

## CURRICULUM VITAE

- NAME:** Charles Place Boyer
- CITIZENSHIP:** U.S.A.
- HOME ADDRESS:** 931 Green Valley Rd. N.W.  
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- OFFICE ADDRESS:** Department of Mathematics and Statistics  
University of New Mexico  
Albuquerque, N.M. 87131
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- LANGUAGES:** English (native)  
Spanish (fluent)  
French and German (technical reading)
- EDUCATION:** Pennsylvania State University  
-Ph.D., March 1972,  
Brookhaven National Laboratories  
-Summer school, 1969  
Pennsylvania State University  
-B.S., June 1966.
- DISSERTATION:** Field Theory on a Seven Dimensional Homogeneous Space of the Poincaré Group.  
Director: Gordon N. Fleming.
- AWARDS:** 2017-2022. Simons Foundation Collaboration Grant "Extremal Sasakian Geometry", #519432.
- 2013 Inducted as Fellow of the American Mathematical Society, Jan. 2013.
- 2012-2017. Simons Foundation Collaboration Grant "Extremal Sasakian Geometry", #245002.
2005. National Science Foundation Research Grant. "Einstein Manifolds, Sasakian Geometry, and Kähler Orbifolds", DMS-0504367.
2002. National Science Foundation Research Grant. "Contact Geometry, Fano Orbifolds, and Einstein Manifolds", DMS-0203219.

1999. National Science Foundation Research Grant. "Contact Geometry and Einstein Manifolds", DMS-9970904.

1994. National Science Foundation Research Grant. "Quaternionic Geometry, Einstein Manifolds, and the Topology of Moduli Spaces", DMS-9423752.

1992. National Science Foundation Research Grant. "The Geometry and Topology of Moduli Spaces", DMS-9200995.

1990. National Science Foundation Research Grant. "The Geometry and Topology of Instanton Moduli Space", DMS-9004076.

1988. National Science Foundation Research Grant. "Moduli Problems and Iterated Loop Spaces in Mathematical Physics", DMS-8815581.

1986. National Science Foundation Research Grant. "Geometrical Methods in Mathematical Physics", DMS-8508950.

1981. National Academy of Scientific Research (Mexico). National Prize in the Exact Sciences.

1971. Pennsylvania State University  
Graduate assistant teaching award.

1969. Brookhaven National Laboratories.  
Summer school stipend.

1966-1969. NDEA Pre-doctoral Fellowship.

**RESEARCH POSITIONS**

Emeritus Professor	Department of Mathematics and Statistics University of New Mexico	July 2012-present
Full Professor	Department of Mathematics and Statistics University of New Mexico	July 1988-2012
Associate Professor	Department of Mathematics and Computer Science Clarkson University	Aug. 1983-July 1988
Researcher (Titular C)	Research Institute of Applied Mathematics and Systems (IIMAS). Universidad Nacional Autonoma de Mexico. (UNAM)	Since 12/81 - 9/83
Visiting Research Fellow	Department of Mathematics Harvard University	February 1982 February 1981
Researcher (Titular B)	IIMAS-UNAM	December 1981 - April 1978
Researcher (Titular A)	IIMAS-UNAM	April 1978 -April 1975
Researcher (Asociado C)	IIMAS-UNAM	April 1975 -January 1974
Visiting Researcher	Le Centre de Recherches Mathematiques, University of Montreal	January 1974 - October 1973
Visiting Researcher	IIMAS-UNAM	October 1973 -September 1972

**TEACHING POSITIONS**

Emeritus Professor	Department of Mathematics and Statistics, University of New Mexico	July 2012-present
Full Professor	Department of Mathematics and Statistics, University of New Mexico	July 1988-2012 Present
Associate Professor	Department of Mathematics and Computer Science Clarkson University	August 1983 -July 1988
Adjunct Professor	College of Science UNAM	Since 1974-1983
Adjunct Professor (Advanced Seminar on Mechanics)	Department of Mathematics Universidad Autonoma Metropol itana	Sept. 82 - Aug. 83

### TEACHING ACTIVITIES

I have over 30 years experience teaching mathematics in both Spanish and English.

a) **Curriculum Development:** I have designed much of the current puremath track in the graduate program at the University of New Mexico, especially the geometry part. In particular, I have recently developed a course that is partly based on the research monograph/graduate text that K. Galicki and I have written. This book is published by Oxford University Press.

b) **Students:**

- (1) I supervised two undergraduate dissertations and two Master's dissertations while at IIMAS in the National Autonomous University of Mexico. One of my Master's students, Oscar Adolfo Sanchez Valenzuela received his Ph.D from Harvard University under the direction of S. Sternberg.
- (2) At the University of New Mexico I supervised 8 Ph.D dissertations.
- (3) I currently have 1 graduate student graduating in 2014 and one still working on his Ph.D dissertation.

### UNIVERSITY SERVICE

I have served on many different committees during my career. Here I list a few of the most important committees:

- (1) I served as Interim Chair of the Department of Mathematics and Statistics at the University of New Mexico for the Academic Year 2003/2004.
- (2) I have served twice on the A&S Senior Promotion Committee at the University of New Mexico, once as Chair of that committee.
- (3) I served as Chair of the Graduate Committee from 1989 to 1992.
- (4) I served often on the Executive Committee of the Department of Mathematics and Statistics at the University of New Mexico.
- (5) I served on the Executive Committee for the Center for Nuclear Studies at the National Autonomous University of Mexico.

### FURTHER SCIENTIFIC ACTIVITIES

#### a) Invited Talks at Scientific Conferences (1972-1994)

Workshop on Quaternionic Geometry, Vienna, Austria.	October 1994	The Hypercomplex Geometry of Stiefel Manifolds
Special Session of AMS, Geometry and Topology of Moduli Spaces Cincinnati, Ohio.	January 1994	The Topology of Rational Maps into Generalized Flag Manifolds
Workshop on Riemannian Metrics Satisfying Curvature Equations, MSRI, Berkeley, Ca.	Sept. 1993	New Examples of Inhomogeneous Einstein Manifolds of Positive Scalar Curvature
Conference on	August 1993	The Geometry and Topology of

Algebraic Topology in Honor of Samuel Gitler Cocoyoc, Mexico		Instanton Moduli Spaces
Aspects of General Relativity and Mathematical Physics in Honor of Jerzy Plebanski Mexico City, Mexico	June 1993	Jerzy Plebanski's Influence on the Career of a Mathematician
Symposium on Gauge Theories Warwick Univ. England	July 1992	The Atiyah-Jones Conjecture
Differential and Holomorphic Geometry University of California at Riverside	May 1992	The Atiyah-Jones Conjecture
Clifford Lectures Conference, Tulane University	Feb. 1992	The Topology of Instanton Moduli Spaces
Two Talks at First Workshop on Differential Geometry and Mathematical Physics, Guanajuato, Mexico.	Oct. 1990	(1) Algebraic Cycles and Infinite Loop Spaces (2) The Hyperkähler Geometry of the ADHM Construction
Summer AMS Institute on Differential Geometry, UCLA, Ca.	July 1990	The Hyperkähler Geometry of the ADHM Construction
Special Session of AMS Geometry and Topology of Moduli Spaces Albuquerque, N.M.	April 1990	Hyperkähler Morse Theory of $k = 2$ Instantons
Workshop, Applications of Algebraic Topology to Geometry and Analysis Berkeley, Ca.	January 1990	The Geometry and Topology of Instanton Moduli Spaces
Annual Seminar Canadian Math. Society Montreal, Canada	August 1989	Quaternionic Lie Algebras, Hyperkähler Geometry, and Instantons
Clifford Lectures Conference, Tulane	April 1988	Instantons and Iterated Loop Spaces

## University

Kaluza-Klein Theory Conference, Univ. of New Mexico	Jan. 1988	Instantons, Monopoles, and Iterated Loop Spaces
Northwest Geometry Conference, Oregon State Univ.	Oct. 1987	Instantons, Monopoles, and Iterated Loop Spaces
Symmetry Methods in Differential Equations, Utah State Univ.	June 1987	Instantons, Monopoles, and Iterated Loop Spaces
Charlotte, N.C.	Oct., 1986	Special Session on Twistor Theory and Four Dimensional Riemannian Geometry in regional meeting of American Mathematics Society, "Self-Dual and Anti-Self-Dual Hermitian Metrics on Compact Complex Surfaces".
Montreal, Canada	Aug. 1985	Seminaire de Mathematiques Superieuries "The Curved Twistor Construction as an Integrable System".
San Luis Obispo, CA	Nov. 1983	Special Session of Geometric Methods in Partial Differential Equations in regional meeting of American Math Society, Group theory and the twistor method for self-dual Einstein spaces.
Oaxtepec, Mexico	Dec. 1982	School and Workshop on Nonlinear Phenomena Lectures on, The Geometry of Self-dual Einstein Spaces.
Oaxtepec, Mexico	Aug. 1981	Algebraic Topology Conference, On the Structure of Supermanifold.
Mexico City, Mex.	Dec. 1980	Workshop on Nonlinear Equations. Killing Vectors in Self-dual Einstein Spaces.
Mexico City, Mex.	Dec. 1979	Conference on Gauge Theories. Gravitational Instantons.
Waterloo, Ontario Canada	Aug. 1977	Special session on Complex Method and Exact Solutions iin the 8th International Conference on General Relativity and Gravitation. General

Relativity and G-Structures.

Albuquerque, N.M.	Nov. 1976	Special session on Partial Differential Equations in the regional Meeting of the American Mathematical Society. Symmetries of Partial Differential Equations and G-Structures.
San Antonio, TX	Jan. 1976	Special session on Special Functions in the annual meeting of the American Mathematical Society. Applications of Lie Theory of Special Functions.
Mexico City, Mex.	Jan. 1976	The International Symposium on Mathematical Physics. Symmetries and Exterior Differential Forms.

**b) Talks at Seminars and Scientific Conferences**

Oklahoma State Univ. Stillwater, Okla.	April 1995	Colloquium Talk Quaternionic Geometry and 3-Sasakian Manifolds
Univ. of Valencia, Valencia, Spain.	January 1995	Seminar Talk Geometria Cuaternionica y Variedades 3-Sasakianas
CIMAT, Guanajuato, Mexico.	July 1994	Seminar Talk Estructuras Complejas sobre Variedades de Stiefel
Univ. of New Mexico	Oct. 1993	New Mexico Geometry/ Topology Conf. New Examples of Inhomogeneous Einstein Manifolds of Positive Scalar Curvature
McGill University Dept. of Mathematics	Jan. 1993	Seminar Talk The Geometry of 3-Sasakian Manifolds
Univ. of Minnesota Dept. of Mathematics	April 1992	Colloquium Talk The Atiyah-Jones Conjecture
Harvard Univ. Dept. of Mathematics	Feb. 1992	Geometry Seminar Talk The Atiyah-Jones Conjecture
Phoenix, Ariz.	Jan. 1989	Annual Meeting of AMS Instantons, Monopoles, and Iterated Loop Spaces

Stanford Univ. Dept. of Mathematics	Nov. 1988	Geometry Seminar Talk The Hyperkahler Geometry of Instantons
Univ. of New Mexico Dept. of Mathematics	Oct. 1988	Colloquium Talk The Geometry of Gauge Fields
Univ. of New Mexico Dept. of Mathematics	Mar. 1988	Colloquium Talk Iterated Loop Spaces in Mathematical Physics
Temple University Dept. of Mathematics	Feb. 1988	Colloquium Talk Instantons and Iterated Loop Spaces
Rochester University Dept. of Mathematics Rochester New York	Oct. 1987	Colloquium Talk Instantons, Monopoles, and Iterated Loop Spaces
National University of Mexico, Institute of Applied Mathe- matics	July 1987	Two Seminar Talks Instantones, Monopolos, y Espacios de Lasos
Lehigh Conference in Geometry and Topology	May 1987	Operad Constructions on Instantons
State University of New York at Stony Brook Dept. of Mathematics	Feb. 1987	Seminar Talk Homology Operations on Instantons
University of Waterloo, Dept. of Mathematics	Nov. 1986	Seminar Talk Homology Operations on Instantons
AMS Summer Institute: Mathematics of General Relativity, University of California at Santa Cruz	June 1986	Self-dual and Anti-self-dual Metrics on Compact Complex Surfaces
Lehigh Conference in Geometry	May 1986	Conformal Duality and Compact Complex Surfaces
Institute for Advanced Study, Princeton, New Jersey	Jan. 1986	Seminar Talk Self-dual Metrics on Compact Complex Surfaces



Cinestav, Mexico	June 1985	Seminar Talk Dualidad Conforme y Superficies Complejos Compactos.
National University of Mexico	June 1985	Seminar Talk Dualidad Conforme y Superficies Complejos Compactos.
National University of Mexico, Institute of Applied Mathe- matics	Aug. 1984	Seminar Talk La Construccion Twistorial en la Fisica Matematica
University of Waterloo, Dept. of Mathematics	Apr. 1984	Seminar Talk Methods of Complex Geometry in Mathe- matical Physics
Clarkson University Dept. of Mathematics	Dec. 1983	Seminar Talk The Mathematics of Supersymmetry and Supergravity
University of Montreal, Center of Applied Mathematical Research	Oct. 1983	Seminar Talk Group Theory and the Twistor Method for Self-Dual Einstein Spaces
Metropolitan Uni- versity, Mexico	May 1983	Seminar Talk Metodos Geometricos en Ecuaciones Parciales Diferenciales.
Los Alamos National Laboratories	Apr. 1983	Seminar Talk Geometric Methods in Partial Differ- ential Equations
University of New Mexico, Dept. of Physics	Apr. 1983	Seminar Talk Superposition Principles for Self- dual Einstein Spaces.
Rice Unviersity Dept. of Mathe- matics	Apr. 1983	Seminar Talk An Infinite Hierarchy of Conservation Laws and Superposition Principles for Self-dual Einstein Spaces.
University of Minn- esota, Dept. of Mathematics	Apr. 1983	Seminar Talk An Infinite Hierarchy of Conservation Laws and Superposition Principles for Self-dual Einstein Spaces.

University of Montreal, Center of Applied Mathematical Research	Apr. 1983	Seminar Talk Nonlinear Superposition Principles for Self-dual Einstein Spaces.
Polytechnical Insti- tute of Mexico, Center of Advanced Studies	Mar. 1983	Seminar Talk La Construcion de Twistor en Espacios de Einstein Autoduales.
University of Georgia, Dept. of Physics	Jan. 1983	Seminar Talk An Infinite Hierarchy of Conservation Laws and the Twistor Construction in General Relativity.
Clarkson University Department of Mathematics	Jan. 1983	Seminar Talk An Infinite Hierarchy of Conservation Laws and the Twistor Construction in General Relativity.
University of Montreal, Center of Applied Mathe- matical Research	Jan. 1983	Seminar Talk An Infinite Hierarchy of Conservation Laws and the Twistor Construction in General Relativity.
Brandeis University Department of Mathematics	Sept. 1981	Seminar Talk Supermanifolds and Physics.
University of Montreal, Center of Applied Mathematical Research	July 1981	Seminar Talk The Theory of $G^\infty$ Supermanifolds.
Harvard University Department of Mathematics	March-April 1981	Several Seminar Talks The Theory of $G^\infty$ Supermanifolds an its Relation to Physics
University of New Mexico, Department of Mathematics	Oct. 1980	Seminar Talk The Theory of $G^\infty$ Supermanifolds.
University of New Mexico, Department of Mathematics	Oct. 1980	Seminar Talk Gravitational Instantons.
Cocoyoc, Mexico	June 1980	The Ninth International Colloquium on

		Group Theoretical Methods in Physics. The Theory of $G^\infty$ Supermanifolds.
Polytechnical Institute of Mexico of Center of Advanced Studies	Mar. 1980	Seminar Talk La Teoria de las Supervariedades.
Trieste, Italy International Center for Theoretical Physics	Aug. 1979	The Second Marcel Grossman Meeting Separation of Variables in Einstein Spaces.
Puebla, Mexico	Nov. 1978	Meeting of Mexican Mathematical Society. Geometria Diferencial Graduada.
Austin, Texas	Sept. 1978	The Seventh International Colloquium on Group Theoretical Methods in Physics. Graded G-structures.
University of New Mexico, Department of Physics	Sept. 1978	Seminar Talk Symmetry and Separation of Variables in Mathematical Physics.
Mexico City, Mexico	Aug. 1978	Latin American Symposium on Generation Relativity and Gravitation. Graded Differential Geometry.
Mexico City, Mexico	Sept. 1977	First Joint Symposium of Tel Aviv University and UNAM. G-structures and General Relativity.
Montreal, Canada	July 1976	The Fifth International Colloquium on Group Theoretical Methods in Physics. Symplectic Structures in Complex Riemannian Geometry.
University of Montreal, Center for Mathematical Research	Nov. 1975	Seminar Talk Symmetries of Partial Differential Equations.
Nijmegen, Holland	June 1975	The Fourth International Colloquium on Group Theoretical Methods in Physics. Symmetries of Partial Differential Equations.
University of	April 1975	Seminar Talk

Minnesota, Department of Mathematics		Lie Theory and Separation of Variables and Physics.
University of Montreal, Center for Mathematical Research	Oct. 1973	Seminar Talk Symmetries of the Schrödinger Equation.
Mexico City, Mexico	June 1973	The Symposium on Symmetry in Nature. Deformations in Lie Algebras.
Mexico City, Mexico	April 1973	The Mexico-Israel Scientific Symposium. Deformations in Lie Algebras.
Washington, DC	Mar. 1972	The Annual Meeting of American Physical Society. Field Theory on Homogeneous Spaces of the Poincare Group.

#### Invited Talks 1995-present

- (1) Colloquium Talk, Oklahoma State Univ., April 1995: The Geometry of 3-Sasakian Manifolds.
- (2) Workshop on the Topology of Moduli Spaces, Montreal, CA, May 1995: Moduli Problems in Quaternionic and 3-Sasakian Geometry.
- (3) Invited talk in the Special Session on Differential Geometry, Joint AMS Mexican Mathematical Society meeting, Guanajuato, Mex. Nov. 1995: The Twistor Space of a 3-Sasakian Manifold.
- (4) Colloquium talk at Texas A& M Univ., Nov. 1996: Einstein Manifolds of Positive Scalar Curvature.
- (5) Invited talk in the Special Session on Global Riemannian Geometry at the Regional American Mathematical Society Meeting in New York City, April 1996: The Twistor Space of 3-Sasakian Manifolds.
- (6) Workshop on the Geometry, Physics, and Homotopy, Fields Institute, Toronto, CA, April 1996: Topological Stability Theorems for Spaces of Rational Curves.
- (7) Two talks at the International Centre for Mathematical Sciences, Edinburgh, Scotland, June 1996, at the conference, Interplays between Geometry and Topology: (1) The Twistor Space of a 3-Sasakian Manifold, (2) Hypercomplex Structures on Circle Bundles over 3-Sasakian Manifolds.
- (8) Conference on Moduli Spaces and Homotopy, Oberwolfach, Germany, Sept. 1996: Topological Stability for Spaces of Rational Curves.
- (9) Invited talk at the Conference in Honor of the 60th Birthday of J. Patera and P. Winternitz, Montreal Canada Jan. 1997: Quaternionic Geometry and Einstein Manifolds.
- (10) Invited talk at the conference: Future Directions in Mathematic Sciences, a Conference honoring the 60th birthday of D. Aronson, W. Littman, W. Miller, Jr., G. Sell, and H Weinberger. Univ. of Minnesota, April 1997: Two Applications of Symmetry Methods to Geometry and Topology.

- (11) **Invited Plenary Address** at the AMS Regional Meeting, Nov. 1997, Albuquerque, N.M.: Quaternionic Geometry and Einstein Manifolds.
- (12) Invited talk at the Regional Meeting of the Canadian Mathematics Society, June 1998, St. Johns, New Brunswick, CA.: Einstein Manifolds and Contact Geometry.
- (13) Invited talk at the Texas Geometry and Topology Conference, Feb. 1999, Lubbock, TX.: Einstein Manifolds via Contact Geometry.
- (14) Invited talk in the Special Session in Algebraic Topology at the Fourth International Joint Meeting of the AMS and Sociedad Matemática Mexicana, May 1999, Denton TX.: The Classifying Space of an Orbifold and some Applications.
- (15) Talk at the Erwin Schrödinger Institute, Vienna, Austria, Oct. 1999: Einstein Metrics via Contact Geometry.
- (16) Invited talk in the Special Session on Differential Geometry at the joint meeting of American Mathematics Society-Scandinavia, Odense, Denmark, June 2000: Sasakian Geometry and Links of Isolated Hypersurface Singularities.
- (17) Invited series of two talks in La Matemática en el Umbral del Siglo 21, Mexico City, October 2000: La Geometria Diferencial y su relacion con Geometria Algebraica y La Física.
- (18) Invited Colloquium talk at Department of Mathematics, SUNY-Stony Brook, April 2001: Sasakian-Einstein Geometry and Algebraic Geometry.
- (19) Invited talk in the Special Session on Ricci Curvature and Related Topics in Hoboken, New Jersey, April 2001: Sasakian-Einstein Geometry and Algebraic Geometry.
- (20) Talk in the Special Session on Differential Geometry at the Fifth Joint American Mathematical Society–Mexican Mathematical Society Meeting in Morelia, Mexico in May 2001: Sasakian-Einstein Geometry and Mori Theory.
- (21) Invited talk in the London Mathematical Society Durham Symposium on Special Structures in Differential Geometry, August 2001: Sasakian Geometry and Algebraic Geometry.
- (22) Invited talk in the Special Session on Extremal Metrics and Moduli Spaces in Irvine California, November 2001: On Moduli Spaces of Sasakian Structures.
- (23) Invited talk in the Mathematical Physics Seminar, Centre de Recherche Mathematique, Univ. de Montreal, March 2002: Sasakian Geometry and its Applications to Physics.
- (24) Invited talk in the Geometry Seminar, Universite du Quebec aux Montreal, March 2002: Rational Homology 5-Spheres with Positive Ricci Curvature.
- (25) Invited talk at the Conference on Symplectic, Contact Geometry, and Group Actions, MIT, April 2002: Sasakian Geometry.
- (26) Invited talk at the Conference, Géométrie des variétés de petites dimensions et géométries spéciales, Luminy, France, June 2002: Sasakian Geometry on  $n - 1$ -connected  $2n + 1$ -manifolds.
- (27) Invited talk at the Special Session in Complex, Contact and Quaternionic Geometry at the First joint meeting of the Unione Matematica Italiana and

- American Mathematical Society, Pisa Italy, June 2002: Sasakian Geometry and Exotic Structures.
- (28) Invited talk at the Besse Seminar, Ecole Polytechnique, Paris, France, July 2002: Sasakian Geometry, Exotic Structures, and Positive Ricci Curvature.
  - (29) Invited Speaker for the Goldberg Memorial Lecture, Dept. of Mathematics, Univ. of Illinois, Urbana-Champaign, Nov. 2002: The Influence of Samuel Goldberg on Sasakian Geometry.
  - (30) Invited talk at the Special Session in Moduli Spaces in Geometry and Physics at the First Joint Meeting of the Real Sociedad Matemática Española and American Mathematical Society, Seville (Spain) on June 18-21, 2003: Moduli Problems in Sasakian Geometry.
  - (31) Invited Colloquium talk at Mathematics Department of the Université di Roma "La Sapienza", July 2003: Groupoids in Sasakian Geometry.
  - (32) Invited talk at the Black Sea EDGE-Workshop on Differential Geometry, Albena, Bulgaria, July 7 to July 13, 2003: A Survey of Sasakian Geometry.
  - (33) Invited talk in the Special Session on Geometric Structures on Manifolds at the National AMS meeting in Phoenix, AZ, January 7-10, 2004: Einstein Metrics on Spheres.
  - (34) Invited talk at the Pacific Northwest Geometry Seminar at Stanford, Ca, Feb. 21-22, 2003: Einstein Metrics on Exotic Spheres.
  - (35) Invited Colloquium talk at the Mathematics Department of Washington University, Feb 26, 2004: Einstein Metrics on Spheres.
  - (36) Colloquium talk at the Mathematics Department of Florida International University, April 8, 2004: Einstein Metrics on Spheres.
  - (37) Invited talk at the Short Program on Riemannian Geometry at the Centre de Recherche Mathématique, Univ. de Montreal, July 2004: Einstein Metrics on Spheres.
  - (38) Two invited lectures in the Workshop on Moment maps and surjectivity in various geometries at the American Institute of Mathematics, Palo Alto, Ca, August 2004: Toric 3-Sasakian Geometry.
  - (39) Invited talk at the Harvard/MIT Algebraic Geometry Seminar, MIT Cambridge Ma. September 2004: Algebraic geometry and Einstein metrics on spheres.
  - (40) Invited talk at the Texas Geometry and Topology Conference, Texas A&M University, October 2004: Sasakian Geometry and Einstein Metrics on Spheres.
  - (41) Invited talk in the Geometry and Topology Seminar, University of Maryland, April 4, 2005: Sasakian Geometry and Einstein Metrics on Spheres.
  - (42) Invited Colloquium talk, New Mexico State Univ., April 14, 2005: Einstein Metrics on Spheres.
  - (43) Invited talk at the Conference on Differential Geometry—in honor of Paul Gauduchon, École Polytechnique, Palaiseau, France, May 19-20, 2005: Sasakian Geometry and Einstein Metrics on Spheres.
  - (44) Invited talk at the Special Session on Differential Geometry of the First Joint meeting of the Sociedad Matemática Mexicana and the Canadian Mathematical Society, CIMAT, Guanajuato, Sept. 2006: On Toric Sasakian Geometry.

- (45) Gave one lecture of a minicourse on Sasakian Geometry with K. Galicki and S. Simanca during the Conference: Riemannian Topology, Geometric Structures on Manifolds, Albuquerque, N.M., Oct. 2006.
- (46) Invited talk at the Special Session on Differential Geometry in the Joint meeting of the Sociedad Matemática Mexicana and the American Mathematical Society, Zacatecas, México, May, 2007: Sasakian Geometry in Low Dimensions.
- (47) Invited as a Distinguished Professor to give a short course (in Spanish) at CIMAT, Guanajuato, Mexico, June 2007: Title: Introducción a la geometría Sasakiana.
- (48) Invited Seminar talk at CIMAT, Guanajuato, Mexico, June 2007: Métricas de Einstein sobre Esferas.
- (49) Invited talk at the Annual Meeting of the Mathematical Society of Japan, Tokyo Japan, Sept. 2008, Title: Sasakian Geometry in Dimensions Five and Seven.
- (50) Talk at the Geometry and Mathematical Physics Conference in memory of Kris Galicki, Oct. 2008, Title: The Work of Krzysztof Galicki
- (51) Invited series of 3 lectures at the Mini-Encuentro de Geometría Diferencial held at CIMAT, Guanajuato, Mexico, Jan. 2009. Title: Moduli Problems in Sasakian Geometry
- (52) Invited seminar talk at SUNY, Stony Brook, N.Y., Feb. 2009. Title: Einstein Metrics, Contact Geometry, and Algebraic Geometry
- (53) Invited seminar talk at the Courant Institute of New York University, March 2009. Title: Einstein Metrics in Abundance
- (54) Invited talk at the conference: Kähler and Sasakian Geometry in Rome, Rome, Italy, June 2009. Title: Sasakian Geometry: the Recent Work of Krzysztof Galicki.
- (55) Invited talk at the conference: Extremal Kähler Geometry in Banff, CA, June-July 2009. Title: The Kähler cone versus the Sasaki cone.
- (56) Invited Seminar talk at McMaster University, Ontario, Canada, October, 2009. Title: Maximal Tori in Contactomorphism Groups.
- (57) Invited Colloquium talk at McMaster University, Ontario, Canada, October, 2009. Title: Einstein Metrics on Spheres.
- (58) Invited talk at the Conference on Kaehler and related geometry, Nantes, France, Nov. 2009. Title: Maximal Tori in Contactomorphism Groups and Extremal Metrics.
- (59) Invited Seminar talk at University of California at Riverside, Riverside California, Jan. 2010. Title: Maximal Tori in Contactomorphism Groups and Extremal Metrics.
- (60) Invited talk at the conference: Symmetry, Separation, Super-integrability, and Special Functions, Univ. of Minnesota, Sept. 17-19, 2010. Title: On Toric Contact Geometry.
- (61) Invited talk at the Workshop on Extremal Kähler Metrics at the Simons Center for Geometry and Physics, Stony Brook NY, March 21-25, 2011. Title: Extremal Sasakian Geometry.
- (62) Invited talk at the Conference on Geometric Structures in Mathematical Physics, in Golden Sands, Bulgaria, September 19-26, 2011. Title: Extremal Sasakian Geometry.

- (63) Invited talk at the Workshop on Ricci Solitons and Symmetry, at the University of Oklahoma, March 16-18, 2012. Title: Extremal Sasaki Metrics.
- (64) Invited talk at the conference: Differential Geometry Days, in honor of Luis A. Cordero, in Santiago de Compostela, Spain, June 27-29, 2012. Title: Extremal Sasakian metrics on  $S^3$ -bundles over Riemann surfaces.
- (65) Invited Colloquium talk at Universidad del Pais Vasco, Bilbao, Pais Vasco, Spain, July 2012. Title: Einstein Metrics on Spheres.
- (66) Invited talk at the Annual AMS meeting in the Special Session on Manifolds with Special Holonomy and Generalized Geometries, San Diego CA, January 9-12, 2013. Title: The Join Construction & Extremal Sasakian Geometry.
- (67) Invited talk at the Annual AMS meeting in the Special Session on Symplectic and Contact Structures on Manifolds with Special Holonomy, Baltimore, MD, Jan. 15-19, 2014. Title: Sasaki join, transverse Hamiltonian 2-forms, and Sasaki-Einstein metrics.
- (68) Invited talk at the conference on Real and Complex Differential Geometry, Bucharest, Romanian, Sept. 8-12, 2014: Title: Extremal Sasakian Geometry: the Join and Admissible Constructions.
- (69) Invited talk in the Geometry Seminar of the Institute of Mathematical Sciences (ICMAT) in Madrid, Spain, February 2015: Title: Extremal Sasakian Geometry: the Join and Admissible Constructions (in Spanish).
- (70) Invited to give a Mini-course at the Pontificia Universidad Católica del Perú, March 15-April 15, 2015: Title: Geometria Sasaki Extremal (in Spanish).
- (71) Invited Colloquium at Pontificia Universidad Católica del Perú, April 14, 2015: Title: Geometria Sasaki Extremal y la Construcción "Join" (in Spanish).
- (72) Invited Talk at the conference: Recent Advances in Kähler Geometry, at Vanderbilt University, May 18-22, 2015. Title: Moduli Problems in Sasakian Geometry.
- (73) Gave a series of three lectures at the Inaugural Geometry Lectures at CIMAT Mérida, Mexico, Sept. 30-Oct. 02, 2015. Title: Extremal Sasaki Geometry.
- (74) Gave an invited talk in the 21st Symposium on Complex Manifolds in Kanazawa, Japan, Oct. 28-30, 2015. Title: Extremal Sasaki Geometry.
- (75) Invited talk at the Workshop on Graded Algebra, Geometry and Related Topics, Mérida, Mexico, Nov. 15-18, 2016: Title: A Panarama of Sasakian Geometry.
- (76) Invited talk at the FIU Winter Conference on Geometry, Topology and Applications, Miami, Florida, Jan. 4-7, 2017: Obstructions for Extremal Sasaki Metrics.
- (77) Invited talk at the Conference on Gauge Theories, Monopoles, Moduli Spaces and Integrable Systems in honor of Jacques Hurtubise, Montreal, Quebec, Canada, Aug 21-25, 2017: The Kähler Geometry of Bott Manifolds.
- (78) Invited talk at the Conference RIEMain in Contact, in honor of David Blair, Cagliari, Italy, June 18-22, 2018: Contact Structures of Sasaki Type and their (local) Moduli.



- (79) Invited talk at the AUSTRALIAN-GERMAN WORKSHOP ON DIFFERENTIAL GEOMETRY IN THE LARGE, University of Melbourne, Australia, Feb. 4-15, 2019: Extremal Sasaki Geometry.
- (80) Talk (virtual) at Group theoretical methods in physics in memory of Pavel Winternitz, July 26, 2021: Reminiscences of Pavel Winternitz.
- (81) Invited talk (virtual) at the Workshop on Special Geometries on Riemannian Manifolds, UQAM and CRM, Montreal, Canada, Oct.11-15, 2021: Transverse Kähler Holonomy and Sasakian Rigidity.

### MEMBERSHIPS IN PROFESSIONAL SOCIETIES

- (1) American Mathematical Society
- (2) The National Academy of Scientific Research of Mexico

### EDITOR

Associate Editor for Rocky Mountain Journal of Mathematics (2001-2010)

### ORGANIZATION OF SCIENTIFIC CONFERENCES

- (1) I was a co-organizer with D. Vassilev and D. Grandini, of a Special Session of the Regional American Mathematical Society Meeting which took place in Albuquerque, N.M., April 5-6, 2014.
- (2) I was a co-organizer with C. Tønnesen-Friedman and J. Jauregui for the session on Special Geometric Structures at the Union College Mathematics Conference, Oct. 19-20, 2013.
- (3) I was a co-organizer, with D. Vassilev, of a Special Session of the Regional American Mathematical Society Meeting which took place in Albuquerque, April 17-18, 2010.
- (4) On the Scientific Organizing Committee for the conference: Kähler and Sasakian Geometry in Rome, June 2009.
- (5) Organized the conference: Geometry and Mathematical Physics Conference in memory of Kris Galicki held in Albuquerque, N.M. Oct. 2008 (with K. Vilonen)
- (6) Organized a Special Session entitled Geometric Structures on Manifolds for the Western Sectional Meeting of the American Mathematical Society held in Albuquerque, N.M., Oct. 2007 (with K. Galicki).
- (7) Organized Special Session, entitled Interactions in Riemannian Geometry, of the Regional AMS Meeting held in Albuquerque N.M. Oct 16-17. 2004 (with K. Galicki).
- (8) Organized Special Session in Differential Geometry for the Joint American Mathematical Society–Mexican Mathematical Society Meeting in Morelia, Mexico in May 2001 (with Adolfo Sanchez Valenzuela).
- (9) I was appointed to the AMS organizing committee for the Third Joint American Mathematical Society–Mexican Mathematical Society Meeting to take place in Oaxaca, Mexico in December 1997.
- (10) Organized Special Session, entitled Quaternions in Differential and Algebraic Geometry, to the Regional AMS Meeting held in Albuquerque N.M. Nov. 1997 (with K. Galicki).

- (11) The New Mexico Geometry/Topology Conference. This is a joint conference organized by UNM and New Mexico State University. It has been meeting biannually beginning in 1991 with the Fall meeting at UNM and the Spring meeting in Las Cruces.
- (12) Organized Special Session of a regional AMS Meeting, The Topology and Geometry of Moduli Spaces, April 1990, Albuquerque, N.M. (with B. Mann).
- (13) Organized The First Cervantes Workshop on Differential Geometry and Mathematical Physics, October 1990, Guanajuato, Mexico (with Adolfo Sanchez Valenzuela).

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- (2) On the Decomposition  $SO_0(p-1, 1) \subset SO_0(p, 1)$  for Most Degenerate Representations. *Journal of Mathematical Physics*, Vol. 12, No. 10, pp. 2070-2075 (1971) with Farhad Ardalan.
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- (5) Deformations of Inhomogeneous Classical Lie Algebras to the Algebras of the Linear Groups. *Journal of Mathematical Physics*, Vol. 14, No. 12, pp. 1853-1859 with K.B. Wolf.
- (6)  $sl(4, \mathbb{R})$  as a Spectrum-Generating Algebra for the Coulomb Systems. *Lettre a Nuovo Cimento*, Vol. 8, No. 7, pp.458-460 (1973) with K.B. Wolf.
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