

# Curriculum Vitae

Gregory L. McColm  
12202 N. 53rd Str., Temple Terrace, FL 33617

*office:*

Department of Mathematics & Statistics

University of South Florida

4202 E. Fowler Ave., PHY114

Tampa, FL 33620

phone (813) 974-9550; fax (813) 974-2700

mccolm@usf.edu

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## **Position.**

Associate Professor of Mathematics, USF–Tampa

## **Education.**

University of California at Los Angeles

Ph.D. awarded in Fall, 1986

M.A. awarded in Spring, 1982

Field: Mathematical Logic

Specialty: Abstract Recursion and Descriptive Complexity

Dissertation Advisor: Yiannis N. Moschovakis

Dissertation: *Simple and Simultaneous Recursive Fixed Points*

Oberlin College

B.A. awarded in Spring, 1980

Major: Mathematics

## **Fields.**

Mathematical Logic & Theoretical Computer Science:

Finite Model Theory

Computational and Descriptive Complexity Theory

Combinatorics:

Combinatorial (& Logical) Game Theory

Finite and Infinite Ramsey Theory and Extremal Graph Theory

Random Graph Theory, and Probabilistic Methods and Random Processes

Geometry:

Polyhedral / Combinatorial Geometry, Tilings, Tessellations and Theoretical Crystallography

Computational Geometry and Computer Implementations

Mathematics Education and Mathematical Philosophy

## Annotations.

Knowledge of the computer languages C, ForTran, LisP, Maple, Pascal and Python and of the markup language HTML

## Vocations.

USF–Tampa

Associate Professor of Mathematics, Acad. Yrs. 1992–

Assistant Professor of Mathematics, Acad. Yrs. 1986–1992

## Activities.

Member, American Chemical Society

Member, American Mathematical Society

Member, Association for Computing Machines

Member, Mathematical Association of America

Member, Society for Industrial and Applied Mathematics

## Courses Taught:

- *Lower division.* Basic Statistics, Calculus I, Calculus II, Calculus III, College Algebra, College Trigonometry, Elementary Calculus II, Engineering Calculus I, Engineering Calculus III, Finite Mathematics, Precalculus Trigonometry.
- *Upper division.* Bridge to Abstract Mathematics, Differential Equations, Discrete Mathematics, Early History of Mathematics, Elementary Number Theory, Introduction to Probability, Modern Geometry, Problem Solving using Pascal or C, Set Theory, Symbolic Computations in Mathematics, and Vector Calculus.
- *Graduate level.* Advanced Linear Algebra, Combinatorics I, LISP: programming with Algebraic Applications, Mathematical Logic and Foundations I, Mathematical Logic and Foundations II, Probability Theory I, Probability Theory II, Theory of Computing, and special topics courses on set theoretic forcing, computational complexity, and geometry, and independent study in category theory, mathematical crystallography, and mathematical logic.

## Technical Journal Publications

*Some restrictions on simple fixed points of the integers*

**J. Symb. Logic** **54:6** (1989), 1324–1345.

*Parametrization over inductions with a bounded number of variables*

**Ann. Pure & Appl. Logic** **48** (1990), 103–134.

*When is arithmetic possible?*

**Ann. Pure & Appl. Logic** **50** (1990), 129–151.

*A Ramseyian theorem for products of trees*

**J. Comb. Th.–A** **57:1** (1991), 68–75.

*Eventual Periodicity and One-Dimensional Queries*

**Notre Dame J. Formal Logic** **33:2** (1992), 273–290.

*On the complexity of deadlock-free programs on a ring of processors*

(with W. E. Clark & W. R. Stark)

**J. Parallel & Dist. Comp.** **16** (1992), 67–71.

- Some Ramsey theory in boolean algebra for complexity classes*  
**Z. math. Logik Grund. Math.** **38** (1992), 293–298.
- Deterministic versus nondeterministic transitive closure*  
 (with E. Grädel)  
**Inform. & Comp.** **119:1** (1995), 129–135.
- The dimension of the negation of transitive closure*  
**J. Symb. Logic** **60:2** (1995), 392–414.
- Dimension versus Number of Variables, and Connectivity, Too*  
**Math. Log. Qtrly** **41** (1996), 111–134.
- Pebble games and the fine structure of least fixed point logic*  
**Inf. & Comp.** **122:2** (1995), 201–220.
- Hierarchies in transitive closure logic, stratified Datalog, and infinitary logic*  
 (with E. Grädel)  
**Ann. Pure & Appl. Logic** **77** (1996), 169–199.
- An application of spanning trees to  $k$ -point separating families of functions*  
 (with W. E. Clark & B. Shekhtman)  
**Proc. London Math. Soc.** **58:2** (1998), 297–310.
- A splitting inequality*  
**The Ramanujan J.** **2** (1998), 511–519.
- First Order Zero-One Laws for Random Graphs on the Circle*  
**Random Struct. Alg.** **14** (1999), 239–266.
- MSO zero-one laws on random labelled acyclic graphs*  
**Discrete Mathematics** **254** (2002), 331–347.
- Introducing Random Trees*  
**Research on Language and Computation** **1** (2003), 203–226.
- An Anti-Ramsey Theorem on Posets*  
**Bulletin of the ICA** **38** (2003), 84–100.
- On the Structure of Random Unlabelled Acyclic Graphs*  
**Discrete Mathematics** **277** (2004), 147–170.
- Guarded Quantification in Least Fixed Point Logic*  
**J. Logic, Language and Information** **13** (2004), 61–110.
- Threshold Functions for Random Graphs on a Line Segment*  
**Combinatorics, Probability and Computing** **13** (2004), 373–387.
- When is Betweenness Preserved?*  
 (with X.-D. Hou)  
**Rocky Mountain J. Mathematics** **38:1** (2008), 123–137.
- Complexity Classes for Self-Assembling Flexible Tiles*  
 (with N. Jonoska)  
**Theor. Comp. Sci.** **410:4-5** (2009), 332–346.
- On Stoichiometry for the Assembly of Flexible Tile DNA Complexes*  
 (with Ana Staninska and Natasha Jonoska)  
**Natural Computing** **10:3** (2011), pp. 1121 - 1141.
- Crystal Engineering using a “Turtlebug” Algorithm, a de novo approach to the design of binodal metal-organic frameworks*

(with W. E. Clark, M. Eddaoudi, L. Wojtas & M. Zaworotko)

**Crystal Growth & Design** **11:9**, (2011), pp. 3686 - 3693.

*Generating Graphs Using Automorphisms*

**J. Graph Alg. Appl.** **16:2** (2012), pp. 507 - 541.

*Automatically Generated Periodic Graphs*

**Z. Kristallographie - Crystalline Materials** **230:12** (2015), 699 - 708.

*Counter machines and crystallographic structures*

(with N. Jonoska & M. Krajcevski)

**Natural Computing** **15:1** (2016), 97-113.

### Other Academic Journal Publications

*A University's Dilemma in the Age of National Security*

(with Sherman Dorn)

**Thought & Action, Fall 2005** (National Education Association, Fall 2005), 163 - 177.

*A Metaphor for Mathematics Education*

**Notices of the American Mathematical Society** (April, 2007), 499 - 502.

*Is Logic Necessary?*

**Logica Universalis** **4:2** (2010), 241-254.

*Prospects for Mathematical Crystallography*

**Acta Crystallographica A** **70:2** (2014), 95 - 105.

### Manuscripts in process

*Periodic Euclidean Graphs on Integer Points*

Under revision; draft posted at **ArXiv.org** as arXiv:1105.2328.

### Conference Publications

*Deterministic versus nonDeterministic Transitive Closure*

(with E. Grädel)

**7th IEEE Symposium on the Foundations of Computer Science (LICS'92)**

Santa Cruz, CA; June, 1992.

*Hierarchies in Transitive Closure Logic, Stratified Datalog, and Infinitary Logic*

(with E. Grädel)

**33rd IEEE Symposium on the Foundations of Computer Science (FOCS'92)**

Pittsburgh, PA; October, 1992.

*Zero-One Laws for Gilbert Graphs*

**11th IEEE Symposium on Logic in Computer Science (LICS'96)**

New Brunswick, NJ; July, 1996.

*Game Representations of Complexity Classes*

**European Summer School on Logic, Language and Information**

Helsinki, Finland; August, 2001

*Expectation and Variance of Self-Assembled Graph Structures*

(with N. Jonoska & A. Staninska; S. Staninska presenting)

**11th International Meeting on DNA Computing**

London, Canada; May, 2005

*A Computational Model for Self-assembling Flexible Tiles*

(with N. Jonoska; N. Jonoska presenting)

**4th International Conference on Unconventional Computation**

Sevilla, Spain, October 2005

Proceedings LNCS 3699; ed. by Cristian S. Calude, Michael J. Dinneen, Gheorghe Paun, Mario J. Prez-Jimnez, Grzegorz Rozenberg; pp. 142 – 156

*Flexible versus Rigid Tile Assembly*

(with N. Jonoska; G. McColm presenting)

**5th International Conference on Unconventional Computation**

York, England, September 2006

Proceedings LNCS 4135; ed. by Cristian S. Calude et al; pp. 139 – 151

*Describing Self-assembly of Nanostructures* (with N. Jonoska presenting)

Villiam Geffert, Juhani Karhumki, Alberto Bertoni, eds., **SOFSEM 2008: Theory and Practice of Computer Science** (Proc. LNCS 4910, Nový Smokovec, Slovakia, 2008), 66 – 73.

*Languages Associated with Crystallographic Symmetry* (with N. Jonoska presenting & M. Krajcevski)

Oscar H. Ibarra, Lila Kari, Steffen Kopecki, eds. **Unconventional Computation and Natural Computation (UCNC 2014)** (Proc. LNCS 8553, London, ON, Canada, 2014), 216 – 228.

*Traversal Languages Capturing Isomorphism Classes of Sierpiński Gaskets* (with N. Jonoska presenting & M. Krajcevski)

Martin Amos & Ann Condon, eds. **Unconventional Computation and Natural Computation (UCNC 2016)** (Proc. LNCS 9726, London, ON, Canada, 2016), 155 – 167.

### Other Publications

*The Sentries*

**Palm Prints** (University of South Florida, December, 2001), 11.

*Broken Bonds*

**Palm Prints** (University of South Florida, December, 2002), 40.

*Coffee*

**Wordsmith 14** (Tampa Writer's Alliance, 2003), 52.

*Jihad*

**Wordsmith 14** (Tampa Writer's Alliance, 2003), 87.

*Gift of the Rivers*

**The New Floridian 1:1** (Dec. 2005 & Jan. 2006), 12.

*Teach Meaningful Work, Not Test Skills*

**The Lakeland Ledger**, June 26, 2006.

*Tall Grass*

**Wordsmith 18** (2007; winner, Tampa Writer's Alliance 2006 Writing Contest: 3rd place for fiction), 81 - 84.

*Return of the Trees*

**The Pepper Tree: A Literary Magazine** (Feb., 2007), 18 - 19.

*The Importance of Color*

**The Pepper Tree: A Literary Magazine** (Nov./Dec., 2007), 9.

*Abandoning Education*

**The Tampa Tribune** (July 13, 2008), Views 1.

*FNANO 2008 Report # 1: Nanoscience Prize*

**ISNSCE Newsletter** (September 2008), 2 - 3.

*FNANO 2008 Report # 3: Nanomathematics*

**ISNSCE Newsletter** (September 2008), 5 - 7.

*Florida Economics 101: Tapping Federal Stimulus Dollars to Invest in Re-Educating the Workforce and Reinforcing a Weak Educational System Will Help Ensure a Stronger Future for the State*

**The Tampa Tribune** (March 8, 2009), Views 1, 5.

*Figuring Out the Pattern of Math: In ways great and small, our lives and the world are built on the foundation of mathematics*

**The Tampa Tribune** (April 5, 2009), Views 1, 5.

*Bring back unions, keep the middle class*

**The Tampa Tribune** (May 16, 2009). Views 1, 5.

*The Plain of Good and Evil*

**Shelter of Daylight**, ed. by Tyree Campbell (Sam's Dot Publishing, April, 2009), 60 – 66.

*Math gene debate not adding up: It looks as if the disparity between male and female performance was a result of culture*

**The Tampa Tribune** (August 29, 2009), Views 1, 5.

*From baseball to the census: Statistics tell us what's going on*

**The Tampa Tribune** (April 11, 2010), Views 1, 5.

*Florida struggles to keep good teachers: Attacking job security won't work when tough conditions and inadequate pay make attrition a major problem*

**The Tampa Tribune** (July 24, 2010), Views pp. 1, 5.

*Because it was there*

**The Pepper Tree: A Literary Magazine** (Oct. Nov. & Dec. 2010), p. 5.

*WikiLeaks: Where have we heard this before?*

**The Tampa Tribune** (Dec. 28, 2010), <http://www2.tbo.com/content/2010/dec/28/MEOPINO2-wikileaks-where-have-we-heard-this-before/news-opinion-commentary/>

*For Love*

**Jupiter XXXI: Aitne** (Jan., 2011), pp. 20 – 26.

*Education for the 21st Century Requires Willing Minds*

**The Tampa Tribune** (Feb. 24, 2011), Metro p. 13.

*Meeting challenges involves understanding complexities*

**The Tampa Tribune** (April 6, 2011), Metro p. 11.

*Getting ahead by not going along*

**The Tampa Tribune** (June 5, 2011), Views & News p. 1.

*Are we becoming a can't do nation?*

**The Tampa Tribune** (Oct. 22, 2011), Metro p. 15.

*Art skills needed in today's math classrooms*

**The Tampa Tribune** (Jan. 9, 2012), Metro p. 9.

*Who pays for college and why*

**The Tampa Tribune** (Feb. 25, 2012), Views p. 1.  
*Focus on Teaching Techniques, Not Teachers*,  
**Florida Voices** (My Turn, Mar. 20, 2012), <http://floridavoices.com/myturn/focus-teaching-techniques-not-teachers>  
*What do you want to know? Navigating the sea of data*,  
**The Tampa Tribune** (Apr. 8, 2012), Views p. 2.  
*Footprint*,  
**Jupiter XXXVI: Sponde** (April, 2012), 16 – 24.  
*Want to be major players in Legislature, Democrats? Try showing up*,  
**The Tampa Tribune** (Feb. 17, 2013), Views p. 2.  
*The Winter of Our Revenge*  
**Jupiter XLV: Helike** (July, 2014), 45 – 51.  
*Molecular architects: how scientists design new materials*  
**The Conversation** (27 April 2016).

### Presentations

*Restrictions on simple fixed points of  $\mathbf{N}$*   
 WinterConference, Association for Symbolic Logic  
 Anaheim, CA; January, 1984.  
*When is recursion necessary?*  
 UCLA logic conference  
 Los Angeles, CA; January, 1988.  
*Applications of monotone induction to computer science*  
 4th SIAM Conference in Discrete Mathematics  
 San Francisco, CA; June, 1988.  
*Finite automata and one-dimensional inductions*  
 Winter Conference, Association for Symbolic Logic  
 Los Angeles, CA; January, 1989.  
*The predictability of random events*  
 15th MAA Florida Suncoast Meeting  
 Tampa, FL; December, 1990.  
*Ramsey Theory on Products of Posets*  
 22nd Southeastern International Conference on Combinatorics, Graph Theory,  
 Computing  
 Baton Rouge, LA; February, 1991.  
*Fixedpoint Logics Defined by Pebble Games*  
 865th Meeting of the AMS  
 Tampa, FL; March, 1991.  
*The Great Barrier Reef of Computer Science*  
 16th MAA Florida Suncoast Meeting  
 St. Petersburg, FL; December, 1991.  
*Games Logicians Play*  
 23rd Southeastern International Conference on Combinatorics, Graph Theory,  
 Computing  
 Boca Raton, FL; February, 1992.

*About the partition relation on infinite posets*  
872nd Meeting of the AMS  
Tuscaloosa, AL; March, 1992.

*Pebble games defining logical queries*  
NSF-INRIA Workshop on Databases and Finite Model Theory  
San Diego, CA; June, 1992.

*Least Fixed Point Logic on Chain-Like Structures*  
Dagstuhl-Seminar 9323 on Semantics of Programming Languages and Algebra  
Dagstuhl, Germany; June, 1993.

**P, NP, and all that**  
18th MAA Florida Suncoast Meeting  
Venice, FL; December, 1993.

*Games and Truth*  
19th MAA Florida Suncoast Meeting  
St. Petersburg, FL; December, 1994

*Weak Threshold Functions*  
26th Southeastern International Conference on Combinatorics, Graph Theory,  
Computing  
Boca Raton, FL; March, 1995.

*A General View of Weak Threshold Functions*  
7th Conference on Random Structures and Algorithms (RANDOM'95)  
Atlanta, GA; May, 1995.

*Zero-One Laws for First Order and Least Fixed Point Logics*  
DIMACS Workshop on Logic and Random Structures  
New Brunswick, NJ; November, 1995.

*Reality, Fiction, and Probability*  
20th MAA Florida Suncoast Meeting  
Tampa, FL; December, 1995.

*Pebble Games and Zero-One Laws*  
DIMACS Workshop on Descriptive Complexity and Finite Models  
Princeton, NJ; January, 1996.

*Matching, Majorization, and Thresholds*  
8th SIAM Conference on Discrete Mathematics  
Baltimore, MA; June, 1996.

*Teaching Mathematics as a Liberal Art*  
21st MAA Florida Suncoast Meeting  
Bradenton, FL; December, 1996.

*Zero-One Laws for Homogeneous Models of Random Graphs*  
28th Southeastern International Conference on Combinatorics, Graph Theory,  
Computing  
Boca Raton, FL; March, 1997.

*Models of Random Graphs*  
Biannual Aachen-Freiburg-Mainz Seminar on Finite Model Theory  
Aachen, Germany; April, 1997

*The Mathematics of Databases*

22nd MAA Florida Suncoast Meeting  
St. Petersburg, FL; December, 1997.

*Quantification with Pointers*

Endliche Modelltheorie, Mathematisches Forschungsinstitut Oberwolfach  
Oberwolfach, Germany; February, 1998.

*On the evolution of random structures*

Joint SIAM/Discrete Mathematics Conference  
Toronto, Canada; July, 1998.

*Going by the book*

23rd MAA Florida Suncoast Meeting  
Brandon, FL; December, 1998.

*Combinatorial games in finite model theory*

Logic and Cognitive Workshop at the University of Pennsylvania  
Philadelphia, Pennsylvania; April, 1999.

*The Zen of Mathematics Homework*

MAA Florida Section  
Tampa, FL; March, 2000

*Splitting and Weak (Coarse) Thresholds*

28th Southeastern International Conference on Combinatorics, Graph Theory,  
Computing  
Boca Raton, FL; March, 2000.

*Weak Thresholds in the Evolution of Random Structures*

SIAM Conference on Discrete Mathematics  
Minneapolis, Minnesota; June, 2000.

*Random Trees*

European Summer School on Logic, Language and Information  
Birmingham, England; August, 2000

*Of induction and recursion*

25th Suncoast MAA meeting  
Saint Petersburg, FL; December, 2000

*Ramsey numbers on posets (of boolean algebras)*

Horizons in Combinatorics  
Nashville, Tennessee; May, 2001

*Of Calculus and Cold Water*

26th Suncoast MAA meeting  
Venice, FL; December, 2001

*Weak Thresholds for Gilbert Graphs*

30th Southeastern International Conference on Combinatorics, Graph Theory,  
Computing  
Boca Raton, FL; March, 2002.

*The Mathematics of ‘When Will It Happen.’*

Globalization Research at USF  
Tampa, FL; September, 2002

*Logics of Many Worlds*

27th MAA Suncoast Meeting  
Lakeland, FL; December, 2002

*How Sharp is Immerman's Theorem?*  
Finite Model Theory 2003  
Bedlewo, Poland; March/April, 2003

*What are grades for, anyway?*  
28th Annual Meeting of the Suncoast Region of the Florida Section of the MAA  
Tampa, Florida; December, 2003

*Modelling the Evolution of Random Structures*  
SIAM Conference in Discrete Mathematics  
Nashville, Tennessee; June, 2004

*The Problems with Reality*  
29th Annual Meeting of the Suncoast Region of the Florida Section of the MAA  
Clearwater, Florida; December, 2004

*What's this about weak thresholds? The evolution of random structures*  
12th International Conference on Random Structures and Algorithms  
Poznan, Poland; August, 2005

*When does it happen?*  
30th Annual Meeting of the Suncoast Region of the Florida Section of the MAA  
Sarasota, Florida; December, 2005

*Two Hundred Algebra Students (Oh My)*  
31st Annual Meeting of the Suncoast Region of the Florida Section of the MAA  
Brandon, Florida; December, 2006

*What is Really "Real"? A Metaphor for Skeptical Realists*  
USF Science in Humanities – Humanities in Science – Human Scientists Conference  
Tampa, Florida; March, 2007

*Algebraic Descriptions of Complex Geometric Shapes*  
1024th (Regional) Meeting of the American Mathematical Society: Special Session  
on Computational and Combinatorial Aspects of Tiling and Substitutions  
Charlotte, North Carolina; March, 2007

*Guarded Quantification*  
2007 Annual Meeting of the Association for Symbolic Logic  
Gainesville, Florida; March, 2007

*Formalizing Nanostructure Description*  
(with N. Jonoska; G. McColm presenting)  
4th Conference on Foundations of Nanoscience  
Snowbird, Utah, April 2007

*Of Birds, Bugs, and Crystals*  
32nd Annual Meeting of the Suncoast Region of the Florida Section of the Mathematics Association of America  
St. Petersburg, FL, December 2007

*What is a Crystal?*  
Pi Mu Epsilon Induction Banquet  
Jacksonville, FL, April 2008

*Thresholds and Achlioptas Games*

Thirty-Ninth Southeastern International Conference on Combinatorics, Graph Theory, and Computing

Boca Raton, March 2008

*A Formal Crystal Description System*

(with W. E. Clark & M. Eddaoudi; G. McColm presenting)

5th Conference on Foundations of Nanoscience

Snowbird, Utah, April 2008

*Tales of the Math Gene*

33rd Annual Meeting of the Suncoast Region of the Florida Section of the Mathematics Association of America

St. Leo, Florida, December 2008

*Using a Net Generator to Survey Crystal Nets*

(with M. Eddaoudi & M. Zaworotko; G. McColm presenting)

6th Conference on Foundations of Nanoscience

Snowbird, Utah, April 2009

*The Geometry of Blueprints of Crystals*

34th Annual Meeting of the Suncoast Region of the Florida Section of the Mathematics Association of America

Polk State College, Lakeland, Florida, December 2009

*Periodic Graphs and Crystal Design*

Forty-first Southeastern International Conference on Combinatorics, Graph Theory, and Computing

Boca Raton, March 2010

*Using Physics to Motivate Calculus*

35th Annual Meeting of the Suncoast Region of the Florida Section of the Mathematics Association of America

University of Tampa, Tampa, Florida, December 2010

*Humanism, Realism, and Folk Mathematics: the Case of Reticular Geometry*

MAA Session on Humanistic Mathematics; Joint Meeting of the AMS, MAA, and SIAM

New Orleans, Louisiana, January 2011

*Polyhedra and Mr. Dangerfield*

36th Annual Meeting of the Suncoast Region of the Florida Section of the Mathematics Association of America

Florida Southern College, Lakeland, Florida, December 2011

*Mastering Mathematics (and Other Things)*

Quality Enhancement Plan: Math, The Bridge to Success

Polk State College, Lakeland, Florida, April 2012

*The Academically Adrift Controversy*

37th Annual Meeting of the Suncoast Region of the Florida Section of the Mathematics Association of America

State College of Florida, Bradenton, Florida, December 2012.

*What do we Teach When We Teach Geometry?*

Special Session on Geometry, 38th Annual Meeting of the Suncoast Region of the Florida Section of the Mathematics Association of America

Hillsborough Community College - SouthShore Campus, Ruskin, Florida, December 2013.

*Free to Choose? Its 3 AM on Cloud Nine*

Plenary Session, 38th Annual Meeting of the Suncoast Region of the Florida Section of the Mathematics Association of America

Hillsborough Community College - SouthShore Campus, Ruskin, Florida, December 2013.

*Generating Crystal Nets in Euclidean Space*

Special Session on Discrete Geometry in Crystallography, 1,098th Meeting of the American Mathematical Society

University of Maryland - Baltimore County, Baltimore, Maryland, March 2014.

*Crystal Prediction Using the Point Groups: An Application of Group Theory*

23rd Congress and General Assembly of the International Union of Crystallography  
Montreal, Canada, August 2014.

*Mathematics for Designing Materials and Nanostructures*

39th Annual Meeting of the Suncoast Region of the Florida Section of the Mathematics Association of America

University of South Florida - Sarasota / Manatee, Sarasota, Florida, December 2014.

*Polyhedra, Complexes, and Symmetry*

Joint Annual Meeting of the Mathematical Association of America (Florida Section) and the Florida Two-Year College Mathematical Association

Eckerd College, St. Petersburg, Florida, January 2015

*Free to Choose? 3 AM on Cloud Nine*

Henry C Hartje, Jr. Lecture

Florida Southern College, Lakeland, Florida, April 2015.

*Computers, Calculus, and Organizational Skills*

40th Annual Meeting of the Suncoast Region of the Florida Section of the Mathematics Association of America

Florida Polytechnic University, Florida, December 2015.

*Geometry, Art and Illusion*

Joint Annual Meeting of the Mathematical Association of America (Florida Section) and the Florida Two-Year College Mathematical Association

St. Leo University, St. Leo, Florida, February 2016

*The Geometry of the Human Form*

41st Annual Meeting of the Suncoast Region of the Florida Section of the Mathematics Association of America

St. Petersburg College, Seminole, Florida, December 2016.

*The Utilitarian Roots of Geometry*

Joint Annual Meeting of the Mathematical Association of America (Florida Section) and the Florida Two-Year College Mathematical Association

State College of Florida, Bradenton, Florida, February 2017

*The Unreasonable Popularity of Mathematics*

42nd Annual Meeting of the Suncoast Region of the Florida Section of the Mathematics Association of America

Eckerd College, St. Petersburg, Florida, December 2017

*Plus numerous seminars and colloquia.*

### Book Reviews

*Finite Model Theory* by Heinz-Dieter Ebbinghaus & Jörg Flum

pub. Springer, 1995

**J. Symbolic Logic** **61:3** (1996), 1049 – 1050.

*Geometry of Crystallographic Groups* by Andrzej Szczepaski

pub. World Scientific, 2012

**Acta Crystallographica** **A69:5** (2013), 530 – 532.

*Symmetry Through the Eyes of the Old Masters* by Emil Makovicky

pub. De Gruyter, 2016

**Acta Crystallographica** **A73:2** (2017), 530 – 532.

*Creating Symmetry: the Artful Mathematics of Wallpaper Patterns*, by Frank A. Farris

pub. Princeton University Press, 2015

**Acta Crystallographica** **A73:4** (2017), 370 – 372.

*Starry Reckoning: Reference and Analysis in Mathematics and Cosmology*, by Emily Rolfe Grosholz

pub. Springer, 2016

**MAA Reviews** (2017), <https://www.maa.org/press/maa-reviews/starry-reckoning-reference-and-analysis-in-mathematics-and-cosmology>

Plus numerous reviews posted in zbMATH

### Continuing Web-Postings

*Taking College Courses*

**USF Department of Mathematics Web-page:**

<http://www.math.usf.edu/~mccolm/pedagogy/>

*Crystal Mathematician*

**International Union of Crystallography weblog:**

<http://blogs.iucr.net/crystalmath/>

*Crystal Turtlebug* (crystal design program)

**Sourceforge:**

<http://sourceforge.net/projects/crystalturtlebu/>

### Grants Awarded

*Mathematical Sciences Research Equipment 1989*

(with K. Pothoven, PI, & M. Ismail, J. Pedersen, W. R. Stark, C. Williams)

Awarded \$ 30,000 from the NSF Mathematical Services/ Special Programs, 1989

# DMS-8905678, for research equipment

*Pebble Games and Expressibility in Finite Model Theory*

Awarded \$ 53,395 from the NSF Computer & Computation Research/ Computer Theory, 1994

# CCR-9403-463, for 3 years summer support (extended to Nov., 1998)

*USF Faculty International Travel Grant*

Awarded \$ 898 to travel to CIRM in April, 2000.

*USF Faculty International Travel Grant*

Awarded \$ 806 to travel to York in September, 2006.

### **Other Positions**

Department Graduate Program Director

1993-95

### **Students**

#### *Doctoral Students*

- Ana Staninska, jointly directed with Natasha Jonoska, 2007

*A Theoretical Model for Self-Assembly of Tiles*

#### *Masters Students*

- Deborah Nelson, 2000

*Beans and Pots*

- Joy D'Andrea, 2011

*Fundamental Transversals on the Complexes of Polyhedra*

#### *Undergraduate Students*

- Daniel Cruz, 2012

*A General Approach to the Production and Geometry of the Square Trigonal Prismatic Crystal Net*

*Plus service on numerous committees for doctoral and some master's students in chemistry, computer science, mathematics, and psychology*

### **Other Activities**

Conference co-organizer

15th MAA Florida Suncoast Meeting

Tampa, FL; December, 1990

Conference co-organizer

20th MAA Florida Suncoast Meeting

Tampa, FL; December, 1995

Conference co-organizer

24th MAA Florida Suncoast Meeting

Tampa, FL; December, 1999

Conference co-organizer

MAA Florida Section Meeting

Tampa, FL; March, 2000

Minisymposium organizer

SIAM Mathematical Aspects of Materials Science Meeting

Minisymposium on Crystal Design using Discrete Structures in Geometry

Philadelphia, PA; May, 2010

Special session co-organizer

1079th Meeting of the American Mathematical Society  
Special Session on Modeling Crystalline and Quasi-Crystalline Materials  
Tampa, FL; March, 2012

Minisymposium co-organizer

SIAM Mathematical Aspects of Materials Science Meeting  
Minisymposia on Mathematical Crystallography I, II, and III  
Philadelphia, PA; May, 2013

Special Issue Co-Editor

Acta Crystallographica A  
Virtual Issue on Mathematical Crystallography  
Articles in Volume 70, Numbers 2, 3, 4

Minisymposium co-organizer

SIAM Mathematical Aspects of Materials Science Meeting  
Minisymposia on Mathematical Crystallography I, II, III, and IV  
Philadelphia, PA; May, 2016

University of South Florida; service through the years:

- Regular Committees
  - Member, System Faculty Council
  - Member, USF Faculty Senate
  - Member, Council for Faculty Issues
  - Member & Chair, College Faculty Development Committee
  - Member & Chair, Departmental Advisory Committee
  - Member & Chair, Departmental Library Committee
  - Member & Chair, Departmental Publicity Committee  
(Editor, *The Quaternion* annual newsletter)
  - Member, Departmental Graduate Committee
  - Member, Departmental Interdisciplinary Committee
  - Member, Departmental Lecture Committee
  - Member, Departmental Undergraduate Committee
- Ad Hoc Committees
  - Member & Chair, Departmental Governance Committee, 2001 & 2006 - 2007
  - Member & Chair, Ad Hoc Senate Committee on Departmental Governance, 2005
  - Various textbook committees

Academic Community; service through the years:

- Administrator, International Union of Crystallography weblog *Crystal Mathematician* at <http://blogs.iucr.net/crystalmath/>, 2012 - present

- Consultant, International Union of Crystallography *Commission on Mathematical and Theoretical Crystallography*, 2013 - 2014
- Member, International Union of Crystallography *Commission on Mathematical and Theoretical Crystallography*, 2014 - present

United faculty of Florida; service through the years:

- Member, FEA Delegate Assembly
- Member, UFF Senate
- Secretary, UFF/USF Chapter
- Publicity Chair, UFF/USF Chapter  
(Editor, *Uncommon Sense* and the *UFF Biweekly*)

Other activities:

- Editor, *The Life Long Writers' Newsletter*  
College of Continuing Education  
2002 - 2005
- Webmaster, *International Society for Nanoscale Science, Computation and Engineering*  
2009 - 2012