

Luis David García–Puente

Department of Mathematics and Statistics
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Education

- Virginia Polytechnic Institute and State University** Blacksburg, VA
Ph.D. Mathematics 2004
– Advisor: Reinhard Laubenbacher
– Dissertation: Algebraic Geometry of Bayesian Networks
- Universidad Nacional Autónoma de México (UNAM)** Mexico City, México
B.S. Mathematics 1999
– Graduated with Honors
– Minor in Computer Science

Academic Experience

- Sam Houston State University** Huntsville, TX
Assistant Professor of Mathematics 2007 –
- Texas A&M University** College Station, TX
Visiting Assistant Professor 2005 – 2007
- Mathematical Sciences Research Institute (MSRI)** Berkeley, CA
Postdoctoral Fellow Fall 2004
- University of California, Berkeley** Berkeley, CA
Postdoctoral Research Fellow Summer 2004
- Virginia Bioinformatics Institute (Virginia Tech)** Blacksburg, VA
Graduate Research Assistant 2003 – 2004
- Physical Science Laboratory (New Mexico State University)** Las Cruces, NM
Graduate Research Fellow Summer 2000

Research Interests

Algebraic Statistics, Computational Algebraic Geometry, Combinatorial Commutative Algebra

Awards and Fellowships

- Statistical and Applied Mathematical Sciences Institute** Research Triangle Park, NC
SAMSI New Researcher fellowship Spring 2009
- University of Genova** Genova, Italy
Research Fellow Fall 2002

- Nationwide honor awarded for the best undergraduate mathematics thesis of the year by the Mexican Mathematical Society.

Grants

NSF Conferences and Workshops in the Mathematical Sciences \$9,110.00
DMS-1101781 *Accepted 2010*

- PI in the Proposal “CombinaTexas 2011: A two-day conference focusing on algebraic combinatorics”.

NSA Mathematical Sciences Program – Conferences and Special Situations \$10,000.00
Grant #22050 *Accepted 2011*

- co-PI in the proposal “CombinaTexas 2011: A two-day conference focusing on algebraic combinatorics”.

2007 Norman Hackerman Advanced Research Program (ARP) \$144,000.00
grant no. 010366-0054-2007 *2008 – 2010*

- Collaborative project with Frank Sottile entitled “Applications of Algebraic Geometry to Algebraic Statistics and Geometric Modeling”.

Internal Texas A&M University Grant 2006

- Awarded in support of the proposal “Mathematical Foundations for Probabilistic Boolean Networks” submitted to the Career Awards at the Scientific Interface program of the Burroughs Wellcome Fund.

Publications

1. Sandpile groups of generalized book graphs (with K. Emig, J. Herring, E. Meza, and C. Nieuwoudt), in preparation.
2. GraphicalModels: A Macaulay2 package for discrete and Gaussian statistical graphical models (with S. Petrović, M. Stillman and S. Sullivant), in preparation.
3. Gröbner bases and partial sums of catalan numbers (with C. Hillar and K. Talaska), in preparation.
4. Inference of Structure and Dynamics of Molecular Networks (with M. P. Vera-Licona, A. S. Jarrah, J. McGee, and R. Laubenbacher), submitted.
5. Algebraic and combinatorial aspects of sandpile monoids on directed graphs (with S. Chapman, R. Garcia, M. Malandro, K. Smith), submitted.
6. The secant conjecture in the real Schubert calculus (with N. Hein, C. Hillar, A. Martin Del Campo, J. Ruffo, F. Sottile, and Z. Teitler), accepted in *Experimental Mathematics*.
7. Toric degenerations of Bézier patches (with F. Sottile and C. Zhu), *ACM Transactions on Graphics*, Vol. 30, No. 5, Article 110, October 2011.

8. Parameter estimation for Boolean models of biological networks (with E. Dimitrova, F. Hinkelmann, A. S. Jarrah, R. Laubenbacher, B. Stigler, M. Stillman and P. Vera-Licona), *Special Issue on Foundations of Formal Reconstruction of Biochemical Networks. Theoretical Computer Science*, **412/26**, pp. 2816–2826. (2011).
9. Identifying causal effects with computer algebra (with S. Spielvogel and S. Sullivant), P. Grünwald and P. Spirtes (Editors). *Proceedings of the 26th Conference of Uncertainty in Artificial Intelligence (UAI 2010)*. AUA Press (2010).
10. Experimentation at the Frontiers of reality in Schubert calculus (with C. Hillar, A. Martin Del Campo, J. Ruffo, Z. Teitler, S. Johnson and F. Sottile), *Gems in Experimental Mathematics, AMS Contemporary Mathematics*, **517**, 2010, 365–380.
11. Some geometrical aspects of control points for toric patches (with G. Craciun and F. Sottile), *Mathematical Methods for Curves and Surfaces 2008 (M. Dæhlen et al. Eds). Lecture Notes in Computer Science* **5862**, pp. 111–135. Springer, Heidelberg (2010).
12. Linear precision for parametric patches (with F. Sottile), *Advances in Computational Mathematics*, **33/2** (2010) pp. 191–214.
13. Computing the additive structure of indecomposable modules over Dedekind-like rings using Gröbner bases (with M. A. Aviño-Díaz), in *Journal of Algebra and Its Applications*, **6/2** (2007) pp. 291–304.
14. Sequential dynamical systems over words (with A.S. Jarrah and R. Laubenbacher), in *Applied Mathematics and Computation*, **174/1** (2006) pp. 500–510.
15. Catalog of small trees (with M. Casanellas and S. Sullivant), book chapter in *Algebraic Statistics for Computational Biology*, (L. Pachter and B. Sturmfels Eds.) Cambridge University Press, (2005) pp. 291–304.
16. Algebraic geometry of Bayesian networks (with M. Stillman and B. Sturmfels), in *Journal of Symbolic Computation*, **39/3–4** (2005) pp. 331–355. Special issue on the occasion of Mega 2003.
17. Algebraic Statistics in model selection, in M. Chickering and J. Halpern, editors, *Proceedings of the 20th Conference of Uncertainty in Artificial Intelligence*, (2004) 177–184.
18. Bases de Gröbner asociadas a módulos finitos, in *Miscelánea Matemática (MMS)* **30** (2000), pp. 65–70.

Courses Taught

Sam Houston State University

- | | |
|-----------|---|
| Spr. 2012 | MATH 1430 Calculus II (Section 01) |
| | MATH 5360 Special Topics: Algebraic Geometry (Section 01) |
| Fall 2011 | MTH 163 Trigonometry (Section 02) |
| | MTH 163 Trigonometry (Section 05) |
| | MTH 477 Abstract Algebra (Section 01) |
| Spr. 2011 | MTH 142 Calculus I (Section 2) |
| | MTH 143 Calculus II (Section 2) |

- MTH 163 Plane Trigonometry (Section 6)
- Fall 2010 MTH 142 Calculus I (Section 02)
MTH 199 Mathematics for Managerial Decision Making (Sections 03)
MTH 597 Discrete Mathematics (Section 01)
- Sum. 2010 MTH 163 Plane Trigonometry (Section 03)
MTH 164 College Mathematics (Section 04)
- Spr. 2010 MTH 142 Calculus I (Section 02)
MTH 199 Mathematics for Managerial Decision Making (Section 10)
MTH 636 Abstract Algebra II (Section 01)
- Fall 2009 MTH 142 Calculus I (Section 03)
MTH 677 Abstract Algebra I (Section 01)
- Sum. 2009 MTH 164 College Mathematics (Section 04)
MTH 199 Mathematics for Managerial Decision Making (Section 04)
- Fall 2008 MTH 142 Calculus I (Section 02)
MTH 163 Plane Trigonometry (Section 14)
MTH 470W/560 Special Topics “Algebraic Geometry” (Section 01)
- Sum. 2008 MTH 032 Developmental Mathematics II (Section 02)
MTH 163 Plane Trigonometry (Section 01)
- Spr. 2008 MTH 164 College Mathematics (Sections 07 and 10)
MTH 142 Calculus I (Section 05)
- Fall 2007 MTH 164 College Mathematics (Sections 11 and 12)
MTH 376 Differential Equations (Section 01)

University of Hawaii–Hilo

- Sum. 2011 EMSW21-MCTP Pacific Undergraduate Research Experience in Mathematics (PURE Math) course on sandpile models

Texas A&M University

- Sum. 2007 IMA PI Summer Program for Graduate Students on Applicable Algebraic Geometry (Assistant Instructor)
- Spr. 2007 Math 689 Applicable Algebraic Geometry (Section 604 – with Frank Sottile)
- Fall 2006 Math 251 Calculus III (Sections 502 and 506)
- Sum. 2006 Math 662 REU/VIGRE course on Algebraic Methods in Computational Biology (Section 100 – with Maurice Rojas)
- Spr. 2006 Math 308 Differential Equations (Section 512)
- Fall 2005 Math 142 Business Calculus II (Sections 501 and 508)
- Sum. 2005 Math 662 REU/VIGRE course on Algebraic Methods in Computational Biology (Section 100 – with Maurice Rojas and Lenny Fukshansky)
- Spr. 2005 Math 152 Calculus II (Sections 519, 520, 521, 522, 523, and 524)

Virginia Polytechnic Institute and State University

- Fall. 2003 Math 1205 Calculus I (1 section)
- Spr. 2002 Math 1205 Calculus I (1 section)

University of Puerto Rico–Humacao

Sum. 2001 NSF/REU Summer Institute in Mathematics for Undergraduates (Teaching Assistant for Reinhard Laubenbacher)

New Mexico State University

1999–2000 MATH 120 Intermediate Algebra (2 sections)
MATH 190G Trigonometry and Pre–Calculus (2 sections)

Student Advising

Undergraduate Students

2011–2012 Jesse Hering, Everett Meza, and Christina Nieuwoudt (SHSU). Research supported through the NSF/MCTP Long Undergraduate Research Experience (LURE) program.

2008–2010 Alexander Diaz (SHSU). Research supported through the 2007 Norman Hackerman Advanced Research Program grant no. 010366-0054-2007.

2008–2010 Sarah Spielvogel (SHSU). Research supported through the 2007 Norman Hackerman Advanced Research Program grant no. 010366-0054-2007.

2008–2009 Andrew Howard (SHSU). Research supported through the 2007 Norman Hackerman Advanced Research Program grant no. 010366-0054-2007.

Fall 2009 Maelani Negrito (SHSU). Supervised an Honors Calculus I course.

Sum. 2006 Hannah Saugier (Texas A&M). Research conducted (with Maurice Rojas) during the REU Summer Program at Texas A&M University.

Sum. 2006 Stacey Stokes (Texas A&M). Research conducted (with Maurice Rojas) during the REU Summer Program at Texas A&M University.

Sum. 2005 Elizabeth Dong (Texas A&M). Research conducted (with Maurice Rojas) during the REU Summer Program at Texas A&M University.

Sum. 2005 Guangming Lang (Texas A&M). Research conducted (with Maurice Rojas) during the REU Summer Program at Texas A&M University.

Sum. 2005 Jacob Porter (Texas A&M). Research conducted (with Maurice Rojas) during the REU Summer Program at Texas A&M University.

Graduate Students

2011–2012 Sarah Spielvogel (SHSU). MS in Mathematics Thesis Project entitled “Noether’s PhD thesis and computational invariant theory”. (jointly with R. Garcia)

2011–2012 Luis David Molina (SHSU). MS in Mathematics Thesis Project entitled “Clique sums of sandpile groups”.

2011–2012 Robert Williams (SHSU). MS in Mathematics Thesis Project entitled “Planar graphs of trivariate monomial ideals”.

2011 Chandana Abeysinghe (SHSU). MS in Mathematics Research Project in “Algebraic geometry applications in engineering”.

2010–2011 Alacia Voth (SHSU). Research partially supported through the 2007 Norman Hackerman Advanced Research Program grant no. 010366-0054-2007.

- 2009–2010 Jessica Ellis (SHSU). Research supported through the 2007 Norman Hackerman Advanced Research Program grant no. 010366-0054-2007.
- 2009–2010 Anton Petrov (SHSU). MS in Mathematics Research Project in “Graphical methods for identifiability in structural equation models”.
- 2009–2011 Javier Muñoz Bernabé. Member of Ph.D. Dissertation Committee. Department of Mathematics, Cinvestav, Mexico City, México.

Departmental and University Committee Service

SHSU Calculus Textbook Committee	Spring 2012
SHSU Hiring Committee	2011–2012
SHSU Graduate Program in Mathematics Committee	2010–
SHSU Hiring Committee	2009–2010
SHSU Department of Mathematics and Statistics Library Liaison	2008–
SHSU MTH 163 – Trigonometry Textbook Committee	Spring 2008
SHSU MS in Mathematics Revision Committee	2007–2009
SHSU Engineering–Technology Committee (College of Arts and Sciences)	2007–2008

Editorial, Referee and Review Activities

Editorial Activities

- Associate Editor of the American Mathematical Monthly (2012 – 2016)

Reviewer Activities

- Mathematical Reviews (since 2007)
- Zentralblatt MATH (since 2007)

Journals refereed

- Advances in Applied Mathematics
- Applied Mathematics and Computation
- Bulletin of Mathematical Biology
- Communications in Statistics – Theory and Methods
- IEEE/ACM Transactions on Computational Biology and Bioinformatics
- Journal of Algebra
- Journal of Commutative Algebra
- Journal of Symbolic Computation
- SIAM Journal of Discrete Mathematics

Conferences refereed

- Special issue on Nonlinear Computational Geometry of the IMA Volumes in Mathematics and its Applications, Springer–Verlag
- Algebraic Biology 2007 Conference Proceedings

- 2009 Effective Methods in Algebraic Geometry (MEGA) Conference

Granting agencies refereed

- Division Physical Sciences of Netherlands Organisation for Scientific Research
- National Security Agency (NSA) Mathematical Sciences Grant Program
- National Science Foundation (NSF) International Research Fellowship Program

Conference, Meeting and Seminar Organization

- 2012 with Daniela Ferrero, Martin Malandro, Alison Marr, Lucas Rusnak, and Catherine Yan organized the CombinaTexas 2012 Conference, Southwestern University, Georgetown, TX
- 2011 with Daniela Ferrero, Martin Malandro and Ken Smith organized the CombinaTexas 2011 Conference, Sam Houston State University, Huntsville, TX
- with Ken Smith organized the “Working Algebra Seminar”, Sam Houston State University, Huntsville, TX
- with Tatyana Sorokina organized a minisymposium on “Interactions Among Algebraic Geometry, Geometric Modeling, and Approximation Theory” at the SIAM Conference on Applied Algebraic Geometry, North Carolina State University, Raleigh, NC
- with Rebecca Garcia organized a Scientific Symposia Session on “Mathematical Models: Current Research Of Present-Day Role Models Of The Underrepresented” at the SACNAS 2011 National Conference, San Jose Convention Center, San Jose, CA
- 2010 with Frank Sottile organized an AMS–SIAM special session on “Applications of Algebraic Geometry”, 2010 Joint Mathematics Meetings, San Francisco, CA
- with Scott Chapman, Rebecca Garcia, Martin Malandro and Ken Smith organized the “Algebra and Combinatorics Seminar”, Sam Houston State University, Huntsville, TX
- 2009 with Frank Sottile organized an AMS special session on “Applicable Algebraic Geometry”, 2009 Fall Central Section Meeting of the AMS, Baylor University, Waco, TX
- with Tatyana Sorokina organized the “Second International Workshop on Algebraic Geometry and Approximation Theory”, Towson University, Towson, MD
- with Scott Chapman, Rebecca Garcia, Martin Malandro and Ken Smith organized the “Algebra and Combinatorics Seminar”, Sam Houston State University, Huntsville, TX
- 2008 with Tatyana Sorokina organized the “First International Workshop on Algebraic Geometry and Approximation Theory”, Towson University, Towson, MD
- with Scott Chapman, Rebecca Garcia, Martin Malandro and Ken Smith organized the “Algebra and Combinatorics Seminar”, Sam Houston State University, Huntsville, TX
- 2007 with Frank Sottile organized the “Algebra and Combinatorics Seminar”, Texas A&M University, College Station, TX
- 2006 with Frank Sottile organized the “Algebra and Combinatorics Seminar”, Texas A&M, College Station, TX

- 2003 with Reinhard Laubenbacher organized the “Algebraic Statistics Seminar”, Virginia Tech., Blacksburg, VA
- 2002 with Lorenzo Robbiano organized the “Algebraic Geometry of Graphical Models Seminar”, University of Genova, Italy
- Founder of the “SIAM Graduate Student Seminar”, Virginia Tech., Blacksburg, VA
- 2001 with Reinhard Laubenbacher organized the “Gröbner Bases and Convex Polytopes Seminar”, New Mexico State University, Las Cruces, NM

Conference Talks

- MAA Invited Paper Session on Algebraic Statistics**
2012 Joint Mathematics Meetings Boston, MA
What is an Algebraic Statistical Model? January 2012
- Minisymposium on Graphical Statistical Models** North Carolina State University
First SIAM Conference on Applied Algebraic Geometry Raleigh, NC
Parameter identification of structural equation models October 2011
- Kickoff Workshop on Algebraic Geometry in the Sciences** CMA, University of Oslo
 Oslo, Norway
Toric degenerations of Bzier patches January 2011
- 9th International Workshop ACCOTA** Playa del Carmen, Quintana Roo, México
Ideals of graph homomorphisms November 2010
- 2nd Southeast Texas Workshop on Discrete Math** Sam Houston State University
 Huntsville, TX
What is algebraic statistics? October 2010
- Parameter Identification in Graphical Models Workshop** American Inst. of Mathematics
 Palo Alto, CA
Identifying causal effects with computer algebra October 2010
- Macauley2 Workshop at Colorado College** Colorado Springs, CO
Algebraic statistics library for Macauley2 August 2010
- Special Session on Advances in Algebraic Statistics** University of Kentucky
AMS 2010 Spring Southeastern Sectional Meeting Lexington, KY
Identifiability of graphical models March 2010
- International Conference on Applications of Computer Algebra** Montréal, QC Canada
Experimentation at the frontiers of reality in Schubert calculus June 2009
- Transition Workshop** SAMSI
- Algebraic Methods in Systems Biology and Statistics** Research Triangle Park, NC
Applications of toric varieties in the sciences June 2009
- 2nd International Workshop on Alg. Geometry and Approx. Theory** Towson University
 Towson, MD
Geometric properties of toric patches April 2009
- Special Session on Mathematics of Biochemical Reaction Networks** NCSU
2009 Spring AMS Southeastern Section Meeting Raleigh, NC
Injectivity of toric patches April 2009

SAMSI Two-Day Undergraduate Workshop	SAMSI
2008-09 SAMSI Education and Outreach Program	Research Triangle Park, NC
<i>Introductory lecture on algebraic statistical models</i>	<i>February 2009</i>
Special Session on Computational Algebra and Convexity	
2009 Joint Mathematics Meetings	Washington, D.C.
<i>Geometrical aspects of control points for toric patches</i>	<i>January 2009</i>
Workshop on Algebraic Statistical Models	SAMSI
Algebraic Methods in Systems Biology and Statistics	Research Triangle Park, NC
<i>Algebraic methods for phylogenetic inference (poster)</i>	<i>January 2009</i>
8th International Workshop ACCOTA	Oaxaca City, Oaxaca, México
<i>Sandpile models</i>	<i>December 2008</i>
8th International Workshop ACCOTA	Oaxaca City, Oaxaca, México
<i>Algebra, geometry and combinatorics of sandpiles (poster)</i>	<i>December 2008</i>
Fourth Annual Texas Undergraduate Mathematics Conference	SHSU
	Huntsville, TX
<i>How to draw complex functions</i>	<i>September 2008</i>
Workshop on Geometry and Representation Theory of Tensors	MSRI
	Berkeley, CA
<i>Phylogenetic algebraic geometry</i>	<i>July 2009</i>
1st International Workshop on Alg. Geometry and Approx. Theory	Towson University
	Towson, MD
<i>Linear precision for toric patches</i>	<i>April 2008</i>
1st International Workshop on Alg. Geometry and Approx. Theory	Towson University
	Towson, MD
<i>What is computational algebraic geometry?</i>	<i>April 2008</i>
Special session on Toric Varieties	University of Central Florida
32nd SIAM Southeastern-Atlantic Section Conference	Orlando, FL
<i>Linear precision for toric patches</i>	<i>March 2008</i>
Second Workshop on Constructive Function Theory	Sam Houston State University
	Huntsville, TX
<i>Linear precision for toric patches</i>	<i>October 2007</i>
IMA PI Summer Program in Applicable Algebraic Geometry	Texas A&M University
	College Station, TX
<i>Bézier curves and surfaces</i>	<i>July 2007</i>
Workshop on Non-Linear Computational Geometry Applications	IMA
	Minneapolis, MN
<i>Linear precision for parametric patches (poster)</i>	<i>May 2007</i>
Special Session on Computational Algebraic and Analytic Geometry	
2007 Joint Mathematics Meetings	New Orleans, LA
<i>Linear precision for parametric patches</i>	<i>January 2007</i>
Special Session on Algebraic Geometry	
Sixth Joint AMS–SMM International Meeting	Houston, TX
<i>Algebraic geometry applications in Bayesian model selection</i>	<i>May 2004</i>
Workshop on Algorithmic, Combinatorial and Applicable Real Alg. Geo.	MSRI
Topological Aspects of Real Algebraic Geometry	Berkeley, CA
<i>Algebraic geometry applications in model selection</i>	<i>April 2004</i>

Computational Algebraic Statistics	American Institute of Mathematics Palo Alto, CA December 2003
<i>Independence varieties of Bayesian networks</i>	
Closing Workshop	SAMSI
Challenges in Stochastic Computation	Research Triangle Park, NC
<i>Algebraic geometry of Bayesian networks with hidden variables</i>	June 2003
Effective Methods in Algebraic Geometry Conference	Kaiserslautern, Germany
<i>Algebraic geometry of Bayesian networks</i>	June 2003
International School on Algebraic Statistics	Université Nice Sophia Antipolis
Grostat VI Conference	Nice, France
<i>Algebraic classification of Bayesian networks</i>	February 2003
Special Session on Systems	
2002 SIAM Discrete Mathematics Conference	San Diego, CA
<i>Classification of finite dynamical systems</i>	August 2002
Graduate Oral Presentations in Mathematics	
SACNAS National Conference	Phoenix, AZ
<i>Mathematical foundations for computer simulations</i>	September 2001
Graduate Oral Presentations in Mathematics	
SACNAS National Conference	Atlanta, GA
<i>Combinatorial tools for the analysis of decision systems</i>	October 2000
Computational Algebra with Applications Conference	University of Wyoming Laramie, WY
<i>Computing Gröbner bases associated to finite modules</i>	June 1999
Computational Algebra with Applications Conference	University of Wyoming Laramie, WY
<i>Computing syzygies à la Gauß-Jordan</i>	June 1999
CIMAT-MSRI Conference on Gröbner Bases	CIMAT Guanajuato, México
<i>Gröbner bases associated to finite modules</i>	February 1999

Colloquia and Seminar Talks

Sam Houston State University Friday Afternoon Club	Huntsville, TX
<i>Algebraic Statistics: Recent advances and future progress</i>	December 2011
Texas State University Discrete Mathematics Seminar	San Marcos, TX
<i>The control polyhedron of a rational Bézier surface</i>	December 2011
Georgia Institute of Technology Algebra Seminar	Atlanta, GA
<i>The control polyhedron of a rational Bézier surface</i>	November 2011
Sam Houston State University Friday Afternoon Club	Huntsville, TX
<i>Teaching Algebraic Structures using the ABC</i>	September 2011
Duke University Algebraic Geometry Seminar	Durham, NC
<i>Toric degenerations of Bézier patches</i>	April 2011
Sam Houston State University Mathematics Colloquium	Huntsville, TX
<i>Toric degenerations of Bézier patches</i>	March 2011

Sam Houston State University Friday Afternoon Club <i>How to draw complex functions</i>	Huntsville, TX <i>January 2011</i>
Sam Houston State University Friday Afternoon Club <i>What is Schubert calculus?</i>	Huntsville, TX <i>November 2010</i>
University of Dallas Mathematics Colloquium <i>How to draw complex functions</i>	Dallas, TX <i>April 2010</i>
Southern Methodist University Research Colloquium <i>What is algebraic statistics ... good for?</i>	Dallas, TX <i>November 2009</i>
Coloquio del Instituto de Matemáticas <i>The Geometry of Toric Patches</i>	UNAM, Mexico City, México <i>April 2009</i>
Cinvestav Mathematics Colloquium <i>The Geometry of Toric Patches</i>	Cinvestav, Mexico City, México <i>April 2009</i>
North Carolina State University Symbolic Computation Seminar <i>The Geometry of Toric Patches</i>	Raleigh, NC <i>March 2009</i>
Clemson University Algebra and Discrete Mathematics Seminar <i>The Geometry of Toric Patches</i>	Clemson, SC <i>March 2009</i>
SAMSI Algebraic Statistics and Experimental Design Seminar <i>Linear Precision of toric patches is ML degree 1 of toric statistical models</i>	Res. Triangle Park, NC <i>February 2009</i>
Reed College Mathematics Colloquium <i>The Geometry of Toric Patches</i>	Portland, OR <i>February 2009</i>
Sam Houston State University Mathematics Colloquium <i>What is algebraic statistics ... good for?</i>	Huntsville, TX <i>November 2008</i>
Sam Houston State University Mathematics Colloquium <i>Phylogenetic Algebraic Geometry</i>	Huntsville, TX <i>August 2007</i>
Texas A&M University Algebra and Combinatorics Seminar <i>Linear precision for multi-sided toric patches</i>	College Station, TX <i>March 2007</i>
North Carolina State University Mathematics Colloquium <i>What is algebraic statistics?</i>	Raleigh, NC <i>January 2007</i>
Sam Houston State University Mathematics Colloquium <i>Linear precision for multi-sided toric patches</i>	Huntsville, TX <i>January 2007</i>
Sam Houston State University Mathematics Colloquium <i>What is algebraic statistics?</i>	Huntsville, TX <i>November 2006</i>
Texas A&M University Algebra and Combinatorics Seminar <i>Finite Abelian p-groups and toric ideals</i>	College Station, TX <i>May 2006</i>
Texas A&M University Postdoc Seminar <i>What is algebraic statistics?</i>	College Station, TX <i>October 2005</i>
UC Berkeley Algebraic Statistics for Computational Biology Seminar <i>Catalog of small trees</i>	Berkeley, CA <i>March 2005</i>
MSRI Postdoc Seminar <i>Minimal Cohen–Macaulay deformations of matroid ideals</i>	MSRI, Berkeley, CA <i>December 2004</i>
Texas A&M University Algebraic Geometry Seminar <i>Solving the likelihood equations of small phylogenetic trees</i>	College Station, TX <i>November 2004</i>
Sam Houston State University Mathematics Colloquium <i>Tropical Mathematics</i>	Huntsville, TX <i>October 2004</i>

University of Washington Algebra Seminar <i>Algebraic geometry of Bayesian networks</i>	Seattle, WA <i>April 2004</i>
Georgia Tech Informal Geometry Seminar <i>Algebraic geometry of Bayesian networks</i>	Atlanta, GA <i>August 2003</i>
Instituto de Matemáticas Unidad Morelia Algebra Seminar <i>Algebraic geometry of Bayesian networks</i>	UNAM, Morelia, México <i>May 2003</i>
UC Berkeley Workshop on Algebraic Statistics <i>Algebraic geometry of Bayesian networks</i>	Berkeley, CA <i>January 2003</i>
University of Cantabria Algebra Seminar <i>Algebraic geometry of Bayesian networks</i>	Santander, Spain <i>December 2002</i>
University of Cantabria Combinatorics Seminar <i>Resolutions of Cohen-Macaulay deformations of matroid ideals</i>	Santander, Spain <i>December 2002</i>
Politecnico di Torino Algebraic Statistics Seminar <i>Algebraic geometry of Bayesian networks</i>	Torino, Italy <i>November 2002</i>
MSRI Combinatorial Commutative Algebra Seminar <i>Resolutions of matroid ideals</i>	MSRI, Berkeley, CA <i>August 2002</i>
Virginia Tech SIAM Graduate Student Seminar <i>Resolutions of matroid ideals</i>	Blacksburg, VA <i>March 2002</i>
Virginia Tech SIAM Graduate Student Seminar <i>Combinatorics of the primary decomposition of Cohen-Macaulay monomial ideals</i>	Blacksburg, VA <i>March 2002</i>
University of Bordeaux I Seminar <i>Mathematical foundations for computer simulations</i>	Bordeaux, France <i>October 2001</i>

Professional Associations

American Mathematical Society (AMS)
 Mathematical Association of America (MAA)
 Society for Industrial and Applied Mathematics (SIAM)
 Society for Advancement of Chicanos and Native Americans in Science (SACNAS)
 Sociedad Matemática Mexicana (SMM)

Programming Skills

Languages: C, C++, Perl, Python

Operating Systems: Linux, UNIX, Mac OS X

Computer Algebra Systems: CoCoA, Macaulay2, Maple, Mathematica, MatLab, Sage, Singular

Web Development: MySQL, PHP, HTML, CSS

Software

- GraphicalModels.m2: A Macaulay2 package for algebraic statistics. Package included in the standard Macaulay2 distribution (joint work with M Stillman, S. Petrovic and S. Sullivant, other collaborations by A. Diaz, S. Lin, and A. Taylor). Macaulay2 is a computer algebra system developed by Michael Stillman and Daniel Grayson.
- Designer and principal developer of the Identifiability of Structural Equation Models website (with Sarah Spielvogel): <http://www.shsu.edu/research/graphicalmodels/>. This website contains algebraic information related to the parameter identifiability problem for Gaussian graphical models. This website contains computer algebra libraries to solve the identifiability problem.
- Collaborator in the *Polynome: Discrete System Identification* project. Polynome is a web-based software for the reconstruction and parameter estimation of algebraic models in systems biology. <http://polymath.vbi.vt.edu/polynome> .
- Collaborator in the *Frontiers of reality in Schubert calculus* project. We develop software to execute a large-scale computation to study questions in the Schubert calculus, with a focus on generalizations of the Shapiro conjecture. <http://www.math.tamu.edu/~secant/> .
- Designer and principal developer of the Small Phylogenetic Trees website: <http://www.shsu.edu/~ldg005/small-trees/>. This website contains algebraic information of small phylogenetic trees under several models of biological evolution. Maple package to perform all computations is included (with J. Porter).
- Singular library to compute all complex solutions to the critical equations of the maximum likelihood function of a statistical model. Singular is a computer algebra system developed at the University of Kaiserslautern.
- Optimization algorithm for the identification of biochemical network models (with R. Laubacher, J. McGee, and P. Vera-Licona).
- Macaulay2 and Singular libraries to compute the independence varieties and primary decomposition of Bayesian networks (with M. Stillman). Macaulay2 is a computer algebra system developed by Michael Stillman and Daniel Grayson.
- CoCoA library to compute the primary decomposition of zero dimensional ideals. Implementation for the general case in progress. CoCoA is a computer algebra system developed at the University of Genova, Italy.
- Tulip modules for the biocomplexity research program at NMSU. Tulip is a graph visualization software developed at the University of Bordeaux I.
- C++ program to compute combinatorial homotopy of simplicial complexes (with R. Laubacher).

References

Mark Klespis, Sam Houston State University, klespis@shsu.edu, (936) 294-1577

Reinhard Laubenbacher, Virginia Bioinformatics Institute, reinhard@vbi.vt.edu, (540) 231-7506

Frank Sottile, Texas A&M University, sottile@math.tamu.edu, (979) 845-4169

Bernd Sturmfels, University of California, Berkeley, bernd@math.berkeley.edu, (510) 642-4687