, 1855–1959, 2008. 103 pages.

[8a] Alissa Crans, **Thomas M. Fiore**, and Ramon Satyendra. “Musical Actions of Dihedral Groups,” *American Mathematical Monthly*, Volume 116, Number 6, June–July 2009, pp. 479–495. 17 pages.

[9] **Thomas M. Fiore** and Simona Paoli. “A Thomason Model Structure on  $n$ -fold Categories,” *Algebraic and Geometric Topology*, Volume 10, Number 4, pages 1933–2008, 2010. 76 pages.

[10] **Thomas M. Fiore**, Nicola Gambino, and Joachim Kock. “Monads in Double Categories,” *Journal of Pure and Applied Algebra*, Volume 215, Number 6, pages 1174–1197, 2011. 23 pages.

[11] **Thomas M. Fiore**, Wolfgang Lück, and Roman Sauer. “Finiteness Obstructions and Euler Characteristics of Categories,” *Advances in Mathematics*, Volume 226, Number 3, pages 2371–2469, 2011. 98 pages.

[12] **Thomas M. Fiore**, Wolfgang Lück, and Roman Sauer. “Euler Characteristics of Categories and Homotopy Colimits,” *Documenta Mathematica*, Volume 16, pages 301–354, 2011. 54 pages.

[13] **Thomas M. Fiore**, Nicola Gambino, and Joachim Kock. “Double Adjunctions and Free Monads,” *Cahiers de Topologie et Géométrie Différentielle Catégoriques*, Volume 53, Number 4, pages 242–307, 2012. 65 pages.

[14] **Thomas M. Fiore**, Thomas Noll, and Ramon Satyendra. “Morphisms of Generalized Interval Systems and  $PR$ -groups,” *Journal of Mathematics and Music*, Volume 7, Number 1, pages 3–27, 2013. 25 pages.

[15] Cameron Berry and **Thomas M. Fiore**. “Hexatonic Systems and Dual Groups in Mathematical Music Theory,” *Involve: A Journal of Mathematics*, Volume 11, Number 2, pages 253–270, 2018. 17 pages.

[16] **Thomas M. Fiore** and Thomas Noll. “Voicing Transformations of Triads,” *SIAM Journal on Applied Algebra and Geometry*, Volume 2, Number 2, pages 281–313, 2018. 33 pages + 13 pages supplement = 46 total pages.

[17] **Thomas M. Fiore**, Alexander Lang, and Antonella Perucca. “Tactile Tools for Teaching: An Implementation of Knuth's Algorithm for Mastering Mastermind,” *The College Mathematics Journal*, Volume 49, Number 4, pages 278–286, September 2018. Special Issue on Puzzles and Games. 8 pages + 16 pages supplement.

[18] **Thomas M. Fiore** and Malte Pieper. “Waldhausen Additivity: Classical and Quasicategorical,” *Journal of Homotopy and Related Structures*, Volume 14, Issue 1, pages 109–197, March 2019. 89 pages.

### **c) Papers Published in Fully Refereed Conference Proceedings**

[19] **Thomas M. Fiore** and Igor Kriz. “What is the Jacobian of a Riemann Surface with Boundary?” *Deformation spaces, Perspectives on algebro-geometric moduli. A publication of the Max-Planck-Institute for Mathematics, Bonn. Including papers from the workshops held at the Max-Planck-Institut für Mathematik, Bonn, July 2007 and August 2008*. Edited by Hossein Abbaspour, Matilde Marcolli and Thomas Tradler. Pages 53–74. Aspects of Mathematics, E40. Vieweg + Teubner, Wiesbaden, 2010. 21 pages.

[20] **Thomas M. Fiore** and Thomas Noll. “Commuting Groups and the Topos of Triads,” *Mathematics and Computation in Music, Third International Conference, MCM 2011, Proceedings*. Edited by C. Agon, E. Amiot, M. Andreatta, G. Assayag, J. Bresson, J. Mandereau. Lecture Notes in Artificial Intelligence (Subseries of Lecture Notes in Computer Science), Volume 6726, pages 69–83. Springer, Heidelberg (2011). 15 pages.

[21] **Thomas M. Fiore**, Thomas Noll, and Ramon Satyendra. “Incorporating Voice Permutations into the Theory of Neo-Riemannian Groups and Lewinian Duality,” *Mathematics and Computation in Music, Fourth International Conference, MCM 2013, Proceedings*. Edited by Jason Yust, Jon Wild, and John Ashley Burgoyne. Lecture Notes in Artificial Intelligence (Subseries of Lecture Notes in Computer Science), Volume 7937, pages 100–114. Springer, Heidelberg (2013). 15 pages.

### **d) Previously Published Manuscripts Translated by Publisher for Reprint**

[8b] Chinese translation of above-mentioned article [8a] (translated by Chinese publisher) Alissa Crans, **Thomas M. Fiore**, and Ramon Satyendra. “Musical Actions of Dihedral Groups,” *American Mathematical Monthly*, Volume 116, Number 6, June–July 2009, pp. 479–495. 17 pages.

In *Mathematics and Humanities*, Volume 17, Editors Shing-Tung Yau, Kefeng Liu, Lo Yang, Lizhen Ji, Higher Education Press, Beijing, 2015.

### **e) Papers in Revision for Submission to Refereed Journals**

[22] **Thomas M. Fiore**. “Approximation in  $K$ -theory for Waldhausen Quasicategories,” 2019. 54 pages.

## **f) Manuscripts Nearly Ready for Submission**

[23] Mahesh Agarwal and **Thomas M. Fiore**. “Inter-Campus Implementation of WeBWorK,” 12 pages. Draft.

[24] **Thomas M. Fiore** and Thomas Noll. “A Linear Representation of Uniform Triadic Transformations,” 2017. 14 pages. Draft.

[25] **Thomas M. Fiore**. “On the Cobordism and Commutative Monoid with Cancellation Approaches to Conformal Field Theory, Part II,” 2010. 23 pages. Draft.

[26] Emma Bidwell, Patrick DeBonis, **Thomas M. Fiore**, and Siri Mellem. “The voiced *Tonnetz* and the  $J$ -group, with illustrations in Schubert’s B-flat major Sonata,” 2018. 26 pages. Draft.

## **g) Manuscript Drafts (Rough)**

[27] Moreno Andreatta, Sonia Cannas, **Thomas M. Fiore**, Thomas Noll. “Balanced Uniform Chord Transformations of Triads and Sevenths,” 2017. 8 pages. Draft.

[28] **Thomas M. Fiore**. “Homotopy Natural Transformations of Simplicial Functors,” 2016. 13 pages. Draft.

[29] Other projects not yet ready to announce

## **h) Other Manuscripts**

**Thomas M. Fiore**. “Music and Knowledge in Two Texts by Franz Kafka,” Bachelor of Philosophy in Germanic Languages and Literatures, University of Pittsburgh. Presented in Augsburg, Germany, July, 1998. Thesis Advisor: Clark Muenzer

## **i) Editorials and Announcements (Not Refereed Publications)**

[1] **Thomas M. Fiore** and Marek Žabka. “Greeting.” *Journal of Mathematics and Music*, Volume 7, Number 1, page 1, 2013. 1 page.

[2] **Thomas M. Fiore** and Marek Žabka. “Introduction to Virtual Special Issue,” *Journal of Mathematics and Music*, online only 2013.

[3] **Thomas M. Fiore** and Marek Žabka. “News about the *Journal of Mathematics and Music*,” *Newsletter 5 of the Society for Mathematics and Computation in Music*, May 2013.

[4] **Thomas M. Fiore** and Marek Žabka. “News about the *Journal of Mathematics and Music*,” *Newsletter 6 of the Society for Mathematics and Computation in Music*, August 2014.



[5] Jason Yust and **Thomas M. Fiore**. “Introduction to the Special Issue on Pedagogies of Mathematical Music Theory.” *Journal of Mathematics and Music*, Volume 8, Number 2, pages 113–116, 2014. 4 pages.

[6] **Thomas M. Fiore** and Clifton Callender. “News about the *Journal of Mathematics and Music*,” *Newsletter 7 of the Society for Mathematics and Computation in Music*, June 2015.

[7] **Thomas M. Fiore** and Clifton Callender. “News about the *Journal of Mathematics and Music*,” *Newsletter 8 of the Society for Mathematics and Computation in Music*, October 2016.

[8] **Thomas M. Fiore** and Clifton Callender. “News about the *Journal of Mathematics and Music*,” *Newsletter 9 of the Society for Mathematics and Computation in Music*, June 2017.

[9] **Thomas M. Fiore**. “Introduction to the Special Issue on Perfect Balance and the Discrete Fourier Transform.” *Journal of Mathematics and Music*, Volume 11, Number 2/3, pages 65–66, 2017. 2 pages.

## j) Recent Presentations

### 2019 Presentations

- *Applications of the Group  $J$ , the Voiced Tonnetz, and Diminishing Groups in Schubert's B-flat Major Sonata*, UM-Dearborn REU, July 8, 2019
- *Data Visualization: Python for Plotting with Pandas, Seaborn, and Matplotlib*, ICOS UM Big Data Summer Camp, June 18, 2019
- *Python for Data and Statistics: Pandas*, ICOS UM Big Data Summer Camp, June 17, 2019
- *Waldhausen Approximation and an Application of Matrix Groups in Mathematical Music Theory*, University of Western Ontario, Topology Seminar, May 27, 2019

### 2017 and 2016 Presentations

- *Approximation in  $K$ -Theory for Waldhausen Quasicategories*  
AMS Special Session on Homotopy Theory, AMS Sectional Meeting, Bloomington, IN, April 1, 2017
- *Winter School on Bordism, L-theory, and Real Algebraic K-theory*, Kastell Windsor, near Regensburg, Germany, December 6, 2016
- *Quasicategories in  $K$ -Theory, Musical Transformations*, Poster Presentation at the Humboldt Colloquium Conference, Washington, DC, March 3, 2017
- *Voicing Transformations and a Linear Representation of Uniform Triadic Transformations*  
UM-Dearborn REU, June 8, 2017
- *AMS Special Session on Mathematics and Music, Joint Mathematics Meetings*, Atlanta, GA, January 6, 2017
- *Adjoint Functors between Quasicategories*, Universität Regensburg, Topics in Higher Categories Seminar, May 9, 2016
- *Stable Infinity-Categories*, Universität Regensburg, Higher Invariants Oberseminar: Galois Group of a Stable Homotopy Theory, April 19, 2016

## 2015 Presentations

- *Operads, Discs, and Braids II*, Universität Regensburg, Higher Invariants Oberseminar: The Grothendieck-Teichmüller Group, December 21, 2015
- *Operads, Discs, and Braids I*, Universität Regensburg, Higher Invariants Oberseminar: The Grothendieck-Teichmüller Group, November 30, 2015
- *Transfer maps for bundles and Umkehr maps*, Universität Regensburg, Seminar on Transfers, Umkehr Maps, and Riemann-Roch Type Theorems, November 6, 2015
- *Waldhausen Additivity and Approximation in Quasicategorical K-Theory, and Transformations in Mathematical Music Theory (Talk)*, Universität Augsburg, Network Meeting of the Alexander von Humboldt Foundation, October 29, 2015
- *Quasicategories in K-Theory and Geometry, and Musical Transformations (Poster)*, Universität Augsburg, Network Meeting of the Alexander von Humboldt Foundation, October 29, 2015
- *Waldhausen Additivity in the Setting of Quasicategories*, Barcelona Topology Workshop, November 27, 2015  
Universität Regensburg, Arbeitsgruppe Seminar of U. Bunke, October 22, 2015

## 2014 and 2013 Presentations

- *Morphisms in a Musical Analysis of Schoenberg, String Quartet No. 1, Opus 7*  
UM-Dearborn REU, June 1, 2017  
Allegheny College Mathematics Parsons Lecture, September 25, 2014  
Hillsdale College Mathematics Colloquium, April 15, 2014  
Hope College Mathematics Colloquium, March 25, 2014  
Union College Math Department Student Seminar, April 17, 2013
- *Incorporating Voice Permutations into the Theory of Neo-Riemannian Groups and Lewinian Duality*, joint with Thomas Noll and Ramon Satyendra, at the Shulich School of Music, McGill University, Fourth International Conference on Mathematics and Computation in Music, Montreal, Canada, June 14, 2013
- *Commutativity in Hindemith's Fugue in E*, University of Michigan Dearborn Colloquium and Math Club, October 30, 2013
- *Transformations, the Torus, and Beethoven*, University of Michigan Dearborn Colloquium and Math Club, October 23, 2013
- *Waldhausen Additivity and Approximation in Quasicategorical K-Theory*  
Union College Mathematics Conference, October 20, 2013  
Max-Planck-Institut für Mathematik, Higher Differential Geometry Seminar, July 10, 2013  
Canadian Mathematical Society, Summer Meeting, Dalhousie Univ., Halifax, June 7, 2013  
University of Chicago, Algebraic Topology Seminar, April 30, 2013  
SUNY Albany, Algebra/Topology Seminar, April 18, 2013

## B. Research Grants

### a) Awarded External Research Grants at UM-Dearborn

- [1] "Homotopical Aspects of Higher Categories," Thomas Fiore (PI), Rackham Faculty Research Grant, 2010 - present
- [2] "Homotopy Theory and Higher Categories," Thomas Fiore (PI), Max-Planck-Institut für Mathematik, visit May - July 2010

- [3] “Homotopy Theory and Higher Categories,” Thomas Fiore (PI), Max-Planck-Institut für Mathematik, visit May - June 2011
- [4] “Quasicategories in K-Theory and Loop Space Theory,” Thomas Fiore (PI), Max-Planck-Institut für Mathematik, visit July 2013
- [5] “Symmetries and Transformations in Music,” Thomas Fiore (PI) and Thomas Noll (PI), Max-Planck-Institut für Mathematik, visit 7/15/2013 – 7/27/2013
- [6] “Quasicategories in K-Theory, Algebra, and Geometry,” Thomas Fiore (PI), Humboldt Fellowship for Experienced Researchers, Universität Regensburg, 9/1/2015 – 7/31/2016

## **b) Role of Senior Personnel on Awarded External Research Grants of Other People**

- [1] “REU in Mathematical Analysis and Applications,” PIs: Yunus Zeytuncu and Hyejin Kim, Senior Personnel: John Clifford, Thomas Fiore, and Alan Wiggins

## **C. Research Program Participation/Research Visits**

Institut de Recherche Mathématique Avancée, Université de Strasbourg, France, Collaboration with Moreno Andreatta, Thomas Noll, and Sonia Cannas, July 17-28, 2017,

Universität Regensburg, Germany, Sonderforschungsbereich 1085, July 3- July 16, 2017

Torgau, Germany, Collaboration with Thomas Noll, March 16-18, 2016.

Universität Regensburg, Germany, Humboldt Fellowship, September 1, 2015 - July 31, 2016

Max-Planck-Institut für Mathematik, Bonn, Germany, May-July 2010, May - June 2011, and July 2013

Universität Münster, Germany, Collaboration with Wolfgang Lück and Roman Sauer, July 4, 2010 - July 11, 2010

Centre de Recerca Matemàtica Barcelona, Spain, “Homotopy Theory and Higher Categories,” September 2007 - July 2008

Fields Institute, Toronto, Canada, Thematic Program in Geometric Applications of Homotopy Theory, January and February 2007

## **9. Service Activities**

### **a) University Service**

University Senate Assembly in Ann Arbor (system wide), September 2013 – May 2015  
 Research Support Committee for UM-D (Grant Proposal Evaluation), September 2011 – May 2015

### **b) College Service**

College of Arts, Sciences, and Letters Executive Committee, January 2014 – April 2014

## **c) Department Service**

### **Departmental Decision-Making Bodies**

Math/Stats Executive Committee, September 2011 – December 2012, and  
January 2014 – May 2015, and September 2016 – September 2018  
Math Search Committee, October 2017 – March 2018  
Math Search Committee, September 2011 – April 2012

### **Program Maintenance and Review, and Course Assessment**

Undergraduate Math Program Advisor, September 2016 – May 2018  
Internal Review Committee, Fall 2018 – present  
Math Alumni Survey on Qualtrics, Fall 2018, with Jennifer Zhao and John Clifford  
DDC Assessment of Topology Capstone, May 2018  
Committee to Review Math Major Program, September 2013 – May 2014  
Committee to Review Recruitment and Nurturing of Math Majors, September 2013 –  
May 2014  
Math/Stats Department Self Study Contributor, authored list of dept publications  
during 2000 – 2012 and its analysis [19 pages], coauthored electronic teaching  
innovations document [9 pages], Winter 2013  
Math Major Advising Committee Fall 2010

### **Promotion of Community and Student Success**

Math Major Map, Fall 2018, with John Clifford  
Creation and cultivation of UM-Dearborn Math & Stat Alumni and Friends Network  
on LinkedIn, August 2018 – present, 130 members  
UM-Dearborn Research Experience for Undergraduates Participation: Mentoring and  
Organizational Assistance, Summer 2018  
Math Club Organizer, October 2009 – April 2012 (I organized 17 talks)

### **Online Homework System WeBWork**

Departmental WeBWork Proposal to the NSF, partially revised Winter 2013,  
program cut  
Departmental WeBWork Proposal to the NSF, submitted May 2011  
WeBWork Committee, January 2011 – May 2015  
Curated problem sets for several courses: Calculus III, Differential Equations, Linear  
Algebra, Probability, Mathematical Statistics, past 6 years

### **Course Development and Curriculum Development**

Math 215 Calculus III Course Chair, May 2020 – present (created video lectures,  
updated WeBWork collection, assisted other 215 instructors in the move to  
online instruction in response to the pandemic, and the usual routine course chair  
work)  
Math 227 Linear Algebra Course Chair, September 2018 – May 2020 (created data  
based R labs, worksheets, notes, advertised top resources of other faculty)  
Developed Statistical Programming Stats 535 with materials from Ann Arbor and own  
Probability and Mathematical Statistics (Fall 2013 resp Fall 2015, and regularly  
thereafter)  
Created Departmental M+Box Site “UM-Dearborn Math-Stats Teaching Materials”,

September 2012, has grown to nearly 10,000 files for departmental curriculum collaboration

### **Textbook Committees**

Committee to Select New Textbook for New Differential Equations Class  
Math 228 with Linear Algebra, Winter 2017 – Fall 2018  
Co-Chair of Online Textbook Task Force, September 2012 – April 2014

### **d) Service to the Profession**

**Co-Editor-in-Chief**, *Journal of Mathematics and Music*, 1/1/2013 – 12/31/2018.

(Major role in the publication of 3 issues every year with approximately 75 pages each, that is 17 issues 2013 – 2018, one issue was a double issue)

**Guest Editor**, *Journal of Mathematics and Music*, Three Special Issues (counted above)

- 1) Machine Learning and Music Generation, *JMM Special Issue as Book*, Routledge, jointly edited with Darrell Conklin, José M. Iñesta, Rafael Ramírez, with Fiore as Editor in Chief, published 2018, was also Volume 10, Issue 2, July 2016
- 2) Special Issue on Perfect Balance and Discrete Fourier Transforms, Volume 11, Issue 2, July 2017
- 3) Special Issue on Pedagogies of Mathematical Music Theory, jointly edited with Jason Yust, Volume 8, Issue 2, July 2014

**Editorial Board Member**, *Journal of Mathematics and Music*, 2009 – present

**Advisory Board Member**, *Springer Computational Music Science Series*,  
May 2018 – present

**Editorial Board Member**, *Brepols Publishers' Series on Music, Science, and Technology*,  
May 2018 – present

**Referee for** *Algebraic & Geometric Topology*

*Advances in Mathematics*

*Documenta Mathematica*

*Journal of Homotopy and Related Structures*

*Journal of the London Mathematical Society*

*Journal of Topology*

*Journal of Mathematics and Music*

*Münster Journal of Mathematics*

*Proceedings of the 7th International Conference on Mathematics and Computation in Music (MCM 2019)*, at Universidad Politécnica de Madrid, Madrid, Spain, June 18-21, 2019

*Proceedings of the 5th International Conference on Mathematics and Computation in Music (MCM 2015)*, at Queen Mary University of London, London, June 22-25, 2015

*Proceedings of the 4th International Conference on Mathematics and Computation in Music (MCM 2013)*, at Shulich School of Music, McGill University, Montreal, June 12-14, 2013

*Proceedings of the 3rd International Conference on Mathematics and Computation in Music (MCM 2011)*, at the Institute for Research and Coordination of Acoustics and Music in Paris, June 15-18, 2011

**Coauthor for Proposal for Revision of the Mathematics Subject Classification 2010 for 2020**, jointly submitted to MathReviews with Thomas Noll and other members of *Journal of Mathematics & Music* Editorial Board, concerning the topics Mathematics and Music, August 2018

**Co-Organizer of AMS Special Session, *Structured Homotopy Theory***, October 2018, Sectional Meeting of the AMS in Ann Arbor, jointly organized with Igor Kriz of UM-Ann Arbor, Po Hu of Wayne State University, and Dan Isaksen of Wayne State University

**Chair of Hasse Prize Selection Committee** for the Mathematical Association of America, July 2016 – March 2017

**Member of Hasse Prize Selection Committee** for the Mathematical Association of America, September 2014 – February 2015

**Humboldtian On Campus, March 2017 – present**, (the Humboldtian on Campus program is an initiative of the American Friends of the Alexander von Humboldt Foundation)

**External Master's Thesis Reader** for Malte Pieper at Universität Bonn, August 2013

**External PhD Committee Member** for John Peter at Wayne State University, Winter 2012

**Member of the Scientific Committee** for the Seventh International Conference on Mathematics and Computation in Music (MCM 2019), at Universidad Politécnica de Madrid, Madrid, Spain, June 18-21, 2019

**Member of the Scientific Committee** for the Fifth International Conference on Mathematics and Computation in Music (MCM 2015), June 22-25, 2015 at Queen Mary University of London, United Kingdom

**Member of the Scientific Committee** for the Fourth International Conference on Mathematics and Computation in Music (MCM 2013), June 12-14, 2013 at the Shulich School of Music, McGill University in Montreal, Canada

**Member of the Scientific Committee** for the Third International Conference on Mathematics and Computation in Music (MCM 2011), June 15-18, 2011 at IRCAM in Paris, France

**Panelist** in the Panel Discussion *Mathematical Music Theory in Academia: Its Presence, Role and Objectives in Departments of Mathematics, Music, and Computer Science* at the Fourth International Conference on Mathematics and Computation in Music

(MCM 2013), June 12-14, 2013 at the Shulich School of Music, McGill University in Montreal, Canada

**Co-Organizer of AMS Special Session, *Mathematical Techniques in Musical Analysis***, 2011 Joint Mathematics Meetings in New Orleans on January 6, 2011, jointly organized with Robert Peck of Louisiana State University

**Co-Presenter of MAA Minicourse, *Mathematical Music Theory***, 2011 Joint Mathematics Meetings in New Orleans on January 7 and 9, 2011, jointly organized and presented with Bob Peck of Louisiana State University and Dmitri Tymoczko of Princeton

**Co-Organizer of AMS Special Session, *Homotopy Theory and Higher Categories***, 2009 Joint Mathematics Meetings in Washington DC on January 7-8, 2009, jointly organized with Mark Johnson of Pennsylvania State University Altoona, Jim Turner of Calvin College, Stephen Wilson of Johns Hopkins University, and Donald Yau of Ohio State Newark

## **e) Technical Reviews Authored**

### **Zentralblatt Reviews**

- Zbl 1243.18025  
Barwick, Clark. On left and right model categories and left and right Bousfield localizations.  
*Homology Homotopy Appl.* 12 (2010), no. 2, 245--320.
- Zbl 1197.18002.  
Harper, John E. Bar constructions and Quillen homology of modules over operads.  
*Algebr. Geom Topol.* 10 (2010), no. 1, 87--136.

### **MathSciNet Reviews**

- 10 reviews 2004 – 2007, before arriving at UM-Dearborn

## **11. Recent Conferences Attended**

Statistics in the Data Science Era: A Symposium to Celebrate 50 Years of Statistics at the University of Michigan, University of Michigan, Ann Arbor, September 20-21, 2019

Symposium on Big Data, Human Health, and Statistics, University of Michigan, Ann Arbor, July 25-26, 2019

AMS Special Session, *Structured Homotopy Theory*, October 2018 Sectional Meeting of the AMS in Ann Arbor

Sixth International Conference on Mathematics and Computation in Music (MCM 2017), at the Universidad Nacional Autónoma de México, Mexico City, México, June 26-29, 2017

American Mathematical Society Sectional Meeting, Bloomington, April 1-2, 2017

Humboldt Colloquium, Washington DC, March 2-4, 2017

Joint Mathematics Meetings, Atlanta, January 5-7, 2017

Winter School on Bordism, L-theory, and Real Algebraic K-theory, Kastell Windsor, near Regensburg, Germany, December 5-9, 2016

Annual Meeting of the Alexander von Humboldt Foundation, Berlin, July 6-8, 2016

Towards a World Music Theory, Institut für Systematische Musikwissenschaft, January 23, 2016

Barcelona Topology Workshop, CRM Barcelona, November 27-28, 2015

Network Meeting of the Alexander von Humboldt Foundation, Universität Augsburg, October 28-30, 2015

Fifth International Conference on Mathematics and Computation in Music (MCM 2015), at the Queen Mary University of London, London, United Kingdom, June 22-25, 2015

Midwest Music Theory Conference, Oakland University, Rochester, Michigan, May 8-9, 2015

Austrian Studies Association Conference “Crossing Borders — Blurring Borders”, University of Michigan-Dearborn, March 27, 2015

Homotopical Algebra Summer Days, Universitat de Barcelona, Spain, July 14-15, 2014

Reimagining the Foundations of Algebraic Topology, MSRI, April 7-10, 2014

Union College Mathematics Conference, October 19-20, 2013

Midwest Topology Seminar, Wayne State University, October 5, 2013

Fourth International Conference on Mathematics and Computation in Music (MCM 2013), at the Shulich School of Music, McGill University in Montreal, Canada, June 12-14, 2013

Canadian Mathematical Society, Summer Meeting, Dalhousie University, Halifax, Canada, June 4-7, 2013

## **12. Workshops for Teaching & Research**



ICOS UM Big Data Summer Camp, June 17-21, 2019

Introduction to SPSS, Center for Statistical Consultation and Research at the University of Michigan, Ann Arbor, May 11 and 13, 2015