Virgil U. Pierce

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Education

Ph.D, University of Arizona, Mathematics, *The asymptotic expansion of the partition function of random matrices*, Adviser: N. M. Ercolani, May 2004.

B.A., Boston University, Mathematics, *Tisserand's criterion and the distribution of comets*, Adviser: G. R. Hall, 1998.

Employment History

September 2016 – Present: Associate Dean, Student Success, College of Sciences, UT Rio Grande Valley, Edinburg and Brownsville, Texas.

April 2015 – August 2016: Interim Associate Dean, Undergraduate Education, College of Sciences, UT Rio Grande Valley, Edinburg and Brownsville, Texas.

September 2015 – Present: Associate Professor, Department of Mathematics, UT Rio Grande Valley, Edinburg and Brownsville, Texas.

September 2014 – August 2015: Interim Associate Dean, College of Science and Mathematics, UT – Pan American, Edinburg, Texas. UTPA ceased operations in August 2015 and its assets became part of the new University of Texas Rio Grande Valley.

September 2012 – August 2014: Assistant Chair, Department of Mathematics, UT – Pan American, Edinburg, Texas.

September 2012 – August 2015: Associate Professor, Department of Mathematics, UT – Pan American, Edinburg, Texas. UTPA ceased operations in August 2015 and its assets became part of the new University of Texas Rio Grande Valley.

September 2008 – August 2012: Assistant Professor, Department of Mathematics, UT – Pan American, Edinburg, Texas.

September 2005 – August 2008: VIGRE Ross Visiting Assistant Professor, Department of Mathematics, The Ohio State University, Columbus, Ohio.

January 2005 – August 2005: Assistant Professor, Department of Mathematics, Midwestern State University, Wichita Falls, Texas.

August 2004 – December 2004: Visiting Assistant Professor, Department of Mathematics, Brandeis University, Waltham, Massachusetts.

Teaching Experience

Community Engaged Scholarship and Learning - Research (CESL 3301), Fall 2017, UTRGV.

Supervising: NCBO Pre-College Algebra (Math 0290), Fall 2017, UTRGV.

Linear Algebra (Math 2318), Fall 2017, UTRGV.

Calculus 1 (Math 2413), Spring 2017, UTRGV.

Contemporary Mathematics (Math 1332), Fall 2016, UTRGV.

Calculus 2 (Math 2414) - Flipped Class with Long Friday Meeting, Spring 2016, UTRGV.

Applied Discrete Mathematics - Videoconference course Edinburg and Brownsville, Fall 2015, UTRGV.

Contemporary Mathematics (Math 1348), Spring 2015, UTPA.

Discrete Mathematics (Math 6388), Fall 2014, UTPA.

NSF-STEP Precalculus, Emporium based Summer Bridge to Calculus, (Math 1450), Summer 2, 2014, UTPA.

Mathematics Project (Math 4390), Spring 2014, UTPA.

CCA-FOCUS Mathematics (a program funded by THECB): Contemporary Mathematics (Math 1348) and Intermediate Algebra (Math 1334), team taught with M. McQuillen an instructor of Learning Framework (UNIV 1301), Fall 2013, UTPA.

Mathematical Problem Solving (Math 4181) a course that is part of the MSCTP grant request, Fall 2013, UTPA.

Precalculus (Math 1450), Summer 2, 2013, UTPA.

Mathematical Modeling (Math 6387), Spring 2012, UTPA.

College Algebra w/ Aleks (Math-1340), Fall 2012, UTPA.

Discrete Structures (Math-3337), Fall 2012, UTPA.

Faculty Participant in the CSUMS-2012 Undergraduate Summer Research Program at Rensselaer Polytechnic Institute in Troy, New York. 6 UTPA students also participated. Summer 2012, RPI/UTPA.

Undergraduate Mathematics Adviser, Spring 2012 – August 2012, UTPA.

Mathematics for Electrical and Computer Engineering (Math-2346), Spring 2012, UTPA.

History of Mathematics (Math-3303), Spring 2012, UTPA.

Mathematics for Electrical and Computer Engineering (Math-2346), Fall 2011, UTPA.

Elementary Statistics and Probability (Math/Stat-2330), Fall 2011, 2 sections, UTPA.

Faculty Participant in the CSUMS-2011 Undergraduate Summer Research Program at Rensselaer Polytechnic Institute in Troy, New York. 4 UTPA students also participated. Summer 2011, RPI/UTPA.

Mathematics for Electrical and Computer Engineering (Math-2346), Spring 2011, UTPA.

Contempary Mathematics (Math-1348), Spring 2011, 2 Sections, UTPA.

Precalculus (Math-1450), Fall 2010, 2 Sections, UTPA.

Precalculus (Math-1450), Spring 2010, UTPA.

Graduate Abstract Algebra II (Math-6332) (for the MS in Mathematics Teaching cohorts), Spring 2010, UTPA.

Graduate Abstract Algebra I (Math-6331) (for the MS in Mathematics Teaching cohorts), Fall 2009, UTPA.

Calculus 3 (Math-2401), Fall 2009, UTPA.

Differential Equations (Math-3349), Spring 2009, UTPA.

Business Calculus (Math-1342), Spring 2009, 2 sections at UTPA.

Business Algebra (Math-1341), Fall 2008, 2 sections at UTPA.

Partial Differential Equations, Fall 2007 at Ohio State.

Linear Algebra with Matlab for Engineers, Spring 2007 and Spring 2008 at Ohio State.

Complex Variables for Engineers, Spring 2007 at Ohio State.

Undergraduate Real Analysis I, Winter 2007 at Ohio State.

Applied Differential Equations, Fall 2007 at Ohio State.

Freshman Engineering Honors Calculus Sequence, Fall 2005 — Spring 2006 at Ohio State.

Vector Calculus, Fall 2004 at Brandeis, and Spring 2004 at Arizona.

Calculus II, Summer 2004 at Arizona.

Calculus I, Summer 2005 and Spring 2005 at Midwestern, Fall 2001 at Arizona.

Analysis Qualifying Exam Study Sessions, Summer 2003 and Summer 2002 at Arizona.

Graduate level Analysis problem sessions, Fall 2001–Spring 2002 at Arizona.

Geometry Qualifying Exam Study Sessions, Summer 2001 at Arizona.

Service courses: Elements of Calculus at Arizona, Pre Calculus at Midwestern, Introduction to Mathematical Concepts at Brandeis, College Algebra twice at Midwestern, and once at Arizona, and Trigonometry at Arizona.

Teaching Related Activities:

Organizer: Vaquero Round Up, Running the College of Sciences activities at new student orientation, August 23 and 25, 2017.

Organizer: NSF-STEP Bridge to Calculus - Accelerated Mathematics, Fall 2017.

Organizer: NSF-STEP Bridge to Calculus - Summer, Summer 2, 2017.

Delivered: House Bill 5 College Prep Mathematics, Teacher Training for Fall 2017 implementation. UTRGV - Edinburg, August 10-11, 2017.

Organizer: South Texas Regional Convening, co-hosted by UTRGV and the UT Austin Dana Center, UTRGV, Edinburg, TX, March 24, 2017.

Delivered: Texas Success Initiative Assessment Preparation Workshops, Teacher Training for PSJA ISD Implementation. PSJA ISD, January 11, 2017.

Organizer: Vaquero Round Up, Running the College of Sciences activities at new student orientation, August 26 and 27, 2016.

Organizer: NSF-STEP Bridge to Calculus - Summer, Summer 2, 2016.

Delivered/Consultant: Texas Success Initiative Assessment Preparation Workshops, Teacher Training for Fall 2016 implementation. Brownsville ISD, August 17, 2016.

Delivered: House Bill 5 College Prep Mathematics, Teacher Training for Fall 2016 implementation. Texas Education Service Center, Region One, August 10-11, 2016.

Attended: MAA Conference, Precalculus to Calculus: Insights and Recommendations, University of St Thomas, Saint Paul, MN, June 16-19, 2016.

Panelist: Rising to the Challenge - Changing the Results: Panel on Improving College Readiness, Summit on College Readiness, South Texas College, Edinburg, TX, April 4, 2016.

Recruitment: Various recruitment activities for UTRGV, Spring 2016. Edinburg, Brownsville, and Corpus Christi, Texas.

Attended: LEAP Texas, Liberal Arts Education for the 21st Century, February 2016.

Speaker: Honors Induction, Veterans Memorial High School, Mission, TX, December 14, 2016.

Speaker: Mu Alpha Theta Induction, Edinburg High School, Edinburg, TX, November 1, 2016.

Panelist: Distance Learning Faculty Training, UTRGV, October 22, 2015.

Organizer: NSF-STEP Bridge to Calculus - Summer, Summer 2, 2016.

Attended: Video Conference Training, for instructors planning to teach via video conference in Fall 2015. UTRGV, August 20, 2015.

Representing Mathematics and COS: Jumpstart mid semester meeting, August 10, 2015.

Delivered: House Bill 5 College Prep Mathematics, Teacher Training for Fall 2015 implementation. UTRGV. August 3- 4, 2015.

Delivered: Mathematics lead for House Bill 5 College Prep Course development in Summer 2015. July 20 - 25, 2015.

Delivered: Mathematical modeling presentation for Middle School students in advanced summer program. Sharyland, July 2, 2015.

Thesis: Vicente Valle defended his thesis *Mathematical Models for Citrus Greening, and control measures.* UTPA, June 10, 2015.

Thesis: Indalecio Soto defended his thesis *Map Enumeration.* UTPA, July 15, 2014.

Thesis: Juan Morales defended his thesis *The effect of interconnectivity in neural networks on signal transmission.* UTPA, May 6, 2014.

Delivered: follow up workshops for House Bill 5 - College Prep Course delivered to valley teachers multiple times during the Fall and Spring semesters.

Main Research Fields:

Collegiate mathematics education. Random Matrices, Applied Mathematics, Complex Analysis, Combinatorics, Integrable Systems, and Mathematical Physics.

Refereed Journal Publications

1. M. Bertola, R. Buckingham, S.-Y. Lee, and V. U. Pierce, Spectra of Random Hermitian Matrices with a Small-Rank External Source: The supercritical and subcritical regimes, **153**, *Journal of Statistical Physics* (2013) 654-697.
2. V. U. Pierce, Continuum limits of Toda lattices for map enumeration, *Algebraic and Geometric Aspects of Integrable Systems and Random Matrices, eds. Dzhamay, Maruno and Pierce*, **593**, *Contemporary Mathematics* (2013) 317–345.
3. M. Bertola, R. Buckingham, S.-Y. Lee, and V. U. Pierce, Spectra of Random Hermitian Matrices with a Small-Rank External Source: The critical and near-critical regimes, **146**, *Journal of Statistical Physics* (2012) 475-518.
4. N. M. Ercolani and V. U. Pierce, The continuum limit of Toda lattice for random matrices with odd weights, **10**, *Communications in Mathematical Science* (2012) 267-305.
5. Y. Kodama and V. U. Pierce, The Pfaff lattice on symplectic matrices, *Journal of Physics A.* **43** (2010)
6. Y. Kodama and V. U. Pierce, Combinatorics of dispersionless integrable systems and universality in random matrix theory, *Communications in Mathematical Physics* **292** (2009) 529-568.
7. W. Bryc and V. U. Pierce, Duality of real and quaternionic random matrices, *Electronic Journal of Probability* **14** (2009) 452-476.
8. T. Grava, V. U. Pierce, and F.-R. Tian, Initial value problem of the Whitham equations for the Camassa-Holm equation. *Physica D: Nonlinear Phenomena* **238** (2009) 55-66.
9. Y. Kodama, V. U. Pierce, and F.-R. Tian, On the Whitham equations for the defocusing complex modified KdV equation, *SIAM Journal of Mathematical Analysis* **41** (2008) 26-58.
10. V. U. Pierce, A Riemann-Hilbert problem for skew-orthogonal polynomials, Journal of Computational and Applied Mathematics **215** (2008) 230-241.
11. N. M. Ercolani, K. T.-R. McLaughlin, and V. U. Pierce, Random matrices, graphical enumeration and the continuum limit of the Toda lattices, *Communications in Mathematical Physics* **278** (2008) 31-81.
12. Y. Kodama and V. U. Pierce, Geometry of the Pfaff lattices, *International Mathematics Research Notices*, **23** (2007).
13. V. U. Pierce and F.-R. Tian, Self-similar solutions of the non-strictly hyperbolic Whitham equations for the KdV hierarchy, *Dynamics of Partial Differential Equations*, **4** (2007) 263-282.
14. V. U. Pierce and F.-R. Tian, Large time behavior of the zero dispersion limit of the fifth order KdV equation, *Dynamics of Partial Differential Equations*, **4**, (2007) 87-109.

15. V. U. Pierce and F.-R. Tian, Self-Similar solutions of the non-strictly hyperbolic Whitham equations, *Communications in Mathematical Science* **4** (2006) 799-822.
16. V. U. Pierce, Determining the potential of a Sturm-Liouville operator from its Dirichlet and Neumann spectra, *Pacific Journal of Mathematics*, **204** (2002) 497-509.

Refereed Conference Proceedings:

Pierce, V. U., Kypuros, J. A., and Mills, S. J. (2016), Small-Scale and Large-Scale Interventions to Improve Texas Students' College Readiness Paper, ASEE Annual Conference, New Orleans, LA.

Pierce, V. U. and Javier Kypuros (2015). A Summer Bridge to Calculus for Students in Rio South Texas. ASEE Annual Conference. Seattle, WA.

Pierce, V. U. and Javier Kypuros (2015). A Summer Bridge to Calculus in Rio South Texas using an Emporium Method. Frontiers in Education 2015. El Paso, TX.

Funding and Awards Received:

NSF Co-Pi with Y. Kodama (Ohio State), "Combinatorial and geometric aspects of integrable systems and their applications to physics". $ 200,000 ($ 24,000 of which is a subaward to UTPA) (2008-2010).

Department of Education GAANN Grant, Co-Pi with Z. Qiao, A. Balogh, J. Tsay, GAANN Felowships in Mathematics at the University of Texas – Pan American, $419,304 (2012 – 2015).

Co-Pi with K. Maruno, NSF CBMS Regional Conference in the Mathematical Sciences – "Solitons in Two-Dimensional Water Waves and Applications to Tsunami", $38,998 (2013).

NSF-STEP Co-Pi with J. Kypuros et. al., "An ecosystem for success in engineering and computer science in rio south Texas", $1,660,000 (2013–2018).

NSF-STEP Supplemental Award, Co-Pi with J. Kypuros et. al. "An ecosystem for success in engineering and computer science in Rio South Texas", grant was awarded in the amount of $330,283 (2015–2018). Collaborative proposal with STC and TSTC.

NSF Co-Pi with K. T.-R. McLaughlin (Arizona) and G. Lozano (Arizona), "Conference on integrable systems, random matrix theory and combinatorics", $49,110 (University of Arizona is the lead institution) (2013).

THECB PI, "CCA-FOCUS Mathematics", $36,000 (2013).

2014 UT System Board of Regents' Outstanding Teacher.

NSF Co-Pi with T. Huber et. al. "Pathways to Graduate School and Professional Careers in the Mathematical Sciences," $636,071 (2015–2020).

PSJA-ISD grant through Texas Education Agency, Summer 2015. Successfully funded, contract with UTRGV for two graduate courses and professional development through C-STEM.

La Joya - ISD grant through Texas Education Agency, Summer 2015. Successfully funded, contract with UTRGV for professional development through Mathematics and Physics is under negotiation.

Recognized as UTRGV 2015 Engaged Scholarship STEM Champions for *College Prep Mathematics Courses for Local High Schools.*

Brownsville ISD grant proposal through Educate Texas, Summer 2016. Successfully funded, implementing our workshop model in 2016-2017.

Presentations

1. College Preparatory Mathematics for South Texas High Schools. Teaching Workshop, School of Mathematical and Statistical Sciences, UTRGV, Edinburg, TX, April 22, 2017.
2. Dispersionless limits of DKP equations for continuum limits of lattice equations. Session on Mahler: Asymptotics and Applied Analysis, IMACS International Conference on Nonlinear Evolution Equations and Nonlinear Phenomena, March 29-April 1, 2017.
3. Enumeration of Mobius Graphs. AMS Southeastern Sectional Meeting, Charleston, SC, March 10-12, 2017.
4. WebWork for high school college preparatory mathematics courses in Texas, Special Session on Higher Education and Public School Mathematics Partnerships, AMS-MAA Joint Mathematics Meeting, Atlanta, GA, January 3 - 7, 2017.
5. Jumpstart: A Road to College Readiness, PSJA ISD College For All Conference, McAllen, TX, November 15, 2016.
6. College Preparation in Long and Short Course Formats, PSJA ISD College For All Conference, McAllen, TX, November 15, 2016.
7. College Prep Mathematics Courses for Local High School Partners, Colloquium, Department of Mathematics, University of Arizona, Tucson, AZ, October 13, 2016.
8. Dispersionless limits of the DKP equations for enumerating Möbius graphs, Special Session on Integrable Systems, AMS Western Section Meeting, Denver, CO, October 6 - 9, 2016.
9. Continuum limits of generalized Toda lattices, and map enumeration with vertices of odd degree, Frontiers in Nonlinear Physics, Russia, June 17, 2016.
10. with Javier Kypuros and Shirley Mills. Small-Scale and Large-Scale Interventions to Improve Texas Students' College Readiness Paper. ASEE Annual Conference. New Orleans, LA, June 26 - 29, 2016.
11. College Prep Mathematics Courses in Response to House Bill 5. MAA Texas Sectional Meeting, Nacgodoches, TX, April 1-2, 2016.
12. UTRGV Recruiting Event - College of Science representative, Corpus Christi, TX, March 30, 2016.
13. College Prep Mathematics Courses for Local High School Partners. Texas Southern University, Houston, TX, Frebruary 3, 2016.
14. College Prep Mathematics Courses for Local High School Partners. University of Houston Downtown, Houston, TX, February 3, 2016.
15. Enumeration of Ribbon and Mobius Graphs. Contributed Paper Session, Joint AMS-MAA-SIAM Annual Meeting, Seattle, WA, January 6-10, 2016.

16. College Prep Mathematics Courses for Local High School Partners. Colloquium, University of Northern Colorado, Greely, CO, November 12, 2015.
17. Building a Better Matrix Multiplication. Mathematics Club Presentation, University of Northern Colorado, Greely, CO, November 11, 2015.
18. with Luzelma Canales (Educate Texas) et al. Moving Beyond HB5 Mandates: Building Pathways to College Level Courses. PSJA College for All Conference, McAllen, TX, November 5, 2015.
19. with Javier Kypuros. A Summer Bridge to Calculus for Students with High School Calculus Experience, Frontiers in Education, El Paso, TX, October 21-25, 2015.
20. Region One - College Prep Mathematics and WebWork. UT San Antonio and Harlandale ISD, San Antonio, TX, October 15, 2015.
21. Enumeration of Ribbon and Möbius Graphs with Real, Complex, and Quaternionic Gaussian Random Variables. UTRGV Pure Mathematics Seminar, September 25, 2015.
22. Meet your college and Academic Success, Round Up - New Student Orientation, UTRGV, August 28 and 29, 2015.
23. with Javier Kypuros. A Summer Bridge to Calculus for Students in Rio South Texas. ASEE Annual Conference. Seattle, WA, June 14 - 17, 2015.
24. Random triangulations of genus-g surfaces, Applied Mathematics Seminar, Colorado State University, April 17, 2015.
25. Singularity resolution by higher order KdV equations in the dispersionless limit, Seminar, West Texas A&M University, Canyon, Texas, April 16, 2015.
26. Singularity resolution by higher order KdV equations in the dispersionless limit, Seminar, University of Northern Greely, Colorado, April 15, 2015.
27. Random triangulations of genus g surfaces, Colloqium, University of Colorado at Colorado Springs, April 14, 2015.
28. Counting triangulations of surfaces with the partition function of the unitary ensembles of random matrices, Seventh Discrete Geometry and Algebraic Combinatorics Conference, South Padre Island, Texas, April 8 - 11, 2015.
29. Random Triangulations and Nonlinear Differential Equations, Ninth Annual IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, April 1-4, 2015.
30. Emporium Style Mathematics at UTPA, University of Alabama, Tucscalosa, Alabama, March 12, 2015.
31. Conservation laws and symmetry for continuum limits of generalized Toda lattices, Seminar, Universidad Nacional Autonoma de Mexico, Mexico, D. F., November 27, 2014.
32. Nonlinear differential equations for generating functions of map enumeration, Colloquium, Universidad Autonoma Metropolitana Azcapotzalco, Mexico D.F., November 26, 2014.
33. Presentation at RGV Lead Regional Conference as Mathematics representative for HB5 College Prep Courses, South Padre Island, Texas, November 3-4, 2014.

34. Mathematics where you least expect it – Fostering an inquiring mind, Bronc Round-up, UTPA, Edinburg, Texas, August 21-22, 2014.
35. Forum participant, Developmental Mathematics in the Rio Grande Valley, Rio Grande Valley P-16 Council, Texas State Technical College, Harlingen, Texas, May 14, 2014.
36. Emporium Style and Flexible Time Mathematics Courses, South Texas College, Pecan Campus, McAllen, Texas, May 2, 2014.
37. New Mathways and Pre-Statistics Workshop, South Texas College, Pecan Campus, McAllen, Texas, April 11, 2014.
38. Emporium Style and Flexible Time Mathematics Courses, MAA Texas Section Meeting, Texas A&M International, Laredo, Texas, April 3-5, 2014.
39. Emporium Style and Flexible Time Mathematics Courses at UTPA, speaker and moderator, McGraw Hill, Houston, Texas, February 28, 2014.
40. Dispersionless limits of the KP hierarchy for map enumeration, AMS Special Session on Algebraic and Analytic Aspects of Integrable Systems and Painlevé Equations, AMS-MAA-SIAM Joint Mathematics Annual Meeting, Baltimore, January 15 – 18, 2014.
41. Generating Functions for Dispersionless Limits of Integrable Systems and Map Enumeration, Conference on Integrable Systems, Random Matrix Theory and Combinatorics, Tucson, AZ, October 23 – 26, 2013.
42. Integrable Systems for Map Enumeration, Front Range Algebraic Geometry Seminar, Colorado State University, Fort Collins, Colorado, September 26, 2013.
43. Enumeration of Polygon Dissections, Math Club Presentation, University of Northern Colorado, Greely Colorado, September 25, 2013.
44. Continuum Limits of the Toda Lattice for Map Enumeration, Applied Mathematics Seminar, Boulder Colorado, September 24, 2013.
45. Fractional Catalan Numbers, Colloquium, University of Texas at Brownsville, April 29, 2013.
46. The enumeration of three and five valent maps with random matrix partition functions, The Eighth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University fo Georgia, Athens, Georgia, March 25-28, 2013.
47. Skew-orthogonal polynomials and other large Riemann-Hilbert problems, Holiday Mathematics Workshop, UTPA, December 19, 2012.
48. The enumeration of odd valent maps with random matrix partition functions, AMS Sectional Meeting, Tucson, Arizona, October 27-28, 2012.
49. Continuum limits of Toda lattices for enumeration of three and five valent maps, Nonlinear Evolution Equations and Dynamical Systems, Kolymvari, Crete, Greece, July 8-15, 2012.
50. Singularity resolution by higher order KdV equations in the dispersionless limit, 2012 Spring Workshop on Integrable Systems and Solitons, UTPA, April 27, 2012.
51. An introduction to WebWork as an interactive program for use in the classroom, Conference on Innovative Classroom Practices in STEM Education, Department of Mathematics, UTPA, Saturday, April 21, 2012.

52. Introduction to the online assessment system WeBWork, with A. Balogh, The 20th Meeting of the South Texas Mathematics Consortium, Texas A&M – Corpus Christi, March 24, 2012.
53. An Informal discussion of M. Ratners measure rigidity theorem, Algebra and Geometry Seminar, UTPA, March 23, 2012.
54. Self-similar solutions of dispersionless limits of the higher order KdV equation, 35th Annual Texas Partial Differential Equations Conference, Texas A&M University, College Stations, Texas, March 3-4, 2012.
55. Gaussian Random Matrix Ensembles and their Partition Functions, Mathematics Research Seminar, UT Brownsville, February 3, 2012.
56. Random matrix methods for the enumeration of 3-valent maps, Special Session on Algebraic and Geometric Aspects of Integrable Systems and Random Matrices, Joint AMS-MAA Mathematics Meeting, Boston, Massachusetts, January 3-7, 2012.
57. An Introduction to Gaussian Random Matrix Ensembles and their Partition Functions, Probability and Statistics Seminar, UTPA, November 18, 2011.
58. Integrability of Plane Partitions, Integrable Systems Seminar, UTPA, October 18, 2011.
59. Enumeration of 3-valent maps, Algebra and Geometry Seminar, UTPA, October 7, 2011.
60. Sampling Random Plane Partitions, Applied Mathematics Seminar, UTPA, October 5, 2011.
61. Fractional Catalan Numbers, Algebra and Geometry Seminar, UTPA, September 30, 2011.
62. Continuum limits of the Toda hierarchy and map enumerations, The Seventh IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, Athens, Georgia, April 4-7, 2011.
63. Differential equations for the enumeration of polygonal dissections, 34th Annual Texas Differential Equations Conference, UTPA, March 26-27, 2011.
64. Universality of random matrices and integrable lattice hierarchies, Mathematical Science Colloquium, Renselear Polytechnic Institute, Troy, New York, February 7, 2011.
65. Continuum Limits of the Toda Lattice Hierarchy, Holiday Workshop on Applied Mathematics, UTPA, December 19, 2010.
66. Random Matrices and Geometry of Compact Lie Groups, Algebra and Geometry Seminar, UTPA, October 22, 2010.
67. Integral Representations of the r-Airy kernel: Proof via Bilinear Concomitant, Vladimir Varlamov Lecture Series, Applied Mathematics Seminar, UTPA, September 22, 2010.
68. Dispersionless limits of integrable systems and universality in random matrix theory, in minisymposium "Recent Advances in Nonlinear Integrable Systems" at SIAM Conference on Nonlinear Waves, Philadelphia, Pennsylvania, August 16-19, 2010.
69. Applications of integrable lattice hierarchies to random matrices, invited seminar talk at Shanghai University, Shanghai, China, July 5, 2010.
70. Dispersionless limits of the Toda hierarchy and graphical enumeration, in minisymposium "Solitons and Integrable Systems" at The 4th Shanghai International Symposium on Nonlinear Sciences and Applications, Xuzhou, China, June 29-July 4, 2010.

71. The Whitham equations for dispersionless higher order integrable systems, in minisymposium "Supersonic Dispersive Fluid Flows", The Second International Conference: Nonlinear Waves–Theory and Applications, Beijing, China, June 26-29, 2010.
72. Graphical Enumeration and Quaternionic Normal Random Variables, Algebra and Geometry Seminar, UTPA, May 7, 2010.
73. Asymptotics of Orthogonal Polynomials with External Sources, Colloquium, University of Texas Brownsville, Brownsville, Texas, April 30, 2010.
74. Mobius graphs and quaternionic normal random variables, Third Texas Southmost Geometry and Topology Conference, South Padre Island, Texas, April 15-18, 2010.
75. Asymptotic analysis of a large Riemann-Hilbert Problem I and II, Integrable Systems Seminar, UTPA, April 1 and 16, 2010.
76. Explicit Graphical Enumeration from Continuum Limits of Integrable Systems, Seminario de Investigacin de Matemticas Aplicadas, at El Centro de Investigación en Matemáticas (CIMA), Guanajuato, León, Mexico, April 12, 2010.
77. Some Uses of Graphical Enumeration for Gaussian Random Matrices, Seminario Interinstitucional en Matrices Aleatorias (SIMA), at El Centro de Investigación en Matemáticas (CIMA), Guanajuato, León, Mexico, April 6-9, 2010.
78. Asymptotics of Orthogonal Polynomials with External Sources, Applied Math. Seminar, Ohio State University, Columbus, Ohio, January 13, 2010.
79. The Pfaff Lattice Equations and the Symplectic Eigenvalue Problem, Probability Seminar, University of Cincinnati, Cincinnati, Ohio, January 11, 2010.
80. Map Enumeration, Algebra, Geometry, and Mathematical Physics Seminar, UTPA, October 23, 2009.
81. The Whitham equations for dispersionless higher order integrable systems, Applied Mathematics Seminar, UTPA, September 23, 2009.
82. Geometry of Integrable Lattice Hierarchies I and II, Integrable Systems Seminar, UTPA, September 21 and 28, 2009.
83. Enumeration of Polygon Dissections, University of Portland, Portland, Oregon, September 9, 2009.
84. Enumeration of Polygon Dissections, Willamette University, Salem, Oregon, September 8, 2009.
85. Dispersionless limits of integrable lattice equations and universality in random matrix ensembles, Seminar: Mathematical Physics, Centre de recherches mathematiques, Montreal, Canada, June 10, 2009.
86. Integrable system methods for enumerating polygon dissections of surfaces, Discrete Geometry Workshop, South Padre Island, Texas, April 16-19, 2009.
87. Orthogonal polynomials with external sources, Analysis Seminar, University of Arizona, Tucson Arizona, April 7, 2009.
88. Universality of the dispersionless Toda lattice hierarchy, IMACS, Athens, Georgia, March 23-26, 2009.

89. Orthogonal polynomials with external sources, Applied Mathematics Seminar, UTPA, February 18, 2009.
90. Duality of real and quaternionic random matrices, First Southwest Algebra Colloquium, Edinburg, Texas, January 24, 2009.
91. Continuum and dispersionless limits of the Toda and Pfaff hierarchies. Applied Math. Seminar, UTPA, Edinburg, Texas November 2008.
92. Universality of the Toda lattice for integrable hierarchies, AMS Southeastern Sectional Meeting, Huntsville, Alabama, October 24-26, 2008.
93. The dispersionless Toda and Pfaff hierarchies: reduction and universality; Random matrices, inverse spectral methods and asymptotics at BIRS, Banff, Alberata, October 5-10, 2008.
94. Orthogonal and skew-orthogonal polynomials on the real line, Parts I and II, Integrable Systems Seminar, UTPA, Edinburg, Texas, September 2008.
95. The Pfaff lattice and the symplectic eigenvalue problem, JMM of the AMS and MAA, San Diego, January 2008.
96. Recent results for the Toda and Pfaff lattice hierarchies, University of Cincinnati, November 2007.
97. Polygon dissections of surfaces and random matrices, University of Vermont, September 2007.
98. Riemann-Hilbert problems for skew-orthogonal polynomials. Interactions of Random Matrix Theory, Integrable Systems, and Stochastic Processes, Snowbird, UT, June 2007.
99. Integrable lattices associated to random matrix ensembles. IIAMS-UNAM, Mexico City, MX. May 2007.
100. Large time behavior and self-similar solutions of the zero dispersion limit of the higher order KdV equations. VII Joint meeting of the AMS and SMM in Zacatecas, MX. May 2007.
101. Geometry of the GSE and GOE Pfaff lattice hierarchies. 2007 Spring Central Section Meeting of the AMS at Miami University, Oxford, OH. March 2007.
102. Geometry of integrable lattice hierarchies. Differential equations seminar, University of Michigan, February 2007.
103. Random matrices and graphical enumeration. Mathematics Colloquium, College of Charleston, October 2006.
104. Asymptotic expansions of matrix integrals and continuum limits of the Toda hierarchy. Special Session on Semi-classical and Continuum Limits, Annual meeting of the SIAM Working Group on Coherent Structures and Non-linear waves. Seattle, WA, September 2006.
105. A continuum limit of the Toda lattice hierarchy for map enumeration. University of Michigan, January 2006.
106. A continuum limit of the Toda lattice hierarchy for map enumeration. University of Notre Dame, November 2005.
107. A partition function of random matrices for map enumeration II. Special Session on Integrable Systems, Special Functions, and Orthogonal Polynomials, Joint Mathematics Meetings, Atlanta, GA, January 2005.

108. Random matrices and map enumeration. Math/Physics/Computer Science Everyperson Seminar, Brandeis University, October 2004.
109. A Toda Lattice continuum limit for computing the asymptotic expansion of the partition function of random matrices. Dynamical Systems Seminar, Boston University, October 2004.
110. Matrix integrals and orthogonal polynomials. Mathematical Physics Seminar, University of Arizona, April 2002.
111. Determining the Potential of a Sturm-Liouville Operator from its Dirichlet and Neumann Spectra, Fourth Annual New Mexico Analysis Seminar, University of New Mexico, February 2001

Professional Memberships and Service

Attended: Southern Association of Colleges and Schools - Commission on Colleges Institute on Quality Enhancement and Accreditation, Austin, TX, July 16-19, 2017.

coorganizer: Painlevé Equations, Integrable Systems, and Random Matrices, IMACS International Conference on Nonlinear Evolution Equations and Nonlinear Phenomena, March 29-April 1, 2017.

coorganizer: AMS Special Session on Public School Districts and Higher Education Mathematics Partnerships, AMS-MAA Joint Mathematics Meeting, January 4 - 7, 2017.

Program Chair and Division Chair-Elect, ASEE Mathematics Division, 2016-2017. Program Chair for National Conference, Columbus, OH, June 25–28, 2017.

co-organizer, Rio Grande Valley Oil and Gas Exploration Conference, Edinburg, Texas, March 24-25, 2016.

Served on Working Group for House Bill 5, College Prep Mathematics course, led by RGV-Focus, Spring 2014 – Present.

Co-chair: University General Education Committee, Fall 2015 - Spring 2016.

Mathematics representative, HB5 CPC Advisory Council Meeting, Region One, August 31, 2015.

Attended Rio Grande Valley P16 Council Meeting, answered some questions from THECB representatives about the HB5 College Prep Mathematics course for the valley, May 13, 2015.

Put together a College Prep Academy program with Continuing Education for the Department of Mathematics and Department of English to deliver at the four high schools in the Edinburg CISD. Spring 2015.

Served on the Advisory Board for Project Sin Fronteras, AY2014-2015.

Attended AASHE Conference, Portland, Oregon, October 25 - 29, 2014.

Served on Working Group for New Mathways Project, Calculus Prep Mathematics sequence, Dana Center, University of Texas, Austin, Texas, Spring 2014.

Served on Texas Success Initiative, Negotiated Rule Making Committee, drafting rule changes for rule 4. Spring 2014.

Attended Rio Grande Valley P16 Council Meeting, September 30, 2015.

Wave Tank presentation, McAllen Minimaker Faire, June 22, 2013.

The Eighth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, Scientific Program Committee and Special Session Organizer, March 25-28, 2013.

Holiday Mathematics Workshop, UTPA, Organizer, December 19, 2013.

Assistant Chair of Mathematics, UTPA, August 2012– September 2014.

Mathematical Careers Presentation at Mount Abraham Union High School, Bristol, Vermont, June 1, 2012.

UTPA Department of Mathematics booth for *Ninth Annual Education and Career Expo in Harlingen*, co-organizer, designer and builder of exhibit "Mathematical Modeling of Water Waves", October 13, 2011.

Special session, *Integrable Systems and Random Matrices* at the 2012 Joint AMS-MAA Mathematics Meeting in Boston, co-organizer, January 2012.

Special session, *Weak Dispersion Limits of Integrable Systems and Random Matrix Models*, The Seventh IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, Athens, Georgia, co-organizer, April 4-7, 2011.

34th Texas Differential Equations Conference, held at UTPA, Organizing Committee, March 26 and 27, 2011.

Holiday Workshop on Applied Mathematics, UTPA, Organizer, December 19, 2010.

University Committee Assignment: Academic Advisement Council (2010-2013), will serve as Chair Elect in AY 2011-2012, and Chair in AY 2012-2013.

Department Committee Assignments: Library Committee (2009-2011), Pre-calculus Committee (2009-2010), Colloquium Committee (2009-2011), Chair Search Committee (Spring 2011), Annual Evaluation Committee (2011).

Department Representative to COSE – COSM College Council, 2009 – 2011.

Member of College Split Taskforce, Fall 2010.

Internal Reviewer for NIH MBRS Research Initiative for Scientific Enhancement (RISE), July 14, 2010.

Internal Reveiwer for DOD HBCU/MSI Limited Submission grant, June 18, 2010.

"Symmetry Plus Integrability – 2010" Conference, South Padre Island, Texas, June 10-14, 2010. Funded by NSF-DMS-1000037, $ 26,800, co-organizer and PI.

Volunteer for Texas Math and Science Coaches Association (TMSCA) Math/UIL Tournament at Edinburg North High School, February 27, 2010.

Volunteer for TMSCA Math/UIL Tournament at Sharyland, I.S.D. October 29, 2009.

Volunteer for TMSCA Math/UIL Tournament at Sharyland, I.S.D. February 6, 2010.

Volunteer for TMSCA Math/UIL Tournament at Sharyland, I.S.D. October 24, 2009.

Member AMS(2003-Present)

SIAM (2003-2004), founding member SIAM student chapter at University of Arizona.
Founding organizer of the Graduate Student Geometry Seminar, Spring 2002-Spring 2003.
Organizer of the Mathematics Graduate Colloquium, Fall 1999–Spring 2001.