

## CURRICULUM VITAE

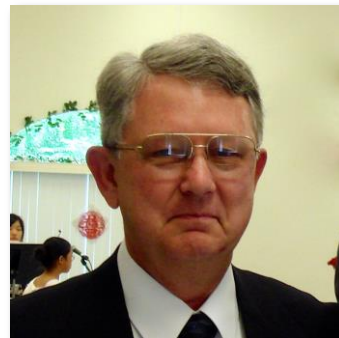
**NAME:** James Edgar Keesling

**WEB:** <http://www.math.ufl.edu/~kees>

**PRESENT POSITION:** Professor of Mathematics  
University of Florida  
Gainesville, Florida 32611-8105

**ADDRESS:** 710 N.E. 6 Street, Gainesville, Florida 32601

**DATE OF BIRTH:** June 26, 1942



**MARITAL STATUS:** Married to Marian Ellen Calley January 26, 1963. Children: James Edgar, Jr. (b. 1964), Marian Esther (b. 1965), Timothy Carl (b. 1966), Ruth Emily (b. 1973).

<b>EDUCATION:</b>	B.S.I.E.	Industrial Engineering	University of Miami	1964
	M.S.	Mathematics	University of Miami	1966
	Ph.D.	Mathematics	University of Miami	1968

### HONORARY SOCIETIES:

ΟΔΚ National Leadership Honorary

ΤΒΠ National Engineering Honorary

ΦΚΦ National Scholarship Honorary

ΣΞ National Research Honorary

ΠΜΕ National Mathematics Honorary

ΑΠΜ National Industrial Eng Honorary

**PROFESSIONAL INTERESTS:** Topology, dynamical systems, biomathematics, stochastic processes, numerical analysis, operations research, and applied mathematics.

### PROFESSIONAL EXPERIENCE:

Assistant Professor	University of Florida	1967-71
Associate Professor	University of Florida	1971-76
Professor	University of Florida	1976-
Visiting Professor	University of Georgia	1976-77
Visiting Professor	University of Utah	1991-92
Fellow	Australian National University	2008, 2011
Chair Department of Mathematics	University of Florida	2008-13
Colonel Allen R. and Margaret G. Crow Term Professor	University of Florida	2016-17
UF Term Professor	University of Florida	2018-21
Professor Emeritus	University of Florida	2022-

**TEACHING EXPERIENCE:** Generally one graduate and one undergraduate course each semester.

Undergraduate courses include *Honors Calculus*, *Numerical Analysis*, *Numerical Methods for Differential Equations*, and *Operations Research* (given in Spanish at the University of Puerto Rico at Mayagüez Summer 1983). Co-managed and co-moderated *Florida Frontiers Lecture Series* (Celebration of the 150<sup>th</sup> anniversary of the University of Florida, 2003). Graduate courses include *Algebraic Topology*, *Dimension Theory*, *Shape Theory*, *Biomathematics*, *Applied Differential and Partial Differential Equations*, *Chaos and Fractals*, *Ergodic Theory and Dynamical Systems*.

*SIAM Visiting Lecturer* for 1992- (mathematics lectures for undergraduates). On University of Florida SUCCEED grant for undergraduate engineering education. Faculty Lecturer and Mentor for undergraduates for *Science for Life* HHMI program at UF.

**AWARDS:** University of Florida TIP Award for teaching (1994, 1998).  
Provost Preeminence Award (12/2021) [CLICK HERE TO VIEW](#)

**GRANTS:** NSF grants in topology: 1970, 71, 72, 73.  
 NSF international travel grant to Yugoslavia 1974.  
 CBMS Travel, Conference on Combinatorial Theory and Linear Programming 1975.  
 DARPA (Applied and Computational Mathematics Program, ACMP) (Co-PI, Louis Block PI) 1989-90, \$100,000.  
 Co-PI NSF grant, 2001-2, \$25,000.  
 Co-PI NSF grant 2008-9, \$49,000.  
 PI Citrus Research and Development Foundation, 2014-2016, \$113,000.  
 Co-PI USDA-NIFA, U.C. Davis & UF, 2015-2020, \$4.579 M.  
 Co-PD USDS-NIFA, Iowa State & UF, 2017-2020, \$2.476 M.

**COPYRIGHT:** Application UF Research Foundation for *2013 Patient Simulation Code* filed 2/2/2017 with Joshua Hurwitz and Joseph Adrian Tyndall

**PROFESSIONAL ORGANIZATIONS:**

American Mathematical Society	American Assoc for the Advancement of Science
Mathematical Association of America	New York Academy of Sciences
Society for Industrial and Applied Mathematics	Society for Mathematical Biology

**REVIEWING AND REFEREEING ACTIVITIES:**

Editorial Advisory Board: *Topology and its Applications* (2009- )  
 Managing Editor: *Topology and its Applications* (2000-2009)  
 Editorial Board: ISRN Geometry (2010-2013)  
 Associate Editor: *Revista Matemática Complutense* (2006-2012)  
 Reviewer: *Zentralblatt für Mathematik*  
                   *Mathematical Reviews* (113 reviews)  
 Referee: *Topology and its Applications*; *Proceedings American Mathematical Society*;  
*Transactions American Mathematical Society*; *Pacific Journal of Mathematics*; *Glasnik Matematički*;  
*Rocky Mountain Journal of Mathematics*; *Journal of the Australian Mathematical Society*; *American Mathematical Monthly*; *Houston Journal of Mathematics*; PLOS ONE; NSF and NIH proposals; Oxford University Press, Addison-Wesley, Harper-Collins (books)

**LISTINGS:**

<i>American Men and Women of Science</i>	<i>Who's Who in America</i>
<i>Who's Who in Frontiers of Science</i>	<i>Who's Who in the World</i>
<i>Who's Who in Science and Engineering</i>	<i>Who's Who in American Education</i>

**DISSERTATIONS DIRECTED:**

·James Felt, Ph.D., <i>Some Contributions to Shape Theory</i> , 1975.	<i>with applications</i> , University of New England, Armidale, New South Wales, Australia, 2005.
·Alicia Winslow, Ph.D., <i>Compacta in the Stone-Čech Remainder of <math>R^n</math></i> , 1979.	·Slagjana Jakimovik, Ph.D., <i>Classification of Inverse Limits of Tent Maps</i> , 2005.
·Eiji Kurihara, Ph.D., <i>Essential Families, Mappings in Dimension Theory, and Hereditarily Infinite Dimensional Spaces</i> , 1984.	·James Maissen, Ph.D., <i>Extensions of Group Actions and the Hilbert-Smith Conjecture</i> , 2013.
·Chithra Krishnamurthi, Ph.D., <i>Self-Similar Sets in Complete Metric Spaces</i> , 1998.	·Jo Ann Lee, Ph.D., <i>Model of the Spread of Citrus Greening</i> , 2013.
·Vincent Ssembatya, Ph.D., <i>Homeomorphisms of Knaster Continua</i> , 2001.	·Joshua Hiller, Ph.D., <i>Modeling of Carcinogenesis Using Improved Methods</i> , summer 2017. Celeste Vallejo, Ph.D., <i>A Novel Analytical Technique for Stochastic Models with Application to Epidemiology</i> , 2018.
·Leon Hardy, Ph.D., <i>A construction of Hopf Algebra for manifolds of 2 and 3 dimensions</i>	

**MASTER'S THESIS:**

Christopher Krut, *Hidden Markov Models and a Conjecture of William Herschel*, 2008.

## UNDERGRADUATE HONORS THESES AND RESEARCH:

Scott Chastain, *Modeling the AIDS Epidemic*, 1991, special recognition by the *Undergraduate Research Initiative* of the College of Liberal Arts and Sciences, University of Florida.

Joseph Simons, *Fractals and Iterated Function Systems*, 1992, University of Utah.

Matthew Harvey, *Graph classification of tumor shapes and enumeration of unlabeled trees*, 2000, Undergraduate Research Scholar University of Florida.

Erik Lundberg, *Variations on a Theme of Sharkovskii*, graduated *summa cum laude* 2005, University of Florida.

Trista Jackson McMorro, *Mathematical modeling of carcinogenesis*, 2005, Undergraduate Research Scholar, graduated *summa cum laude* 2005, University of Florida.

Mike Segal, *Self-similar tiles*, Undergraduate Research Scholar (2006-7).

Meric Augat, *Self-similar tiles*, Senior Thesis (Summa cum Laude Fall Semester 2012).

Celeste Vallejo, *Epidemiology of a virus of Musca domestica*, Undergraduate Research Scholar (2012-13).

Jacob Simmons, Undergraduate Research Scholar, (2013-14), *Insect Pheromones*.

## DEPARTMENTAL SERVICE:

Chair Tenure Faculty Search (2018-19)

Chair of Departmental Search for EPI-CLAS  
Preeminence Hire

Chair Department of Mathematics (2008-13)

Liaison with Engineering Committee

Faculty Advisor GMA (Grad Student Assoc)

Promotion and Tenure Committee

Hiring Plan Committee (Chair)

Topology Ph.D. Exam Committee (Chair)

Center for Applied Mathematics

Graduate Selection Committee

## UNIVERSITY SERVICE:

Member of Internal Advisory Committee for  
*Emerging Pathogens Institute* at UF (2009-21)

EPI-CLAS Search Committee (2014)

Member Chair Search Committee Biology 2013

Chair of CLAS Assembly 2010-13

Member of NSF IGERT Grant Council 2010-12

Member of CLAS Faculty Council 2010-13

Member of Advisory Committee for  
*Computational Biology Initiative* at UF (2009-2013)

Special Advisory Committee to the President [Gave advice to the President on the final selection of Dean of CLAS] (2008)

Member of Faculty Senate 2007-2010, 2011-2014, 2014-2017

CLAS Task Force on Shared Governance (Chair, 2006-7) [Produced new CLAS Constitution]

CLAS Parliamentarian (2005-11)

CLAS Constitution Review Committee (Chair, *ex officio* as Parliamentarian)

Senate Committee Structure and Effectiveness

Senate Committee on Elections

Graduate Committee

SPEP Review Committee (Chair)

Liaison with External Advisory Com (Chair)

Committee on Teaching

TIP Evaluation Committee

Coordinator of Departmental Board of  
Regents Review 1989

Steering Committee

Committee on Applied Mathematics (Chair)

Graduate Coordinator

Several Search Committees (Chair)

College Constitution Review Committee (*ex officio* as past President Pro Tempore)

President Pro Tempore of the College of Arts and Sciences

Division of Sponsored Research Review  
Committee

College Advisory Committee [an *ad hoc* team of Faculty appointed by Dean Sidman to oversee the transition between Deans in the College, 1988-89]

College Nominating Committee (Chair)

College Steering Committee (Chair)

College Promotion and Tenure Committee (Chair)

Mathematics Educational Policy Committee (Chair)

Mathematics Chair Search Committee

College Curriculum Committee

College Travel Committee

**GENERAL PROFESSIONAL SERVICE:**

Team Chair, Program Review for Mathematics and Statistics, Texas State University, San Marcos, 2017.

External reviewer for Mathematics at Auburn (1988)

Spring Topology Conference Steering Committee (1988, 1995-97, 2006-2009, 2012-2018)

Summer Topology Conference Steering Committee (1998-2000)

Organizer for UF-FSU Topology Conference (1994,1996)

Reviewer for *State of Louisiana Research Programs* (1995)

Co-organizer of Dubrovnik Topology Conference held in Croatia in 1998, 2002, 2007, and 2011

Reviewer for *Texas Advanced Technology Programs* (1995,1997) (Chair of Mathematics Subcommittee in 1997)

A managing editor for *Topology and its Applications* (2000-2008)

Advisory Board *Topology and its Applications* (2008-)

Associate Editor for *Matemática Revista Complutense* (2004-12)

Organizer of Dynamics Session of Spring Topology Conference 2005 and 2006

Co-organizer with A. Dranishnikov, I. Ivansic, and S. Ungar of *Geometric Topology II*, held in Dubrovnik 2002

Co-organizer with A. Dranishnikov, I. Ivansic, and S. Ungar of *Dubrovnik VI, Geometric Topology*, held in Dubrovnik 2007

Member SACS *Substantive Change Committee*, University of Tennessee Chattanooga, 2005

Member SACS Review Committee, University of North Texas, 2006

Reviewer for Ph.D. Proposal University of North Carolina at Greensboro (UNC General Administration) 2007

Co-organizer with M. Bestvina, A. Dranishnikov, V. Matijevic, and S. Ungar of *Dubrovnik VII, Geometric Topology*, held in Dubrovnik 2011

SACS-COC off-site accreditation team reviewer 2011

Member of Program Advisory Council for Liberal Studies, *Full Sail University*, 2013.

Member of Program Advisory Council for Mobile Game Engineering, *Full Sail University*, 2013, 2014, 2015

**NONACADEMIC ACTIVITIES:**

Member of Creekside Community Church (Evangelical Free Church of America), 1967-2012. Gainesville, Florida. Elder, 1975-78, 1984-89, 1993-98, 2000-2005.

Chair of Elder Board and church, 1976-8, 1988-1990, 1994-97, 2001-2003

Member of First Presbyterian Church (U.S.A.) 2012-

Elder, First Presbyterian Church (U.S.A.) 2013-2019, Clerk of Session (2014-19)

President, Christian Faculty Fellowship, University of Florida, 1989-90, 93-94, 95-96, 2000-2004

Faculty Advisor: The Navigators, 1983-91, 2001- ; Kappa Phi Epsilon, 2014-

Heritage Advisory Board: Kappa Phi Epsilon, Christian Fraternity at UF, 2012-

**INVITED ADDRESSES:**

Conferences (place held, *title of talk*, year): SUNY at Buffalo, *Hyperspaces* (1969); University of Pittsburgh, *Dimension theory* (1969); SUNY at Binghamton, *Function spaces* (1970); University of Pittsburgh, *Shape theory and topological groups* (1971); L.S.U., *Homeomorphisms of the solenoid* (1972); City University of Rome (Italy), *Products in the shape category* (1973); V.P.I., *Movability and local connectivity* (1973); San Antonio (AMS), *Shape theory and topological groups* (1973); University of Utah, *Whitehead theorem in shape theory* (1974); Tuskaloosa (AMS), *Algebraic invariants in shape theory* (1975); Dubrovnik (Yugoslavia) (6 talks), *Shape theory* (1976); Auburn University, *Derived limit functors in shape* (1976); L.S.U., *Shape and the Stone- Čech compactification* (1978); University of Warsaw (Poland), *Shape and the Stone- Čech compactification* (1978); Mathematical Association of America, *Mathematics in biology* (1979);

U.S. Naval Academy, *Dimension theory* (1982); Baton Rouge (AMS), *Hausdorff dimension* (1982); Florida State, *Hausdorff dimension* (1983); Polish Academy of Sciences (Banach Center, Warsaw), *Shape and the Stone- Āech compactification* (one hour), *Embedding torus-like continua in Euclidean space* (one hour), *Hausdorff dimension* (two hours) (1984); Florida State, *Embedding torus-like continua in Euclidean space* (1985); Pan American University, *Biomathematical modeling* (1985); Dubrovnik (Yugoslavia), *Using solenoids in the study of the Stone- Āech compactification* (1986); Charlotte (AMS), *Hausdorff dimension* (1986); Ohio University, *Topological entropy of homeomorphisms of the solenoid* (1988); University of Tennessee, *Computing the topological entropy of a map* (1989); Duke University, *Shape and the Stone- Āech compactification* (1989); Ball State University, *The dimension of the space of functions* (1989); Tsukuba University (Japan), *Topological entropy of a map* (1990); Moscow State (Russia), *The topological entropy of homeomorphisms of a solenoid* (1992); Columbia, *Using flows in topology* (1993); Knoxville, *Attractors of flows* (1993); Park City, Utah, *The Higson compactification* (1994); Matsuyama, Japan, *The Higson compactification* (1994); Orlando, *Self-similar fractals for infinite iterated function systems* (1995); Orlando, *The Levy dragon and self-similar fractals* (1996); Banach Center, Warsaw, Poland, *The Higson compactification* (1996); Memphis, *The dimension of the boundaries of selfsimilar tiles* (1997); Orlando, *The dimension of the boundary of the L  vy Dragon* (1997); Louisville, *Dimension of the boundary of self-similar tiles* (1998); Dubrovnik, Co-organizer of *Geometric Topology* and talk, *The homeomorphism group of generalized Knaster continua* (1998); Mexico City, Mexico, *Properties of the Higson corona* (1998); Warsaw, Poland (1998), *Using homotopy classes to determine dimension in the Higson compactification* (two hour lectures); Madras, India (Indian Science Congress 1999), *A simulation model for the spread of dengue*; San Antonio (1999 AMS national meeting, 45 minute invited address), *Homeomorphisms of Knaster continua*; Gainesville (1999 AMS regional meeting), *Using the code space in analyzing self-similar fractals*; Kanagawa University (Topology Conference, 1999), *Using the code space in analyzing selfsimilar fractals*; Ohrid, Macedonia (Topology Conference, 2000), *Extending maps on Cantor sets to ambient spaces*; Birmingham (AMS, 2000), *New results and old results with new proofs concerning adding machines*; Valdosta State University (2001), *Fractals: a subject made possible by the computer* (Plenary address, sixth annual *Mathematics Technology Conference*); Saskatoon (CMS 2001), *Extending adding machines*; Matsue (Japan, 2002), *Adding machines in the quadratic family of maps* (International Conference in Topology); Osaka (Japan, 2002), *Fixed points in Knaster continua*; Lubbock (Spring Topology Conference, 2003), *Fixed points of Knaster continua*; Denton (Dynamics Conference, 2003), *Almost adding machines in the quadratic family*; Tallahassee (AMS, 2003), *What groups can be the fundamental groups of compact Hausdorff spaces?*; Birmingham (AMS 2004), *A new proof of K  ilhofer's Theorem solving Ingram's problem*; Split (Croatian Mathematical Congress, 2004), *Strange adding machines in the tent and quadratic families*; Orlando (WCNA2004), *Strange adding machines in the tent and and quadratic families*; Oaxaca (Mexico-Japan Topology Conference, 2004), *Inverse limits of tent maps*; Spring Topology and Dynamics Conference 2005 (Semi-plenary address, Rome, Georgia), *Inverse limits of tent maps*; Bedlewo, Poland (Borsuk Centennial Celebration, 2005), *What groups can be the fundamental groups of compact Hausdorff spaces?* Spring Topology and Dynamics Conference 2006 (Greensboro, NC), *On Ingram's conjecture and The structure of the Stone-Ćech compactification for paracompact spaces*; Summer Topology Conference (Topology Conference Georgia Southern, Statesboro, 2006), *Self-similar tiles*; Topology Conference, Oxford, England (2006), *Self-similar tiles*; GT2007, Peking University (Beijing, 2007) *Inverse limits of tent maps*; Dubrovnik Geometric Topology VI (Dubrovnik, 2007), *Inverse limits of tent maps*; Advances in Set Theory (Erice, Sicily, 2008), *Inverse limits of tent maps*; AMS (Huntsville, Alabama, 2008), *Homeomorphisms of inverse limits*; AMS (Waco,

Texas, 2009), *The homeomorphism group of inverse limits*; Spring Topology and Dynamics Conference (Starkville, Alabama, 2010), *Group Actions on Hilbert Space*; Czech-Slovak-Spanish Workshop on Discrete Dynamical Systems (La Manga, Spain, 2010), *Semi-Conjugacies and Onto Maps*; AMS (Statesboro, 2011), *Extending group actions to compactifications*; Huangshan (USTC sponsored 2011 International Conference on Measurable and Topological Dynamics and Related Topics), *Hilbert's Fifth Problem: A New Approach to an Old Problem*; UNAM (Oaxaca, México 2011) (sponsored by the Instituto de Matemáticas de la Universidad Autónoma de México and the Steklov Institute of Mathematics, Russian Academy of Sciences), *The Hilbert-Smith Conjecture: A new approach to an old problem*; Spring Topology Conference (Mexico City, 2012), *The Hilbert Smith Conjecture: A new approach to an old problem*; American Institute of Mathematical Sciences (Orlando, 2012), *The Hilbert-Smith Conjecture and Queueing theory in emergency care*; Summer Topology Conference (Minnesota State, 2012), *Estimating the Hausdorff dimension of a self-similar fractal*; Summer Topology Conference (Nipissing University, Northbay, Ontario, Canada, 2013), *Efficiency of emergency care*; Spring Topology Conference (University of Richmond, 2014), *New Directions in the Hilbert-Smith Conjecture*; SIAM SEAS (Florida Institute of Technology, Melbourne, FL, 2014), *Queueing Networks*; AIMS Conference (Universitaria Autonoma Madrid, 2014), *A Theorem on queueing theory with applications to queueing networks* and *Extending group actions on separable metric spaces*; Summer Topology Conference (College of Staten Island, New York, 2014), *Extending group actions on separable metric spaces*; Seventh Conference on Discrete Geometry and Algebraic Combinatorics (University of Texas, Brownsville, 2015), *New approaches to the Hilbert-Smith Conjecture*; Bing Lecture Series (Texas State University, 2015), *New Approaches to the Hilbert-Smith Conjecture*; AMS (University of Georgia, Athens, 2015), *A new approach to stochastic modeling*; AIMS Conference (Orlando, 2016), *A new way to analyze stochastic networks*, and *Fundamental groups and generalized covering spaces*; Spring Topology and Dynamics Conference (NJCU, 2017), *Monotonicity of topological entropy in the quadratic family*; Geometry of Banach Spaces and Geometric Topology (Beer Sheva University, Eilat campus, 2017), *Fundamental groups and generalized covering spaces*; Mathematical Congress of the Americas 2017 (McGill, Montreal), *Spaces all of whose loops are small*; AMS Meeting (Orlando, 2017), *A method of modeling stochastic networks using Little's Law*; Spring Topology and Dynamics Conference (Auburn, 2018), *The algebraic topology of the Stone-Cech compactification and some applications* and *Silent circulation of polio*; Spring Topology and Dynamics Conference (UA Birmingham, 2019), *Putting hyperbolic toral automorphisms to good use*; Arches Topology Conference (BYU, 2019), *Generalized covering spaces*; Dubrovnik Topology IX (Dubrovnik, 2019), *Applications of generalized covering spaces*; Geometric Topology, Celebrating the Year of Mathematics in Poland (Banach Center, Warsaw, 2019), *Applications of generalized covering spaces*.

Colloquia (inviting institution, title of talk, year): Florida State University, *Hyperspaces* (1969); Cornell, *Function spaces* (1970); University of Kentucky (4 talks), *Shape theory* (1973); University of Georgia (2 talks), *Shape theory*, *Catastrophe theory* (1976); University of Utah (2 talks), *Shape theory* (1976); University of Washington, *Shape theory* (1976); U.N.C. at Greensboro, *Shape theory* (1977); V.P.I., *Shape theory* (1977); University of Miami, *Shape theory* (1978); Adam Mickiewicz University (Poznan, Poland) (4 talks), *Shape theory* (1978); University of Puerto Rico (Mayagüez) (10 lectures), *Short course in biomathematics* (1982); University of Miami, *Hausdorff dimension* (1983); U.S.D.A. Insects Affecting Man Laboratory (2 talks), *Biomathematical modelling* (1985); University of Central Florida, *Biomathematical modelling* (1985); Western Kentucky University, *Biomathematical modelling* (1988); University of North Carolina at Greensboro, *Chaos, a new scientific paradigm* (1989); University of Washington (3 talks, the Millman Lectures), *Hausdorff dimension*, *Chaotic dynamics*, and *Topological entropy* (1989); Mississippi College (3 talks, the A. H. Germany Forum Lectures), *Hausdorff dimension*, *Biomathematical modelling*, and *Chaotic dynamics* (1990); University of Hawaii, *Chaos and Fractals* (1991); University of Utah, *Chaos and topological entropy* (1991); University of Utah,

*Fractal geometry: theory and applications* (1992); University of Craiova (Romania) (2 talks), *Fractal geometry and Biomathematical modelling* (1992); Institute for Informatics (Craiova, Romania), *Fractal geometry* (1992); Moscow Institute for Physics and Engineering (Moscow, Russia), *Fractal geometry* (1992); Texas Tech, *Fractals: Jagged geometry* (1993) (SIAM Lecture); Jacksonville University, *Jagged geometry and unpredictable functions. What is mathematics coming to?* (Lecture in the Science and Engineering Lecture Series, SIAM Lecture) (1993); University of Central Florida, *The Higson compactification and Higson corona* (1994); Bowdoin College, *Fractals: jagged geometry* (1994) (*Christie Lecture Series*, SIAM Lecture); University of Rhode Island, *Fractals: jagged geometry*, (SIAM Lecture); Kagawa University (Japan), *Fractals: jagged geometry* (1994); Calvin College, *Fractals: jagged geometry* (1995) (SIAM Lecture); University of North Florida, *Fractals: jagged geometry* (1995); University of West Alabama, *Fractals: jagged geometry and Biomathematics* (1996) (SIAM Lectures); Mongolia State University (Ulaanbaatar, Mongolia), (four talks) *Mathematics education in the United States, Fractal geometry, The cohomology of the Higson compactification, and Biomathematics* (1997); University of North Carolina Greensboro, *Self-similar fractals and tiles* (1998); St. Louis University, *Fractals: jagged geometry* (1998) (SIAM Lecture); Stetson University, *Biomathematics* (1998) (SIAM Lecture); Madras, India (Alladi Centenary Foundation Lecture 1999), *Brownian Motion from Einstein to Mandelbrot*; Madras, India (Tamil Nadu Academy of Science 1998), *The Higson compactification and its applications*; Madras, India (Vivekananda College 1999), *Dimension theory*; Madras, India (Anna University, Ramanujan Lecture 1999), *Fractal geometry*; Northern Michigan University, *Population dynamics, epidemiology, and gambler's ruin and Gaining insight into biology by simple mathematics* (1999) (SIAM Lectures); University of Nevada, Las Vegas, *Biomathematics and Fractals: jagged geometry* (1999) (SIAM Lectures); University of North Florida (2001), *Adding machines and the quadratic family of maps*; Baylor (2005), *Self-similar fractals*; Valencia CC (Orlando) (2005) (SIAM Lecture), *Self-similar fractals*; Santa Fe CC (2005) (SIAM Lecture), *Self-similar fractals*; Rhodes College (Memphis) (2006) (SIAM Lectures), *Self-similar fractals and Biomathematical modeling*; University of Science and Technology of China (Hefei, China) (2007) *Inverse limits of tent maps and Self-similar fractals*; Australian National University (Canberra, Australia) (2008) *Inverse limits of tent maps*; Santa Fe College (2008) *Biomathematics*; Georgia Southern University (2009) *Attractors and inverse limits* and SIAM Lecture *Biomathematics*; University of Miami (2009) *Attractors and inverse limits*; Mathematical Sciences Institute, Australian National University (2011), *The Hilbert Smith Conjecture*; Australian National University (2011); Mathematical Sciences Institute, Australian National University, *Semi-conjugacies and onto maps* (2011); Lamar University (2013), *Fractal Geometry and Biomathematics*; Full Sail University (2014), *Fractal Geometry with Applications to Media*; Full Sail University (2014), *Queueing Networks and Applications*; University of Miami (2014), *Agent based microsimulation model for the spread of Citrus Greening and Queueing Networks and Applications*; University of Texas Brownsville (2015), *Biomathematics*; Texas State University (2015), *Biomathematics*; University of Maryland (2016), *New Approaches to the Hilbert-Smith Conjecture*.

## PUBLICATIONS:

- [1] "Mappings and dimension in general metric spaces", *Pac. J. Math.* **25** (1968), 277-288.
- [2] "Open Mappings and closed subsets of the domain in general metric spaces", *Proc. Amer. Math. Soc.* **20** (1969), 238-245.
- [3] "Open and closed mappings and compactification", *Fund. Math.* **65** (1969), 73-81.
- [4] "Compactification and the continuum hypothesis", *Fund. Math.* **66** (1969), 53-54.
- [5] "Closed mappings which lower dimension", *Colloq. Math.* **20** (1969), 237-241.
- [6] "Closed mappings and local dimension", *Colloq. Math.* **21** (1970), 75-79.
- [7] "Compactness related properties in hyperspaces", *Lecture Notes in Mathematics* Vol. 171, Springer-Verlag, 1970, 40-44.
- [8] "Normality and properties related to compactness in hyperspaces", *Proc. Amer. Math. Soc.* **24** (1970), 760-766.
- [9] "Normality and compactness are equivalent in hyperspaces", *Bull. Amer. Math. Soc.* **76** (1970), 618-619.
- [10] "On the equivalence of normality and compactness in hyperspaces", *Pac. J. Math.* **33** (1970), 657-667.
- [11] "Locally compact full homeomorphism groups are zero-dimensional", *Proc. Amer. Math. Soc.* **29** (1971), 390-396.
- [12] "Proper mappings and dimension", *Proc. Amer. Math. Soc.* **29** (1971), 202-204.
- [13] "On certain ideals of  $C(X)$ ", *Duke Math. J.* **38** (1971), 259-263. (with P. Nanzetta).
- [14] "Function spaces and flows", *Proceedings of the Conference on Monotone Mappings and Open Mappings 1970*, SUNY at Binghamton, 270-284.
- [15] "Mappings and dimension in metric spaces", *Gen. Top. and Appl.* **2** (1972), 181-192.
- [16] "Using flows to construct Hilbert space factors of function spaces", *Trans. Amer. Math. Soc.* **161** (1971), 1-24.
- [17] "Proper mappings and the minimum dimension of a compactification", *Proc. Amer. Math. Soc.* **30** (1971), 593-598.
- [18] "The group of homeomorphisms of a solenoid", *Trans. Amer. Math. Soc.* **172** (1972), 119-131.
- [19] "Topological groups whose underlying spaces are separable Frechet manifolds", *Pac. J. Math.* **44** (1973), 181-190.
- [20] "Normality and infinite product spaces", *Advances in Math.* **9** (1972), 90-92.
- [21] "Shape theory and compact connected abelian topological groups", *Trans. Amer. Math. Soc.* **194** (1974), 349-358.
- [22] "Continuous mappings induced by shape morphisms", *Proc. Amer. Math. Soc.* **41** (1973), 3143-320.
- [23] "An algebraic property of the Čech cohomology groups which prevents local connectivity and movability", *Trans. Amer. Math. Soc.* **190** (1974), 151-162.
- [24] "On the shape of torus-like continua and compact connected topological groups", *Proc. Amer. Math. Soc.* **40** (1973), 297-302.
- [25] "Shape theory and topological groups", *Lecture Notes in Mathematics* Vol. 378, Springer-Verlag, 1974, 233-242.
- [26] "Products in the shape category and some applications", *Symposia Mathematica* Vol. XVI, Academic Press, 1975, 133-142.
- [27] "On movability and local connectivity", *Lecture Notes in Mathematics* Vol. 375, Springer-Verlag, 1974, 158-167. [28]
- [28] "The group of PL-homeomorphisms of a compact PL-manifold is an  $\ell^2_f$ -manifold", *Trans. Amer. Math. Soc.* **193** (1974), 249-256. (with D. Wilson).
- [29] "The Čech homology of compact connected abelian topological groups with applications to shape theory", *Lecture Notes in Mathematics* Vol. 438, Springer-Verlag, 1975, 325-331.
- [30] "On the Whitehead theorem in shape theory", *Fund. Math.* **92** (1976), 251-257.



- [31] "An example concerning the Whitehead theorem in shape theory", *Fund. Math.* **92** (1976), 259-263. (with J. Draper).
- [32] "Some examples in shape theory using the theory of compact connected abelian topological groups", *Trans. Amer. Math. Soc.* **219** (1976), 169-188.
- [33] "The Čech cohomology of movable and  $n$ -movable spaces", *Trans. Amer. Math. Soc.* **219** (1976), 149-167.
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