Mark Tomforde
Curriculum Vitae

Positions Held

Associate Professor, University of Colorado, Colorado Springs, CO	2020–present
Professor, University of Houston, Houston, TX	2018–2020
Associate Professor, University of Houston, Houston, TX	2012–2018
Assistant Professor, University of Houston, Houston, TX	2006–2012
Visiting Assistant Professor, College of William & Mary, Williamsburg, VA	2005–2006
NSF Postdoctoral Fellow, University of Iowa, Iowa City, IA	2002–2005
Instructor of Mathematics, Dartmouth College, Hanover, NH	1999–2002

Education

Ph.D. in Mathematics, Dartmouth College, Hanover, NH   June 2002
    Advisor: Dana P. Williams
    Thesis: Extensions of graph C^*-algebras

M.A. in Mathematics, Dartmouth College, Hanover, NH   June 1999

B.A. in Mathematics, Gustavus Adolphus College, St. Peter, MN   June 1997
    graduated *Summa Cum Laude* and with departmental honors in Mathematics

Research

Refereed Publications

[48] "Morita equivalence for graded rings", with Gene Abrams and Efren Ruiz, submitted.

[47] "Matricial Archimedean order unit spaces and quantum correlations", with Roy Araiza and Travis Russell, Indiana Univ. Math. J., to appear.

[46] "A universal representation for quantum commuting correlations", with Roy Araiza and Travis Russell, Ann. Henri Poincaré, to appear.

[45] "Reconstruction of groupoids and C^*-rigidity of dynamical systems", with Toke Meier Carlsen, Efren Ruiz, and Aidan Sims, Adv. Math. **390** (2021), Paper No. 107923, 55 pp.

[44] "The extension problem for graph C^*-algebras", with Søren Eilers, James Gabe, Takeshi Katsura, and Efren Ruiz, Ann. K-Theory **5** (2020), 295–315.

[43] "Naimark's problem for AF graph C^*-algebras", with Nishant Suri, Illinois J. Math **61** (2017), 479–495.

[42] "Classification of graph algebras: A selective survey", Operator Algebras and Applications, Proceedings of the 2015 Abel Symposium, (Eds. T.M.Carlsen, N.S. Larsen, S. Neshveyev, and C. Skau), Springer, (2016), 297–320.

[41] "Chaotic behavior in a forecast model", with Michael Boyle, Pi Mu Epsilon J. **14** (2016), 237–242.

[40] "The ranges of K-theoretic invariants for nonsimple graph algebras", with Søren Eilers, Takeshi Katusra, and James West, Trans. Amer. Math. Soc. **368** (2016), 3811–3847.

[39] "K-theory for Leavitt path algebras: computation and classification", with James Gabe, Efren Ruiz, and Tristan Whalen, J. Algebra **433** (2015), 35–72.

[38] "The nuclear dimension of graph C^*-algebras", with Efren Ruiz and Aidan Sims, Adv. Math. **272** (2015), 96–123.

[37] "A class of C^*-algebras that are prime but not primitive", with Gene Abrams, Münster J. Math. **7** (2014), 489–514.

[36] "The prime spectrum and the primitive ideal space of a graph C^*-algebra", with Gene Abrams, Internat. J. Math. **25** no. 7 (2014), 1450070, 22 pp.

[35] "Identifying AF-algebras that are graph C^*-algebras", with Søren Eilers, Takeshi Katusra, and Efren Ruiz, J. Funct. Anal. **266** (2014), 3968–3996.

[34] "One-sided shift spaces over infinite alphabets", with William Ott and Paulette Willis, New York Journal of Mathematics. NYJM Monographs **5**. State University of New York, University at Albany, Albany, NY (2014), 54 pp.

[33] "A groupoid generalization of Leavitt path algebras", with Lisa Orloff Clark, Cynthia Farthing, and Aidan Sims, Semigroup Forum **89** (2014), 501–517.

[32] "Ideals in graph algebras", with Efren Ruiz, Algebr. Represent. Theory **17** (2014), 849–861.

[31] "Classification of unital simple Leavitt path algebras of infinite graphs", with Efren Ruiz, J. Algebra **384** (2013), 45–83.

[30] "Ideal-related K-theory for Leavitt path algebras and graph C^*-algebras", with Efren Ruiz, Indiana Univ. Math. J. **62** (2013), 1587–1620.

[29] "Quotients, exactness, and nuclearity in the operator system category", with Ali Kavruk, Ivan Todorov, and Vern Paulsen, Adv. Math. **235** (2013), 321–360.

[28] "Index maps in the K-theory of graph algebras", with Toke Carlsen and Søren Eilers, J. K-theory **9** (2012), 385–406.

[27] "Isomorphism and Morita equivalence of graph algebras", with Gene Abrams, Trans. Amer. Math. Soc. **363** (2011), 3733–3767.

[26] "Tensor products of operator systems", with Ali Kavruk, Ivan Todorov, and Vern Paulsen, J. Funct. Anal. **261** (2011), 267–299.

[25] "Leavitt path algebras with coefficients in a commutative ring", J. Pure Appl. Algebra **215** (2011), 471–484.

[24] "Operator system structures on ordered spaces", with Vern Paulsen and Ivan Todorov, Proc. London Math. Soc. **102** (2011), 25–49.

[23] "Frame theory for binary vector spaces", with Bernhard Bodmann, My Le, Letty Reza, and Matthew Tobin, Involve **2** (2010), 589–602.

[22] "On the classification of nonsimple graph C^*-algebras", with Søren Eilers, Math. Ann. **346** (2010), 393–418.

[21] "Graph algebras, Exel-Laca algebras, and ultragraph algebras coincide up to Morita equivalence", with Takeshi Katsura, Paul S. Muhly, and Aidan Sims, J. Reine Angew. Math. **640** (2010), 135–165.

[20] "Realizations of AF-algebras as graph algebras, Exel-Laca algebras, and ultragraph algebras", with Takeshi Katsura and Aidan Sims, J. Funct. Anal. **257** (2009), 1589–1620.

[19] "Continuity of ring $*$-homomorphisms between C^*-algebras", New York J. Math. **15** (2009), 1–7.

[18] "Equiangular tight frames from complex Seidel matrices containing cube roots of unity", with Bernhard Bodmann and Vern I. Paulsen, Linear Algebra Appl. **430** (2009), 396–417.

[17] "Vector spaces with an order unit", with Vern I. Paulsen, Indiana Univ. Math. J. **58** (2009), 1319–1360.

[16] "Ultragraph C^*-algebras via topological quivers", with Takeshi Katsura, Paul S. Muhly, and Aidan Sims, Studia Math. **187** (2008), 137–155.

[15] "Strong Shift Equivalence of C^*-correspondences", with Paul S. Muhly and David Pask, Israel J. Math. **167** (2008), 315–346.

[14] "Uniqueness theorems and ideal structure for Leavitt path algebras", J. Algebra **318** (2007), 270–299.

[13] "Structure of graph C^*-algebras and generalizations", Chapter in the book "Graph Algebras: Bridging the gap between analysis and algebra", Eds. Gonzalo Aranda Pino, Francesc Perera Domènech, and Mercedes Siles Molina, Servicio de Publicaciones de la Universidad de Málaga, Málaga, Spain, (2006).

[12] "Strong Shift Equivalence in the C^*-algebraic setting: Graphs and C^*-correspondences", Contemporary Mathematics, Proceedings of the 25th Meeting of the Great Plains Operator Theory Symposium, American Mathematical Society, Providence, RI, (2006), 221–230.

[11] "Topological quivers", with Paul S. Muhly, Internat. J. Math. **16** (2005), 693–756.

[10] "The C^*-algebras of arbitrary graphs", with D. Drinen, Rocky Mountain J. Math. **35** (2005), 105–135.

 [9] "Classification theorems for the C^*-algebras of graphs with sinks", with I. Raeburn and D.P. Williams, Bull. Austral. Math. Soc. **70** (2004), 143–161.

 [8] "Adding tails to C^*-correspondences", with Paul S. Muhly, Documenta Math. **9** (2004), 79–106.

[7] "Stability of C^*-algebras associated to graphs", Proc. Amer. Math. Soc. **132** (2004), 1787–1795.
[6] "A unified approach to Exel-Laca algebras and C^*-algebras associated to graphs", J. Operator Theory **50** (2003), 345–368.
[5] "Simplicity of ultragraph algebras", Indiana Univ. Math. J. **52** (2003), 901–926.
[4] "Computing Ext for graph algebras", J. Operator Theory **49** (2003), 363–387.
[3] "The ordered K_0-group of a graph C^*-algebra", C. R. Math. Acad. Sci. Soc. R. Can. **25** (2003), 19–25.
[2] "Computing K-theory and Ext for graph C^*-algebras", with D. Drinen, Illinois J. Math. **46** (2002), 81–91.
[1] "Ext classes and embeddings for C^*-algebras of graphs with sinks", New York J. Math. **7** (2001), 233–256.

Books and Monographs

[2] "One-sided shift spaces over infinite alphabets", William Ott, Mark Tomforde, and Paulette Willis, New York Journal of Mathematics. NYJM Monographs, **5**. State University of New York, University at Albany, Albany, NY, 2014. 54 pp. (Also listed in publications above.)
[1] "Structure of graph C^*-algebras and generalizations", Chapter in the book "Graph Algebras: Bridging the gap between analysis and algebra", Eds. Gonzalo Aranda Pino, Francesc Perera Domènech, and Mercedes Siles Molina, Servicio de Publicaciones de la Universidad de Málaga, Málaga, Spain, (2006). (Also listed in publications above.)

Conference Proceedings and Non-Refereed Publications

[1] "Classification of graph C^*-algebras and Leavitt path algebras", summary of my talk given at the "Endomorphisms, Semigroups, and C^*-algebras of Rings" workshop held April 2012 at the Mathematisches Forschungsinstitut Oberwolfach in Oberwolfach, Germany. This appears in the "Oberwolfach Report" (OWR) published by the Mathematisches Forschungsinstitut Oberwolfach.

Invited Addresses and Workshops

Keynote Speaker at Pikes Peak Community College Student Mathematics Colloquium, December 2021
an annual event aimed at 1200+ students,
"Group Testing, Hamming Codes, and Error Correction"

Invited Panelist at Mathematics and Statistics Graduate Program Panel, November 2021
Metropolitan State University of Denver

Invited Speaker at Groundwork for Operator Algebras Lecture Series (GOALS) July 2020
"K-theory: An Elementary Introduction"

Invited Speaker at University of Colorado Colorado Springs Colloquium March 2020
"Classification of graph algebras"

Plenary Speaker at the 100th Annual Meeting of the Texas Section of the MAA, March 2020
University of North Texas, Denton, Texas [Cancelled due to COVID-19 pandemic]

Presentations by MAA Teaching Award Recipients at the Joint Mathematics Meetings January 2020
"Lessons Learned from Lessons Taught"

Invited Speaker at Special Session "Outreach Strategies for Reaching Underrepresented January 2020
Students at the Pre-College Level" at the Joint Mathematics Meetings
"Principles of Running an Outreach Program"

Invited Speaker at the Ring Theory Seminar at University of Colorado Colorado Springs   August 2019
    I gave one lecture:
      "The renaissance of Cuntz-Pimsner algebras"

Plenary speaker at "Invitation to Mathematics", an NSF-funded conference   September 22 – 23, 2018
    aimed at introducing undergraduates to research in mathematics
    Texas Southern University, Houston, Texas.

Invited Panelist at the Gulf States Math Alliance Conference, Tulane University   February 2018
    I served on a panel "Getting a Job in Academia".

Plenary speaker at the Great Plains Operator Theory Symposium (GPOTS)   May 22 – 26, 2017
    Texas Christian University, Fort Worth, Texas.

Plenary speaker at the Texas Undergraduate Mathematics Conference   October 2016
    Lamar University, Beaumont, Texas.

Mittag-Leffler Institute of the Royal Swedish Academy of Sciences   January 2016 – March 2016
    Invited Participant at semester-long program on "Classification of
    operator algebras: complexity, rigidity, and dynamics"
    I gave an invited talk at the program:
      "The Isomorphism Conjecture for graph algebras"

Invited Panelist at the Field of Dreams Conference of the Math Alliance   November 2015
    I served on a panel "How to Prepare for your First Academic Position".

Invited Participant and Speaker at the Abel Symposium   August 2015
    The annual Abel Symposium is funded by the Niels Henrik Abel Memorial Fund
      and administrated by the Norwegian Mathematical Society and the Norwegian
      Academy of Sciences and Letters. The topic of the 2015 Abel Symposium was
      "Operator Algebras and Applications" and the symposium was held on the
      Hurtigruten cruise ship, which sailed from Bergen, Norway to Harstad, Norway.
      I was one of 27 invited speakers, of which two were Fields Medalists.
    I gave an invited talk at the symposium:
      "Classification of algebras using C^*-algebra techniques"

Main Speaker at Master Class on "Dynamical Systems and C^*-algebras"   July 2015 – August 2015
    Funded by the Foundation for Danish-Norwegian Cooperation.
    There were two week-long sessions, with a change of venue. I attended both.
      • Week 1: July 22–26, 2015 at Schæffergården in Copenhagen, Denmark.
        The focus was Dynamical Systems and the main speaker was Doug Lind.
      • Week 2: August 2–6, 2015 at Lysebu in Oslo, Norway.
        The focus was C^*-algebras and the main speaker was Mark Tomforde.

Invited Speaker at the University of Dayton   February 2015
   I gave a colloquium talk:
      "Dynamical systems and the classification of C^*-algebras and algebras"

Invited Speaker at the University of Nebraska-Lincoln   December 2014

   I gave a colloquium talk:
      "Using results from dynamical systems to classify algebras and C^*-algebras"
   and a general talk on CHAMP, the outreach program at UH that I created:
      "CHAMP: STEM Outreach for High School Students in Inner-City Houston"

Invited Panelist at the Field of Dreams Conference of the Math Alliance,   November 2014
      I was asked to serve on a panel discussing successful mentoring
      of undergraduate students.

Invited Speaker at the University of Colorado at Colorado Springs   April 2014
   I gave a colloquium talk:
      "Using results from dynamical systems to classify algebras and C^*-algebras"
   and a talk in the Ring Theory Seminar:
      "Classification of Leavitt path algebras using algebraic K-theory"

Invited Speaker at the workshop "Flow equivalence of graphs, shifts, and   November 2013
      C^*-algebras" at the University of Copenhagen, Denmark, November 2013
   I gave one lecture:
      "Flow equivalence and its uses in the classification of C^*-algebras and algebras"

Invited Speaker at the Field of Dreams Conference of the Math Alliance,   November 2013
      I was asked to serve on a panel in the "Fields of Innovations" session.
      I gave a presentation and answered questions about CHAMP, the high school
      mathematics outreach program that I created.

Invited Research Visitor at the University of Hawai'i at Hilo   May 2013 – June 2013
      Participated in research group with Dr. Efren Ruiz from University of
      Hawai'i at Hilo and Dr. Aidan Sims from University of Wollongong, Australia

Organizer and Invited Participant at "Graph Algebras: Bridges between graph   April 2013
      C^*-algebras and Leavitt path algebras" workshop held at the Banff
      International Research Station (BIRS) in Banff, Canada
   I gave one lecture:
      "Classification of Leavitt path algebras: How to use tools from the
            classification of C^*-algebras in the Algebra setting"

Invited Speaker at University of Hawai'i at Mānoa   March 2013
   I gave a colloquium talk:
      "Classification of Leavitt path algebras: How to use tools from the
            classification of C^*-algebras in the Algebra setting"

Invited Speaker at Sam Houston State University   February 2013
   I gave a colloquium talk:
      "Classification of unital Leavitt path algebras"

Invited Speaker at Union College in Schenectady, New York   February 2013
   I gave a colloquium talk:
      "Tracial States on C^*-algebras of graphs"

Invited Speaker at University of Nebraska, Lincoln   September 2012
   I gave a colloquium talk:
      "Leavitt path algebras and the legacy of Bill Leavitt"

   and a talk in the Algebra Seminar:
      "Classification of Leavitt path algebras: How to use tools from the
         classification of C^*-algebras in the Algebra setting"

Invited Visitor at the University of Copenhagen   August 2012

   I gave one lecture, the first of a series of lectures on Leavitt path algebras:
      "An introduction to Leavitt path algebras for functional analysts"

Invited Speaker at the Ring Theory Seminar at University of Colorado Colorado Springs   May 2012
   I gave one lecture:
      "The role of the sign of the determinant in the classification of Leavitt path algebras"

Invited Participant at "Endomorphisms, Semigroups and C^*-algebras of Rings" workshop   April 2012
      at the Mathematisches Forschungsinstitut Oberwolfach in Oberwolfach, Germany
   I gave one lecture:
      "Classification of graph C^*-algebras and Leavitt path algebras"

Invited Speaker at AMS Special Session on "C^*-algebras and Index Theory",   March 2012
      held at the AMS Sectional Meeting, University of Hawai'i at Mānoa
   I gave one lecture:
      "Classification of graph C^*-algebras and the Extension Problem"

Invited Colloquium Speaker at the University of Louisiana at Lafayette   October 2011
   I gave a department colloquium:
      "Classification of nonsimple graph C^*-algebras"

Invited Visitor at the Centre de Recerca Matemática (CRM) in Barcelona, Spain.   June 2011
   I attended for one month and participated in two conferences and a workshop.
   I gave one invited talk:
      "Classifying nonsimple graph C^*-algebras: the invariant, computability, and range."

Invited Visitor at the University of Copenhagen.   May 2011

   I gave a department colloquium:
      "Classification of nonsimple graph C^*-algebras up to stable isomorphism"

Invited Colloquium Speaker at the University of Texas at San Antonio   March 2011
   I gave a department colloquium:
      "Leavitt path algebras and graph C^*-algebras"

Invited Colloquium Speaker at Sam Houston State University   February 2011
   I gave a department colloquium:
      "Leavitt path algebras and graph C^*-algebras"

Invited Participant at "Classification of amenable C^*-algebras" workshop held   September 2010
      at the Banff International Research Station (BIRS) in Banff, Canada
   I gave one lecture:
      "Classification of nonsimple graph C^*-algebras"

Invited Visitor at the University of Copenhagen July 2010

   I gave 6 lectures in a special Master Class on "Cuntz-Pimsner algebras"

Invited Colloquium Speaker at the University of Louisiana at Lafayette March 2010

   I gave a department colloquium:
     "Graph C^*-algebras and Leavitt path algebras"

Organizer and Invited Speaker at Special Session on "Graph Algebras in Analysis January 2010
   and Algebra" at the 2010 Joint Meetings of the AMS and MAA

   I gave one lecture:
     "Isomorphism and Morita equivalence of graph algebras"

Invited Participant at "Cuntz semigroup" workshop at the American Institute of November 2009
   Mathematics (AIM) in Palo Alto, California.

Invited Speaker at "East Coast Operator Algebras Symposium" held at October 2009
   Texas A&M University

   I gave one lecture:
     "Tensor products of operator systems"

Invited Visitor at the University of Copenhagen. January 2009

   I gave a department colloquium:
     "Classification of one-ideal graph C^*-algebras"

Invited Speaker at "Operator Algebras, Dynamics, and Classification" workshop August 2008
   at Texas A&M University

   I gave one lecture:
     "Graph algebras and the Classification Program"

Visiting Honorary Fellow at the University of Wollongong, Australia May 2008 – June 2008

   I gave a department colloquium:
     "Ordered vector spaces with an order unit"

Invited Participant at "C^*-algebras Associated to Discrete and Dynamical Systems" January 2008
   workshop at the Banff International Research Station (BIRS) in Banff, Canada

Invited Speaker at the joint meeting of the Japan-US Operator Algebra Seminar and January 2007
   West Coast Operator Algebra Seminar at the University of Hawai'i at Mānoa

   I gave one lecture:
     "Leavitt path algebras: At the crossroads of Algebra and Functional Analysis"

Invited Speaker at the Graph Algebra Workshop at the University of Málaga, Spain July 2006

   I gave 4 lectures and wrote a chapter for a book published after the conference.

Distinguished Visitor Lectures, University of Nebraska, Lincoln March 2006
   (Travel supported by Lincoln Research Council Visiting Scholar Grant.)

   I gave two lectures:
     "Adding tails to C^*-correspondences"
     "C^*-algebras of directed graphs"

Presentations and Contributed Talks

"Classification of Leavitt path algebras using algebraic K-theory", Great Plains Operator Theory Symposium, Kansas State University — May 2014

"Using results from dynamical systems to classify algebras and C^*-algebras, I and II", two one-hour lectures at the Summer School on Dynamical Systems held at the University of Houston — April 2014

"Classification of Leavitt path algebras using algebraic K-theory", Great Plains Operator Theory Symposium, Kansas State University — May 2014

"Graph C^*-algebras and the Classification Program", Great Plains Operator Theory Symposium, Arizona State University — May 2011

"Classification of one-ideal graph C^*-algebras", Great Plains Operator Theory Symposium, University of Colorado at Boulder — June 2009

"Equiangular tight frames from complex Seidel matrices", Great Plains Operator Theory Symposium, University of Cincinnati — June 2008

"Graded Uniqueness for Leavitt path algebras", Great Plains Operator Theory Symposium, University of Nebraska, Lincoln — May 2007

"Leavitt path algebras: At the crossroads of Algebra and Functional Analysis", Colloquium, University of Houston — January 2007

"An introduction to graph C^*-algebras", Texas A&M University — October 2006

"Graphs, Tracial States, and C^*-algebras", University of Mississippi — April 2006

"C^*-algebras of directed graphs", University of Mississippi — April 2006

"C^*-algebras of directed graphs", University of Houston — April 2006

"Graphs, Tracial States, and C^*-algebras", Fairfield University — March 2006

"C^*-algebras and their presentations", Fairfield University — March 2006

"C^*-algebras of directed graphs", University of Hawai'i, Mānoa — February 2006

"C^*-algebras, Graphs, and Topological Quivers", University of Denver — February 2006

"C^*-algebras of directed graphs", Washington & Lee University — January 2006

"C^*-algebras of directed graphs", Susquehanna University — October 2005

"Using directed graphs to describe C^*-algebras", College of William & Mary — October 2005

"Strong Shift Equivalence for C^*-correspondences", Great Plains Operator Theory Symposium, University of Central Florida — June 2005

"Strong Shift Equivalence in the C^*-algebra setting", University of Iowa — April 2005

"C^*-algebras, Graphs, and Topological Quivers", College of William & Mary — January 2005

"Topological Quivers", University of Newcastle, Australia — August 2004

"An introduction to Ultragraph C^*-algebras", NSF-CBMS Conference on Graph Algebras, University of Iowa — June 2004

"C^*-algebras associated to Topological Quivers", Great Plains Operator Theory Symposium, University of Illinois, Urbana-Champaign — June 2003

"Gauge-Invariant Uniqueness for Relative Cuntz-Pimsner algebras", Iowa-Nebraska Functional Analysis Seminar, Drake University — October 2002

"Tracial states of graph algebras", Great Plains Operator Theory Symposium, University of North Carolina at Charlotte — February 2002

"Simplicity of C^*-algebras associated to graphs", University of Oregon — February 2002

"C^*-algebras of infinite graphs", University of Western Michigan — February 2002

"Functional Analysis, C^*-algebras, and directed graphs", Davidson College — January 2002

"C^*-algebras of labeled graphs", University of Newcastle, Australia — September 2001

"Computing Ext for graph C^*-algebras", Great Plains Operator Theory Symposium, University of New Hampshire — June 2001

"Creating C^*-algebras from directed graphs", Allegheny College — March 2001

"C^*-algebras generated by partial isometries", College of the Holy Cross — February 2001

"Simplicity for C^*-algebras of graphs", University of Denver — February 2001

"Extensions of graph algebras", Great Plains Operator Theory Symposium, Puerto Rico — May 2000

Grants and External Funding

$42,000 Simons Foundation Collaboration Grant, PI: Mark Tomforde, This grant provides $8,400 per year ($6,000 for collaboration, travel, and research expenses, $1,000 in discretionary funds, and $1,400 in indirect costs) for a total of 5 years, September 1, 2017 – August 31, 2024.
(Note: Initially, this was a five-year grant scheduled to end August 31, 2022. However, due to the COVID pandemic, and the fact this grant is targeted at travel for collaboration, all Simons Foundation grants we given an automatic two-year no-cost extension by the sponsor.

$35,000 NSF grant "Applications of Model Theory to Operator Algebras", to host a conference at the University of Houston from July 31 – August 4, 2017. PI: Mark Tomforde, Co-PI: Mehrdad Kalantar, DMS-1700316, June 1, 2017 – May 31, 2018.

$17,500, Tensor-SUMMA Grant from Mathematical Association of America (MAA). PI: Mark Tomforde. Funding for this grant is provided by the Tensor Foundation and awarded by the MAA to projects designed to encourage the pursuit and enjoyment of mathematics by students who are members of groups that are historically underrepresented in the field of mathematics, September 1, 2015 – August 31, 2018.

$40,610, NSF grant "Classification of C^*-algebras, Flow Equivalence of Shift Spaces, and Graph and Leavitt Path Algebras" to organize and host a conference at the University of Louisiana at Lafayette, PI: Ping Ng, Co-PI: Leonel Roberts, Main Speaker: Søren Eilers, Senior Personnel: Mark Tomforde, DMS-1501104, March 1, 2015 – February 28, 2016.

$45,500 NSF grant to organize and host Houston Summer School on Dynamical Systems in Spring 2014, PI: Vaughn Climenhaga, Co-PIs: Matt Nicol, William Ott, Mark Tomforde, and Andrew Török, DMS-1363024, April 1, 2014 – March 31, 2015.

$35,000 Simons Foundation Collaboration Grant, PI: Mark Tomforde, This grant provides $6,000 per year for travel and $1,000 per year for IDC, for a total of 5 years, October 1, 2011 – September 31, 2016.

$25,000 NSF grant to organize and host the Great Plains Operator Theory Symposium (GPOTS) in Spring 2011 and Spring 2012, PI: Vern Paulsen, Co-PIs: David Blecher and Mark Tomforde, DMS-1101654, January 15, 2011 – December 31, 2013.

$135,000 NSF Mathematical Sciences Postdoctoral Research Fellowship, PI: Paulette Willis, Sponsoring Scientist: Mark Tomforde, September 2010 – August 2013. (Note: The applications for the NSF MSPRF are composed jointly by the PI and sponsoring scientist, and awards are based on materials submitted by each.)

$30,000 National Security Agency (NSA) Young Investigator Award, "Leavitt path algebras and their generalizations", PI: Mark Tomforde, October 2009 – September 2011.

$31,300 NSF-CBMS Regional Conference in the Mathematical Sciences "Graph Algebras: Operator Algebras We Can See" PI: Paul Muhly, Co-PI: Mark Tomforde, September 2003 – August 2004.

$108,000 NSF Mathematical Sciences Postdoctoral Research Fellowship, PI: Mark Tomforde, Sponsoring Scientist: Paul Muhly, $108,000, September 2002 – August 2005.

Funding to Support Students

$3,800 Summer Undergraduate Research Fellowship (SURF) to support undergraduate research project with University of Houston undergraduate Catherine Godfrey, Summer 2016.

$1,000 Provost's Undergraduate Research Scholarship (PURS) to support undergraduate research project with University of Houston undergraduate Catherine Godfrey, Spring 2016.

$3,800 Summer Undergraduate Research Fellowship (SURF) to support undergraduate research project with University of Houston undergraduate Sarah Chehade, Summer 2015.

$500 Travel Grant from AMS, allowed my graduate student, Tristan Whalen, to attend the Joint Meetings of the AMS and MAA in January 2015.

$3,800 Summer Undergraduate Research Fellowship (SURF) to support undergraduate research project with University of Houston undergraduate Tanya Chen, Summer 2014.

$2,400 Research Experience for Undergraduates (REU) funding from UH Mathematics Department to support undergraduate research project with Texas Southern University undergraduate Ariel Bowman, Summer 2014.

$1,000 Provost's Undergraduate Research Scholarship (PURS) to support undergraduate research project with University of Houston undergraduate Michael Boyle, Fall 2013.

$500 Travel Grant from AMS, allowed my graduate student, Tristan Whalen, to attend an AMS Sectional Meeting in March 2012.

$10,000 Departmental Mini-grant for research on the topic of Leavitt path algebras in Functional Analysis and Algebra, Summer 2008.

$10,000 Departmental Mini-grant to develop the course "Honors Linear Algebra", a course in a sequence of Honors Calculus and Honors Differential Equations for freshmen and sophomores, Summer 2008.

$10,000 Departmental Mini-grant to develop the course Math 3397 "Transitions to Mathematics", a first proofs course for undergraduates, Summer 2007.

Conferences Organized

"GroupoidFest 2021", I served as main organizer. Held at the University of Colorado at Colorado Springs from November 13 – 14, 2021.

"Workshop on Cuntz-Pimsner Algebras", supported by NSF grant DMS-1700316 (PI: Mark Tomforde). Held at the University of Houston from December 16 – 19, 2019.

"Applications of Model Theory to Operator Algebras", support provided by NSF grant DMS-1700316 (PI: Mark Tomforde). The conference included a 5-lecture masterclass as well as talks by several plenary speakers. Held at the University of Houston from July 31 – August 4, 2017.

"Classification of C^*-algebras, Flow Equivalence of Shift Spaces, and Graph and Leavitt Path Algebras", I was one of 5 organizers, and support was provided by NSF grant DMS-1501104. (I was Senior Personnel on the grant.) The principal speaker was Søren Eilers (University of Copenhagen) who gave a series of five lectures. There were 50 participants at the conference, and over half were international participants from outside North America. The conference was held at the University of Louisiana at Lafayette from May 11 – 15, 2015.

"Great Plains Operator Theory Symposium" (GPOTS), I was on the scientific committee, which provides guidance and advice to the organizers, for GPOTS 2014. The organizers for the conference were Sarah Reznikoff, Jon Brown, and Gabriel Nagy. The members of the scientific committee were: Valentin Deaconu, Ilijas Farah, Astrid an Huef, Vaughan Jones, David Pitts, and me. GPOTS 2014 was held at Kansas State University from May 27 – 31, 2014.

"Houston Summer School on Dynamical Systems", I was one of several organizers for this annual conference, which is aimed at graduate students interested in learning about dynamical systems and their applications. The other organizers consisted of the members of the Dynamical Systems Group at the University of Houston, and Vaughn Climenhaga served as the main organizer. We were supported by NSF grant DMS-1363024. (I was a Co-PI on the grant.) The conference was held at the University of Houston from May 14 – 22, 2014

"Graph algebras: Bridges between graph C^*-algebras and Leavitt path algebras", BIRS 5-Day Workshop. This 5-day workshop was held at the Banff International Research Station (BIRS) in Banff, Canada. I was the main organizer, and the co-organizers were: Gene Abrams, Jason Bell, Søren Eilers, George Elliott, and Marcelo Laca. This proposal was selected as one of the few supported from among 152 proposals submitted for that year. The dates of the conference were April 21 – April 26, 2013.

"Great Plains Operator Theory Symposium" (GPOTS), I was one of several organizers on this annual conference. We were supported by a two-year NSF grant held joint between Arizona State University

and University of Houston. (I was a Co-PI on the grant.) The conference was held at Arizona State University in 2011 and at University of Houston in 2012.

"Graph Algebras in Analysis and Algebra", Special Session at the AMS/MAA Joint Mathematics Meetings, co-organized with Gene Abrams, San Francisco, CA, January 2010.

"Graph Algebras: Operator Algebras We Can See", NSF-CBMS Regional Conference in the Mathematical Sciences, co-organized with Paul Muhly and Iain Raeburn, University of Iowa, June 2004.

Postdocs Supervised

- Paulette Willis, NSF Postdoctoral Fellow, University of Houston, Fall 2010 – Spring 2013

Ph.D. Students Supervised

- River VanIwaarden, University of Colorado at Colorado Springs, Spring 2022 – present
- Carl Cassidy, University of Colorado at Colorado Springs, Spring 2022 – present
- Mozahid Haque, University of Houston, Ph.D. awarded Spring 2019
- James West, University of Houston, Ph.D. awarded Fall 2017
- Nishant Suri, University of Houston, Ph.D. awarded Spring 2017
- Tristan Whalen, University of Houston, Ph.D. awarded Spring 2015

Ph.D. Defense Committees

Outside Examiner, Ph.D. Thesis Committee for Edward Stout in Mathematics (Chair: William Ott), University of Houston, April 2021.

Chair, Ph.D. Thesis Committee for Mozahid Haque (my Ph.D. student) University of Houston, April 2019.

Examiner, Ph.D. Thesis Committee for Zhenhua Wang in Mathematics (Chair: David Blecher), University of Houston, April 2019.

Chair, Ph.D. Thesis Committee for James West (my Ph.D. student) University of Houston, December 2017.

Chair, Ph.D. Thesis Committee for Nishant Suri (my Ph.D. student) University of Houston, April 2017.

Examiner, Ph.D. Thesis Committee for Alex Bearden in Mathematics (Chair: David Blecher), University of Houston, April 2017.

Outside Examiner, Ph.D. Thesis Committee for Yosafat Pangalela in Mathematics (Chair: Iain Raeburn), University of Otago, New Zealand, January 2017.

Examiner, Ph.D. Thesis Committee for Ricky Ng in Mathematics (Chair: Vern Paulsen), University of Houston, April 2016.

Examiner, Ph.D. Thesis Committee for Da Zheng in Mathematics (Chair: Vern Paulsen), University of Houston, April 2016.

Examiner, Ph.D. Thesis Committee for Carlos Ortiz in Mathematics (Chair: Vern Paulsen), University of Houston, November 2015.

Chair, Ph.D. Thesis Committee for Tristan Whalen (my Ph.D. student) University of Houston, March 2015.

Outside Examiner, Ph.D. Thesis Committee for Danny Crytser in Mathematics (Chair: Dana P. Williams), Dartmouth College, April 2014.

Examiner, Ph.D. Thesis Committee for Maureen Royce in Mathematics (Chair: David P. Blecher), University of Houston, July 2013.

Examiner, Ph.D. Thesis Committee for Preeti Singh in Mathematics (Chair: Vern Paulsen), University of Houston, May 2010.

Examiner, Ph.D. Thesis Committee for Blerina Xhabli Arikan in Mathematics (Chair: Vern Paulsen), University of Houston, November 2009.

Examiner, Ph.D. Thesis Committee for Upasana Kashyap in Mathematics (Chair: David P. Blecher), University of Houston, December 2008.

Examiner, Ph.D. Thesis Committee for Mrinal Raghupathi in Mathematics (Chair: Vern Paulsen), University of Houston, April 2008.

Outside Examiner, Ph.D. Thesis Committee for Lisa Orloff Clark in Mathematics (Chair: Dana Williams), Dartmouth College, May 2004.

Outside Examiner, Ph.D. Thesis Committee for Aidan Sims in Mathematics (Chair: Iain Raeburn), University of Newcastle, Australia, December 2003.

Outside Examiner, Ph.D. Thesis Committee for Menassie Ephrem in Mathematics (Chair: Jack Spielberg), Arizona State University, August 2003.

Graph Algebra Network, coordinator for the UCCS node Summer 2022 – present

The Graph Algebra Network is global network of universities with research groups studying graph algebras. The network consists of geographic "nodes" at various universities, with each node coordinated by a prominent researcher. There are 11 nodes at European universities, 11 nodes at U.S. universities, 3 nodes at Canadian universities, and 1 node at a Mexican university. Funding for the Graph Algebra Network totals $624,400 (= $517,800 European Union Funding + $66,300 Warsaw University Funding + $40,300 Simons Foundation Funding). The funding is used to provide travel support for researchers to visit other nodes and collaborate with the corresponding research groups. While UCCS does not receive any Indirect Costs (IDC), the network provides complete support for researchers and Ph.D. students in the network to visit other nodes and collaborate on research projects. This provides fully funded opportunities for researchers to visit UCCS, as well as for UCCS faculty and student to travel to other nodes. I serve as the coordinator for the node at UCCS.

Editor for Advances in Operator Theory Spring 2016 – Spring 2019

Advances in Operator Theory (AOT) is an international, open access (free of charge), and peer-reviewed quarterly journal that publishes papers of high standards within the fields of operator theory (MSC 47), functional analysis (MSC 46), matrix analysis (MSC 15), abstract harmonic analysis (MSC 43), and related topics in PDE and ODE.

Teaching

Being a Difference Award for Ethical Leadership, UCCS Campus, 2022

The National Association of State Boards of Accountancy (NASBA) Student Center for the Public Trust (StudentCPT) honors one faculty member on each chapters campus who positively impacts the school by displaying strong, ethical leadership. This award honors faculty who embody the very best in ethical behavior, integrity, and leadership. This is the first time in UCCS history that this award has been given to a faculty member outside of the Business College.

25-Year Anniversary Award from Gustavus Adolphus College, 2022

Gustavus Adolphus College presents this award annually to recognize one alumnus from the 25th anniversary class for exceptional career achievement. The criteria for selection include difficulty of accomplishment; quality, creativity, and distinctiveness of work; recognition by professional peers; and lasting contributions to the world of ideas and affairs. The citation for my award referred to my "meaningful work, and commitment to the community".

MAA Haimo Award For Distinguished Teaching Of Mathematics, 2020

The Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics is the highest teaching honor bestowed by the Mathematical Association of America (MAA). Each year up to three recipients are chosen nationally from among the approximately 28,000 members of the MAA. The award honors college and university teachers who have been widely recognized as extraordinarily successful and whose teaching effectiveness has been shown to have had influence beyond their own institutions. The award includes a $1,000 prize. An announcement of the award was made together with a citation, biography, and response.

Epsilon Camp, Instructor, Summer 2022

Epsilon Camp is a renowned two-week mathematics summer camp serving gifted elementary school children (ages 6–12) and their families through an intensive student program and parent workshop. This program is for children who are highly gifted and passionate about math. Epsilon Camp connects gifted children with professional mathematicians and builds a supportive community of peers and families. Epsilon Camp has been held at various locations in the United States, and in Summer 2022 it was held on the UCCS campus. I served as both an instructor and unofficial liaison between Epsilon Camp administrators and UCCS.

MAA Distinguished Teaching of Mathematics Award, Texas Section, 2019

This award is given annually by the Texas Section of the Mathematical Association of America (MAA) to one mathematics professor that (1) is widely recognized as extraordinarily successful in their teaching, (2) has teaching effectiveness that can be documented, (3) has had influence in their teaching beyond their own institutions, and (4) foster curiosity and generate excitement about mathematics in their students.

AMS Award for Mathematics Programs that Make a Difference, 2018

This annual award is given by the American Mathematical Society (AMS) to one program that (1) aims to bring more persons from underrepresented backgrounds into some portion of the pipeline beginning at the undergraduate level and leading to advanced degrees in mathematics and professional success, or retain them once in the pipeline; (2) has achieved documentable success in doing so; and (3) is a replicable model. In 2018 the AMS honored the Cougars and Houston Area Math Program (CHAMP), the outreach program I created, for "its consistent commitment to and success in promoting enrollment of underrepresented groups in college STEM programs". An announcement of the award was made in a 6-page article in the 2018 *Notices of the AMS*, and the award includes a $1,000 prize.

Phi Beta Kappa Award for Engaging Broader Audiences, 2018

The national Phi Beta Kappa society, in consultation with the Houston Mayor's Office, recognized CHAMP as one of four exemplary local organizations that serve as national models for building creative exchanges with diverse audiences in arts, humanities, social sciences, natural sciences, or mathematics. CHAMP was honored at a Phi Beta Kappa reception celebrating the City of Houston as an "Arts and Sciences City of Distinction". The award includes a $5,000 prize.

University Teaching Excellence Award: Community Service Category, 2016

The University Teaching Excellence Awards are made annually in multiple categories to full-time tenured or tenure-track faculty who have demonstrated excellence in teaching. The award in the Community Service Category is given to faculty who involve students in service to the community through service learning activities or community engagement projects related to courses that they teach demonstrating leadership in advancing students civic learning, fostering reciprocal community partnerships, building institutional commitments to service-learning and civic engagement, and other means of enhancing higher education's contributions to the public good. The award includes an $8,000 prize.

NSM John C. Butler Excellence in Teaching Award, 2015

The Butler award is the highest teaching award in the College of Natural Science and Mathematics (NSM). It recognizes NSM faculty who best engage and challenge their students, who share their enthusiasm for the subject matter they teach, and who serve as effective mentors. The award is given annually to one tenure/tenure-track faculty member in NSM and includes a $5,000 prize.

Courses Taught

University of Colorado at Colorado Springs
- Math 6330/5330: Real Analysis I (Graduate Course), Spring 2022
- Math 3410: Introduction to Analysis, Spring 2022
- Math 6350/5350: Functional Analysis (Graduate Course), Fall 2021
- Math 4130/5130: Linear Algebra I (Graduate Course), Fall 2021
- Math 2150: Discrete Mathematics, Fall 2020

University of Houston
- Math 3325: Transitions to Advanced Mathematics, Spring 2020
- Math 3333: Intermediate Analysis, Fall 2019
- Math 3325: Transitions to Advanced Mathematics, Fall 2019
- Math 6321: Functions of a Real Variable I (Graduate Course), Spring 2019
- Math 6320: Functions of a Real Variable I (Graduate Course), Fall 2018
- Math 3333: Intermediate Analysis, Fall 2018
- Math 3330: Abstract Algebra, Spring 2018
- Math 3325: Transitions to Advanced Mathematics, Fall 2017
- Math 3330: Abstract Algebra, Fall 2017
- Math 6303: Modern Algebra II (Graduate Course), Spring 2017
- Math 6302: Modern Algebra I (Graduate Course), Fall 2016
- Math 3325: Transitions to Advanced Mathematics, Fall 2016
- Math 6395: Topics in C^*-algebras (Graduate Course), Spring 2016
- Math 6342: Topology (Graduate Course), Fall 2015
- Math 3325: Transitions to Advanced Mathematics, Fall 2015
- Math 7321: Functional Analysis II (Graduate Course), Spring 2014
- Math 7320: Functional Analysis I (Graduate Course), Fall 2014
- Math 3325: Transitions to Advanced Mathematics, Fall 2014
- Math 6395: Introduction to C^*-algebras (Graduate Course), Spring 2014
- Math 6342: Topology (Graduate Course), Fall 2013
- Math 2331: Linear Algebra, Spring 2013
- Math 3331: Differential Equations, Fall 2012
- Math 2331: Linear Algebra, Fall 2012
- Math 6321: Functions of a Real Variable II (Graduate Course), Spring 2012
- Math 6320: Functions of a Real Variable I (Graduate Course), Fall 2011
- Math 3331: Differential Equations, Fall 2011
- Math 6303: Modern Algebra II (Graduate Course), Spring 2011
- Math 6302: Modern Algebra I (Graduate Course), Fall 2010
- Math 4331: Introduction to Real Analysis I, Fall 2010
- Math 6395: Graph C^*-algebras (Graduate Course), Spring 2010
- Math 6303: Modern Algebra II (Graduate Course), Spring 2010
- Math 6302: Modern Algebra I (Graduate Course), Fall 2009
- Math 2331: Honors Linear Algebra, Spring 2009
- Math 6342: Topology (Graduate Course), Fall 2008
- Math 6395: Topics in C^*-algebras (Graduate Course), Spring 2008
- Math 3397: Transitions to Advanced Mathematics, Fall 2007
- Math 3333: Intermediate Real Analysis, Spring 2007
- Math 4377: Advanced Linear Algebra, Fall 2006

College of William & Mary
- Math 214: Foundations of Mathematics, Spring 2006
- Math 112: Calculus II, Spring 2006
- Math 211: Linear Algebra, Fall 2005
- Math 112: Calculus II (Section 1), Fall 2005
- Math 112: Calculus II (section 2), Fall 2005

University of Iowa
- Math 118: Complex Analysis (Graduate Course), Fall 2004
- Math 50: Abstract Algebra I, Spring 2004
- Math 25: Calculus I, Fall 2003

Dartmouth College
- Math 1: Calculus, Fall 2001
- Math 24: Honors Linear Algebra, Fall 2000
- Math 2: Calculus, Winter 2000

Courses Developed

- Math 3325, "Transitions to Advanced Mathematics"

  This is a "First Proofs Course" that I developed to help our undergraduate math majors make the transition to the upper-level proof-based courses in our department. It is intended for students to take prior to introductory proof-writing courses (e.g., Math 3333: Intermediate Analysis or Math 3330: Abstract Algebra). The course covers topics ubiquitous throughout mathematics (e.g. logic, sets, functions, relations) and focuses on developing proof-writing and communication skills. I taught a preliminary version of the course in Fall 2007 as a Math 3397 topics course. I then worked with the undergraduate studies committee to make the course a required part of the University of Houston mathematics major. The course has been taught as Math 3325 each semester since Fall 2013, and I have taught it several times.

- Graduate Topics Courses

  I have developed several graduate topics courses related to my area of research and the interests of students in my department. These include a Survey of Topics in C^*-algebras course in Spring 2008, a Graph C^*-algebra course in Spring 2010, an Introduction to C^*-algebras course in Spring 2014, and a course on C^*-algebras associated with Dynamical Systems in Spring 2016.

- Math 2331, "Honors Linear Algebra", Spring 2009.

  This is an undergraduate course I developed as part of an Honors Sequence (along with the Honors Calculus and Honors ODEs) and taught for the first time in Spring 2009. I used a different textbook from the usual Math 2331 class, and I also developed new material to be used in the course.

Independent Studies and Masters Tutorials Supervised

- Senior Research Project (Math 3396, Math 4396), Student: Shahzad Kalloo, Fall 2017–Spring 2018
- Senior Research Project (Math 3396, Math 4396), Student: Shannon Weed, Fall 2017–Spring 2018
- Masters Tutorial (Math 6315, Math 7315), Student: Patrick Messina, Fall 2017 – Spring 2018
- Masters Tutorial (Math 6315), Student: Jea Kodavi, Fall 2017
- Masters Tutorial (Math 6315), Student: Ed Stout, Fall 2017
- Masters Tutorial (Math 6315), Student: Worawit Tepsan, Fall 2017
- Masters Tutorial (Math 6315), Student: Tattwamasi Amrutam, Fall 2017
- Masters Tutorial (Math 6315), Student: Tyler Williams, Fall 2017
- Masters Tutorial (Math 6315), Student: Sarah Chehade, Fall 2017
- Independent Study (Math 4398), Student: Catherine Godfrey, Fall 2016
- Masters Tutorial (Math 6315), Student: Mozahid Haque, Fall 2015
- Independent Study (Math 4398), Student: Sarah Chehade, Fall 2015
- Independent Study (Math 6398), Student: Nishant Suri, Spring 2014
- Masters Tutorial (Math 6315, Math 7315), Student: Tristan Whalen, Fall 2011 – Spring 2011
- Masters Tutorial (Math 7315), Student: My Le, Summer 2011 – Fall 2011
- Masters Tutorial (Math 6315), Student: Rebecca Chen, Summer 2009
- Masters Tutorial (Math 6315), Student: James West, Summer 2009

- Senior Research Project (Math 3396), Student: Letty Reza, Summer 2009
- Senior Research Project (Math 3396, Math 4396), Student: Matt Tobin, Fall 2008 – Spring 2009

Undergraduate Research Supervised

University of Houston:

• Shannon Weed, Topic: Voting Theory	Summer 2017 – Spring 2018
• Shahzad Kalloo, Topic: Morita Equivalence of Rings	Spring 2017 – Spring 2018
• Catherine Godfrey, Topic: Voting Systems with Multiple Candidates	Spring 2016 – Spring 2017
• Sarah Chehade, Topic: Perron-Frobenius theorem and rankings	Spring 2015 – Spring 2016
• Tanya Chen, Topic: Linear Algebra and Google's PageRank algorithm	Fall 2013 – Fall 2015
• Ariel Bowman, Topic: Interactions of Analysis and Algebra	Summer 2014
• Michael Boyle, Topic: Chaotic behavior of interval maps	Spring 2013 – Spring 2014
• My Le, Topic: Frames in vector spaces over finite fields	Spring 2009 – Summer 2009
• Letty Reza, Topic: Frames in vector spaces over finite fields	Spring 2009 – Summer 2009
• Matt Tobin, Topic: Frames in vector spaces over finite fields	Fall 2008 – Spring 2009
• Michael Kroh, Topic: Lattices and directed graphs	Spring 2008 – Spring 2009
• Minh Nguyen, Topic: Frames in vector spaces over finite fields	Fall 2008
• Rachel Hodos, Topic: Frames in finite-dimensional spaces	Spring 2007

College of William & Mary:

• Abraham Isgur, Topic: Graph traces on directed graphs	Fall 2005 – Summer 2006
• Joe Dorfler, Topic: Graph traces on directed graphs	Fall 2005 – Spring 2005
• Erin Catlett, Topic: Lattices of ideals in graph C^*-algebras	Fall 2005 – Spring 2005
• Meg Poston, Topic: Lattices of ideals in graph C^*-algebras	Fall 2005 – Spring 2005

University of Iowa:

• Matt Johnson, Topic: Graph traces on directed graphs	Fall 2003 – Spring 2005
• Jon Chaika, (supervised jointly with Paul Muhly), Topic: Quantum computation and completely positive maps	Fall 2002 – Spring 2003

The following publications have resulted from the undergraduate research I have supervised:

- "Chaotic behavior in a forecast model", Michael Boyle and Mark Tomforde, Pi Mu Epsilon J. **14** (2016), 237–242.
- "Frame theory for binary vector spaces", Bernhard Bodmann, My Le, Letty Reza, Matthew Tobin, and Mark Tomforde, Involve **2** (2010), 589–602.
- "The graph traces of finite graphs and applications to tracial states of C^*-algebras", Matt Johnson, New York J. Math. **11** (2005), 649–658.

Circles and Pairs, Founder and Director   Fall 2021 – present

Circles and Pairs is a mathematics outreach program that I created and direct. Circles and Pairs uses volunteer effort of undergraduates, graduate students, and faculty from the University of Colorado, Colorado Springs (UCCS) and Colorado College to provide mathematics outreach to local middle and high school students two days per week. Circles and Pairs engages students using two complementary methods: Math Circles (which are group problem solving activities that emphasize creativity, collaboration, and discovery-based learning) and one-on-one tutoring (in which a volunteer works with a student on topics currently being covered in their math classes). More info and a video are available at the Circles and Pairs website: https://math.uccs.edu/circles-and-pairs

AMS Graduate Chapter, UCCS, Founder and Faculty Advisor   Fall 2021 – present

I organized the mathematics graduate students at the University of Colorado at Colorado Springs to form an official AMS Graduate Student Chapter and helped them to draft by-laws and apply for funding. (For official details on AMS Graduate Student Chapters see `http://www.ams.org/programs/studentchapters`) I currently serve as faculty advisor, and I assist student officers as they organize events each semester. Popular events include: Math Trivia Night, Pi Day Celebration, and Graduate Student Research Talks. More info on the AMS Graduate Chapter at UCCS can be found at the website `https://math.uccs.edu/ams-chapter`

Math Alliance, Mentor   Fall 2009 – present

The Math Alliance (see `http://www.mathalliance.org`) is a consortium of faculty and students at schools throughout the U.S. whose goal is to encourage undergraduates to pursue graduate study in mathematics or a mathematically-related field. The Math Alliance also seeks to increase the number of mathematics Ph.D.s awarded to members of groups that are underrepresented in the mathematical sciences (such as women, ethnic minorities, first generation college students, or students from disadvantaged socioeconomic backgrounds). However, the Math Alliance is not exclusive to students from these groups, and anyone is welcome to join and participate. The Math Alliance was initially centered at the University of Iowa, but in recent years its headquarters have moved to Purdue University.

I nominated students from my department for membership in the Math Alliance, mentored them during their undergraduate careers, and informed them about the Math Alliance's F-GAP program that assists them in composing their graduate school application materials. Every year I organized UH undergraduates to attend the Math Alliance's annual "Field of Dreams" conference.

CHAMP, Founder and Director   Fall 2013 – Spring 2019

Cougars and Houston Area Mathematics Program (CHAMP) is a high school and middle school outreach program that I created and directed for six years. CHAMP provided weekly math tutoring and math lessons for high school and middle school students from partnering schools in the area.

Gulf States Math Alliance, Organizer and Webmaster   Fall 2013 – Spring 2020

The Gulf States Math Alliance (GSMath) is one of seven regional alliances under the national Math Alliance. GSMath is comprised of members of the Math Alliance throughout the states of Texas, Louisiana, and Mississippi. GSMath works closely with the national Math Alliance, as well as the other regional alliances, while simultaneously providing and promoting special opportunities to students within the Gulf States Region. I am a co-organizer of GSMath, and I also created and maintain the GSMath website (see `www.math.uh.edu/gsmath`).

AMS Graduate Chapter, UH, Founder and Faculty Advisor   Fall 2013 – Spring 2019

I organized the mathematics graduate students at the University of Houston to form an official AMS Graduate Student Chapter and helped them to draft by-laws and apply for funding. (For official details on the AMS Graduate Student Chapter program, see `http://www.ams.org/programs/studentchapters`)

Pi Mu Epsilon, Faculty Advisor   Fall 2008 – Spring 2018

Pi Mu Epsilon is the National Mathematics Honor Society. I served as faculty advisor for the *Texas Theta Chapter* of Pi Mu Epsilon at the University of Houston for ten years. My responsibilities included inducting new members, promoting the society, holding monthly meetings for undergraduate members, and advising the student officers. Our Pi Mu Epsilon chapter also functions as our department's Undergraduate Math Club, and while there are official requirements for membership in the national Pi Mu Epsilon organization, our chapter's meetings and activities are open to everyone.

AMS Project NExT Fellow 2003 – 2004

Project NExT (New Experiences in Teaching) is a professional development program for new or recent Ph.D.s in the mathematical sciences who are interested in improving the teaching and learning of undergraduate mathematics. It addresses the full range of faculty responsibilities in teaching, research, and service. Certain fellows who are interested in both research and teaching are designated as AMS Project NExT Fellows and are supported by a grant from the American Mathematical Society.

Teaching of Mathematics Seminar, Dartmouth College Summer 1999

This intensive 10-week long seminar explored both the theory and practice of teaching mathematics. It involved readings and discussions of different philosophies of teaching mathematics and problem solving. Topics included cooperative learning, the use of writing assignments, student evaluations, presentation styles, and designing curricula. Participants also gained hands-on experience by designing and teaching two week-long high school workshops, guest lecturing in Dartmouth classes, and giving presentations throughout the seminar.

Service

Service to the Profession

Editorial Board for MAA FOCUS January 2022 – present

MAA FOCUS is the newsmagazine of the Mathematical Association of America (MAA). It is one of the most widely read mathematics mathematics publication and has a circulation of over 25,000 people. There are 13 members of the editorial board.

Reviewer for the Goldwater Scholarship Competition February 2020 – present

The Goldwater Scholarship is the most prestigious national undergraduate scholarship in the natural sciences, engineering and mathematics, and it is awarded annually to about 300 college sophomores and juniors. Each spring I travel to a national conference center to spend four days working face-to-face with other reviewers as we evaluate applications for the Goldwater Scholarship and make recommendations for awards.

Wikipedia Fellow Fall 2019 and Fall 2020

I participated in the class "Communicating Science on Wikipedia" taught by Wikipedia Experts at Wiki Education, in collaboration with the New York Academy of Sciences. The class met via video chat for one hour per week for ten weeks. Projects were assigned, and I earned a certificate for my project completion. I was supported by a $500 grant from the Heising-Simons Foundation to cover course fees.

Reviewer for National Science Foundation   February 2019

I traveled to the National Science Foundation in Alexandria, Virginia and spent three days serving on a panel to review grant proposals and make recommendations for funding.

AMS Committee on the Profession, subcommittee member   August 1, 2018 – July 31, 2019

I was a member of the subcommittee charged with selecting the winner of the annual AMS Award for Mathematics Programs that Make a Difference

AMS Arnold Ross Lecture Series Committee   Chair, February 1, 2018 – January, 31 2019
Member, February 1, 2017 – January, 31 2018
Member, February 1, 2016 – January, 31 2017

The Arnold Ross Lecture Series sponsors an annual lecture for talented high school mathematics students. The goal of this lecture is to stimulate the students' interest in mathematics beyond the traditional classroom and to show them the tremendous opportunities for careers in mathematics — as mathematics teachers and as researchers in government, industry, and university programs. The lectures are also intended to illustrate some recent development in mathematical research. Members of the Arnold Ross Lecture Series Committee are appointed by the president of the American Mathematical Society (AMS) and charged with selecting the annual speaker and overseeing related details. More info on the Arnold Ross Lecture Series can be found at
http://www.ams.org/programs/students/ross-lectures/ross-lectures

Project NExT Consultant   Fall 2014 – Spring 2015

Project NExT (New Experiences in Teaching) is a professional development program run by the Mathematical Association of America (MAA). Project NExT is for new or recent Ph.D.s in the mathematical sciences who are interested in improving the teaching and learning of undergraduate mathematics. Project NExT invites certain senior mathematicians to be consultants. As a consultant, I was paired with a Project NExT Fellow for whom I serve as a mentor, and I was asked to attend the Joint Meetings of the AMS and MAA in January 2015 and participate in the Project NExT mailing list and answer questions from recent Ph.D.s.

Scholarly Reviews
- Letter of Assessment, University of Ohio asked me to assess a faculty member's research as part of their application for promotion, October 2021
- Reviewer for grant proposal submitted to the National Science Centre of Poland, April 2021
- Reviewer for book proposal submitted to Wiley publishing company, January 2020
- Reviewer for textbook submitted to Springer publishing company, April 2017
- Reviewer for workshop proposal to the Fields Institute, January 2016
- Reviewer for textbook submitted to Springer publishing company, October 2014
- Letter of Assessment, University of Texas at Tyler asked me to assess a faculty member's research as part of an application for promotion, October 2013
- Reviewer for Proceedings of the Operator Algebra and Dynamics Conference, the NordForsk Network Closing Conference held at the Faroe Islands, January 2013
- Reviewer for textbook "Linear Algebra with Applications" by Jeff Holt (University of Virginia) for W.H. Freeman & Company and Worth Publishers, June 2012
- Reviewer for Topology textbook for Taylor & Francis Publishing, January 2010
- Reviewer for NSA grant proposal, April 2009
- Reviewed textbook "A Passage to Advanced Mathematics", Addison-Wesley Publishing, April 2009
- Reviewer for NSA grant proposal, February 2007

Journal Referee

I have refereed for the following journals.

- Acta Mathematica Sinica
- Advances in Mathematics
- Algebras and Representation Theory ($\times 2$)
- Bulletin des Sciences Mathématiques ($\times 4$)
- Bulletin of the Australian Math Society
- Bulletin of the London Math Society ($\times 4$)
- Bulletin of the Malaysian Math Society
- Communications in Algebra ($\times 3$)
- Comptes Rendus Mathématique, Académie des Sciences, Paris
- Contemporary Mathematics, AMS Book Series
- Cubo Mathematics Journal
- Discrete and Continuous Dynamical Systems
- Documenta Mathematica
- Duke Mathematical Journal ($\times 2$)
- Ergodic Theory and Dynamical Systems ($\times 4$)
- Forum Mathematicum
- Functional Analysis and its Applications
- Houston Journal of Mathematics ($\times 3$)
- Indiana University Mathematics Journal ($\times 2$)
- Illinois Journal of Mathematics
- Integral Equations and Operator Theory
- International Workshop on Operator Theory and its Applications (IWOTA), Conference Proceedings, 2021
- Involve
- Journal für die Reine und Angewandte Mathematik (Crelle's Journal) ($\times 3$)
- Journal of Algebra ($\times 3$)
- Journal of Algebra and Applications ($\times 3$)
- Journal of Algebra and Number Theory
- Journal of the American Mathematical Society
- Journal of Commutative Algebra ($\times 2$)
- Journal of Functional Analysis ($\times 8$)
- Journal of the Korean Mathematical Society
- Journal of Mathematical Analysis and Applications ($\times 6$)
- Journal of Noncommutative Geometry
- Journal of Operator Theory ($\times 11$)
- Journal of Pure and Applied Algebra ($\times 3$)
- Journal of Topology and Analysis
- Math Annalen ($\times 2$)
- Mathematische Zeitschrift

- Mediterranean Journal of Mathematics
- Monatshefte für Mathematik ($\times 4$)
- Münster J. Math. ($\times 2$)
- New York Journal of Mathematics ($\times 3$)
- Operators and Matrices ($\times 2$)
- Proceedings A of the Royal Society of Edinburgh
- Proceedings of the American Mathematical Society ($\times 4$)
- Proceedings of the Edinburgh Mathematical Society
- Revista Matemática Iberoamericana
- Rocky Mountain Journal of Mathematics ($\times 3$)
- Studia Mathematica
- Transactions of the American Mathematical Society ($\times 6$)
- Turkish Journal of Mathematics

Article Reviewer for Mathematical Reviews and MathSciNet 2003 – 2014

I wrote 69 article reviews during my 11 years of service.

Service to Department, College, and University
(at University of Colorado at Colorado Springs)

Department Committees

- Graduate Committee, member, Fall 2021 – present
- Member of subcommitttee that wrote and graded preliminary exams for M.S. and Ph.D. students, Winter 2021 and Summer 2022
- Currently heading an initiative to redesign the Comprehensive Exam requirements for the Mathematics Department's Ph.D. students

University Committees

- Graduate Executive Committee, non-voting member, attend monthly meetings, Fall 2021 – present

Service to Department, College, and University
(at University of Houston)

Department Committees

- Colloquium Committee, member, Fall 2019 – Spring 2020
- Undergraduate Studies Committee, member, Fall 2007 – Spring 2012, Fall 2013 – Spring 2019
- Committee for revised policies for the Annual Performance Reviews (APR), Spring 2016
- Analysis Seminar Organizer, Fall 2006, Spring 2007, Fall 2008, Spring 2009, Fall 2010, Spring 2011, Spring 2013, Fall 2014
- Subcommittee for Undergraduate Curriculum Content, member, Spring 2012 – Summer 2012

- Subcommittee for Undergraduate Curriculum Course Tracks, member, Spring 2012 – Summer 2012
- Library Committee, member, Fall 2011 – Spring 2012
- Colloquium Committee, member, Fall 2008 – Spring 2011
- Colloquium Committee, co-chair, Fall 2007 – Spring 2008

College Committees

- Grievance Committee for the College of Natural Science and Mathematics, Fall 2019
- Communications Subcommittee for College-Wide Strategic Plan, Fall 2015

University Committees

- University of Houston Selection Committee for the Goldwater Scholarship, Fall 2017
- Interviewer for Tier One Scholarship Applicants, January 2017

Fellow of the UH Honors College   Spring 2016

The Dean of the Honors College invites select faculty to be members of the Honors College's Society of Fellows. Fellows are not assigned specific duties; rather, according to their own interests and availability, Fellows may direct senior honors theses and serve on thesis committees; mentor students who are pursuing undergraduate research in the PURS, SURF, or other programs sponsored by the Office of Undergraduate Research; assist with the development of Honors curriculum in their disciplines; serve as knowledgeable sources in their home departments and colleges about the policies and goals of the Honors College; provide information in return about policies and goals of their home departments and colleges; alert members of the Honors College faculty of opportunities and partnerships of mutual benefit; and generally serve as fellows —friends, advisors, and ambassadors— of the Honors College.

"Russia's Revolutionary Mathematics", Invited Speaker   February 2017

I gave this talk as part of a series of public events on the UH Campus in 2017 designed to commemorate the centennial of the 1917 Russian Revolution. The series was organized by Dr. David Rainbow from the UH Honors College.

Service to the Community

KIPP: Houston STEM Advisory Board, member   Spring 2016 – Spring 2017

The Knowledge is Power Program (KIPP) is a nationwide network of free open-enrollment college-preparatory schools in under-resourced communities throughout the United States. KIPP: Houston currently has 24 public schools throughout the K–12 level serving nearly 12,500 Houston students and an additional 1,200 alumni in college and beyond. The STEM Advisory Board provides guidance and recommendations regarding STEM education in the KIPP: Houston schools.

Honors, Awards, and Memberships

Honors and Awards

Being a Difference Award for Ethical Leadership, UCCS Campus, 2022

25-Year Anniversary Award from Gustavus Adolphus College, 2022

MAA Haimo Award for Distinguished Teaching of Mathematics, 2020

MAA Distinguished College and University Teaching of Mathematics Award, Texas Section, 2019

AMS Award for Mathematics Programs that Make a Difference, 2018

Phi Beta Kappa Award for Engaging Broader Audiences, 2018

Inducted into University of Houston Honors College Society of Fellows, 2016

University Teaching Excellence Award: Community Service Category, 2016

NSM John C. Butler Excellence in Teaching Award, Spring 2015

Member of the Scientific Committee for the Great Plains Operator Theory Symposium, 2014

National Security Agency Young Investigator Award, 2009

AMS Project NExT Fellow, 2003 – 2004

NSF Postdoctoral Fellowship, 2002 – 2005

Graduate Fellowship, Dartmouth College, 1997 – 2002

Richard V. Andree award from Pi Mu Epsilon, 1996

Barry M. Goldwater Scholarship for Excellence in Mathematics and Science, 1996

National Merit Scholar, 1993

Memberships

American Mathematical Society (AMS), member, 1994 – present

Mathematical Association of America (MAA), member, 1994 – present

Association for Women in Mathematics (AWM), member, 2018 – present

Pi Mu Epsilon, member, 2006 – present

Math Alliance, member, 2005 – present