

Saad Varsaie

Personal Data

- Date of Birth: July, 26, 1961
 - Place of Birth: Arak, IRAN
 - Nationality: Iranian
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Education

B.Sc: [Shahid Beheshti University \(Tehran, Iran\)](#), 1985

M.Sc. : [Sharif University of Technology \(Tehran, Iran\)](#), 1989

Ph.D. : [University of Tehran\(Tehran, Iran\)](#), 1998

M.Sc Thesis

- Distribution of Values of Holomorphic Curves

Ph.D Thesis

- Complex Supermanifolds with Boundary and Kahlerian Supermanifolds
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Awards/Honors

- First rank in B.Sc
 - Selected for receiving scholarship by Behshti University for graduate study
 - Second rank in MSc
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Positions

- Assistant Professor, Department of Mathematics, Institute for Advanced Studies in Basic Sciences (IASBS), Nov. 23, 1999 to March 19, 2011.
- Member of State Committee of World Mathematical Year, 2000
- Member of organizing committee of Regional Summer School on Group Theory, IASBS, July 2000
- Member of Organizing Committee of 26th National Mathematics Competition of University Students, May 2002

- Member of Research Council of IASBS, September 9, 2002 to September 22, 2004
- Member of Departmental Committee on Ph.D. affairs , September 23, 2002
- Member of Librery Committee of IASBS, September 23, 2005 to July 31, 2006
- Iranian Mathematical Society representative in Math Department, September 2005 to March 2009
- Member of Scientific Committee of 38th Annual Iranian Mathematics Conference, 2007
- Dean of the Faculty of Mathematics, June 29, 2011 to June 3, 2013
- Member of Scientific Council of Zanjan Mathematics House, July 24, 2011
- Member of Organisational Development Group of the Faculty of Mathematics, December 22, 2011
- Associate Professor, Department of Mathematics, IASBS, March 20, 2011
- Head of the Elites Foundation of Zanjan State, December 3, 2013 to December 26, 2015
- Reviewer of the Iranian Journal of Science and Technology (IJST), October 26, 2014
- Reviewer of Farhang va Andish-ye Riazi (Culture and Thoughts of Mathematics), July 4, 2016
- Member of Organizing Committee of Math Summer School, IASBS, July 13-14, 2016
- Member of Organizing Committee of Math Summer School, IASBS, July 17- 19, 2017
- Member of Organizing Committee of Math Summer School, IASBS, July 14- 16, 2018
- Member of Organizing Committee of Math Summer School, IASBS, July , 2019
- Reviewer of the 48th and 53rd Annual Irannian Mathematics Conference, Agust 22- 25, 2017 and July 28, 2022
- Reviewer of Journal of Advanced Mathematical Modeling, September 5, 2017, August 29,2022
- Referee of Iran National Science Foundation (INSF), October 4, 2017
- Member of MONTAKHAB committee, September 2018- September 2022
- Member of Educational Committee of the Faculty of Mathematics, August 2022-
- Reviewer of Mathematical Reviews, American Mathematical Society, January 2023-

Fields of interest

- Complex Differential Geometry
- Algebraic Topology
- Global Analysis

Publications

1. (with Fatemeh Nikzad Pasikhani, Mohammad Mohammadi), Extension of local positive definite Z_2^n -superfunctions, submitted
2. همراه با فاطمه علیخانی ، مهدی قربانی) بررسی برخی ردههای پایدار در ابرهندسه، پنجاه سومین کنفرانس ریاضی ایران، دانشگاه علوم و فناوری (مازندران، 14 تا 17 شهریور 1401)
3. (with Mehdi Ghorbani , Fatemeh Alikhani) A supergeometric generalization of Thom's transversality theorem, 53rd Iranian Mathematics Conference, University of Science and Technology of Mazandaran, 5-8 September 2022
4. (with F. Gholami, F. Darabi, M. Mohammadi and M. Roshandel), A new approach on Einstein equation in super spacetime, IJGMMP, October 2022
5. به همراه م. روشندل بنا، رهیافت تحلیلی به تعمیمی از کلاسهای چرن در ابرهندسه
یازدهمین سمینار هندسه و توپولوژی دانشگاه یاسوج 29-31 تیر 1400
6. (with M. J. Afshari) Homotopy Classification of Super Vector Bundles, The 11th Seminar of Geometry and Topology, Yasouj University, July 20- 22, 2021
7. (with M. Mohammadi) On the Construction of Z_2^n -grassmannians as Homogeneous Z_2^n -spaces, accepted in Electronic Research Archive, 2021
8. (with M. J. Afshari) Homotopy Classification of Super Vector Bundles and Universality, submitted
9. ی (به همراه م. ج. افشاری) ابرکلافهای جهانی، پذیرفته شده ، اسفند 1400 (مارس 2022)، در نشریه پژوهش های نوین در ریاضی
10. (with M. Roshandelbana) Analytic approach to a generalization of Chern classes in supergeometry, accepted in Asian-European Journal of Mathematics (AEJM), 2021
11. (with M. Mohammadi and F. Bahadorykhalily) A Class of homogeneous superspaces associated to odd involutions, accepted in Periodica Mathematica Hungarica, 2020
12. (with M. Mohammadi) On the construction of supergrassmannians as homogeneous superspaces, accepted in Asian-European Journal of Mathematics (AEJM), 2020
13. همراه علی طاهرخانی، مدرسه تابستانی ریاضی، رشد آموزش ریاضی، دوره 38، شماره 1، سال 1399، وزارت آموزش و پرورش
14. Supergeometric generalization of the projective spaces, Frontier in Mathematical Sciences Conference, 2012. <http://front.math.sharif.ir>
15. Homotopy classification of super line bundles, Booklet of the XXXI Workshop on Geometric Methods in Physics, 2012
16. \mathbb{Z}_2^n - Classes, International Journal of Geometrical Methods in Modern Physics, Vol. 9, No. 4 (2012)
17. \mathbb{Z}_2^n - Manifolds, International Journal of Geometrical Methods in Modern Physics, Vol. 8, No. 6 (2011)
18. \mathbb{Z}_2^n - projective spaces, \mathbb{Z}_2^n - line bundles and Chern classes, International Journal of Geometrical Methods in Modern Physics, Vol. 8, No. 2 (2011)
19. \mathbb{Z}_2^n - spheres, \mathbb{Z}_2^n - degrees and \mathbb{Z}_2^n - algebras, International Journal of Geometrical Methods in Modern Physics, Vol. 6, No. 7 (2009)
20. On a theory of Chern classes for super vector bundles, International Journal of Geometrical Methods in

Modern Physics, Vol. 5, No. 3 (2008)

21. Psuedodifferential forms and their applications, Proceedings of 35th Annual Iranian Mathematics Conference, 2005
22. Extended volume forms on supermanifolds, Proceedings of 3rd Seminar on Geometry and Topology, 2004
23. On extension of characteristic classes on supermanifolds , International Mathematical Journal, Vol. 3, No. 11, 2003
24. A New cohomology ring for supermanifolds, Journal of Mathematical Physics , Vol. 43 ,No. 1 , 2002
25. A Particle Model for Moduli Spaces of Holomorphic Curves on Rationally Connected Manifolds, Proceedings of International Congress of Mathematicians, 2002
26. A New Cohomology Ring for Supermanifolds, Proceedings of The First Seminar on Geometry and Topology, 2001
27. Kahlerian supermanifolds, Journal of Mathematical Physics ,Vol. 40, No. 12, 1999, 6701-6706
28. (with M. M. Rezaii) Complex supermanifolds with boundary and their parametrization; Algebras, Groups and Geometries , No.2, 1999

Seminars/Conferences

- The First Congress of Ph.D Students in Basic Sciences, University of Tehran , May 1996
- School on Vanishing Theorems and Effective Result in Algebraic Geometry, ICTP, Italy , 25April - 12May 2000
- The First Seminar on Geometry and Topology, Research Institute for Fundemental sciences of Iran, Tabriz , January 2001
- Workshop on Topology of Manifolds and Group Actions, Centre de Recherches Mathematiques (CRM) , University of Montreal , Canada , August 20 - 24, 2001
- International Congress of Mathematicians, Beijing, China, August 20-28, 2002
- 3rd Seminar on Geometry and Topology, Tabriz, Iran, July 15 - 17, 2004
- 35th Annual Iranian Mathematics Conference, Ahvaz, Iran, January 26 - 29, 2005
- XXXI Workshop on Geometric Methods in Physics, Bialowieza, Poland, June 24- 30, 2012
- Sixth European Congress of Mathematics, Krakow, Poland, July 2- 7, 2012
- Frontier in Mathematical Sciences, Sharif University, December 25- 27, 2012 (invited)
- The 11th Seminar of Geometry and Topology, Yasouj Unuversity, July 20-22, 2021
- 53rd Iranian Mathematics Conference, University of Science and Technology of Mazandaran, 5-8

September 2022

Research Project

Grants

- Extension of cellular complexes in supergeometry , March 2007 to March2008, Funded by Institute for Advanced Studies in Basic Sciences
- ν - Geometry and Schubert super varieties, March 2008 to March 2009, Funded by Institute for Advanced Studies in Basic Sciences
- ν - Linear algebra and ν - manifolds, March 2009 to March 2010, Funded by Institute for Advanced Studies in Basic Sciences
- ν - Vector bundles and ν - Connections, March 2010 to March 2011, Funded by Institute for Advanced Studies in Basic Sciences
- Flag superbundles and ν - classes of higher order, March 2011 to March 2012, Funded by Institute for Advanced Studies in Basic Sciences
- Complete ν - manifolds and integrable Π - symmetries, March 2012 to March 2013, Funded by Institute for Advanced Studies in Basic Sciences
- Cellular decomposition of ν - Grassmanians, March 2014 to march 2015, Funded by Institute for Advanced Studies in Basic Sciences
- Cohomology of ν - Grassmanians, March 2015 to march 2016, Funded by Institute for Advanced Studies in Basic Sciences

IASBS

- New Complex for Grassmanian Supermanifolds , Sep. 23 , 1999 to July 22 , 2000
- Deformation of Kahlerian Superstructures , IASBS , July 23 , 2000 to November 21, 2001
- Stability Theorem for Rationally Connected Manifolds , IASBS , Nov. 2001 to Nov. 21 , 2002
- Cyclic Cocycle Associated with Subsupermanifolds, IASBS, March 2003 to March 20, 2004

Cyclic Cohomology of the Algebra of Pseudodifferential Forms, IASBS, March 21, 2004 to July 22, 2005

- Comparatively Study the Associated Homological classes to Schubert Super Cells and Characteristic Classes for Super Vector Bundles, IASBS, July 23, 2005 to July 21, 2006
- Schubert supervarieties and cellular complex, IASBS, July 22, 2006 to March 20, 2007

IPM

- The Extension of the Concept of Characteristic Classes , March 21, 2000 to March 20 , 2001
 - Topology of Moduli Space of Holomorphic Curves , March 21 , 2001 to March 20 , 2002
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Talks

- Covering Spaces, Geometry Colloquium, Faculty of Mathematics, IASBS, 2016
 - Generalization of the concept of Chern classes in supergeometry, Research Day, IASBS, December 2012
 - ν - classes, IASBS, 2012
 - Supergeometric Generalization of n - Spheres, IASBS, 2008
 - Quantum Planes, IASBS, 2005
 - Graded Manifolds, IASBS, 2003
 - Quantization , IASBS , 2002
 - DNA Knots , Zanzan University , 2001
 - Differential Forms, IASBS, 2000
 - Cyclic Cohomology and Characteristic Classes, IASBS,2000
 - Cohomology of Groups,University of Tehran, 1996
 - Invariant of Knots, Zanzan University, 1994
 - Infinity, Zanzan University, 1993
 - Riemannian Surfaces, Zanzan University, 1992
 - Morse Theory, University of Tehran, 1991
 - Calculus of Variation, University of Tehran, 1991
 - Schubert Calculus, University of Tehran,1990
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Teaching Experience

- Differentiable Manifolds 1, 2, 3
- Vector Bundles 1, 2, 3
- Sheaf Theory and Cohomology
- Riemannian Geometry
- Algebraic Topology 1, 2, 3
- Symplectic Geometry 1
- Symplectic Geometry 2 (with Dr Esfahanizadeh)
- Complex Manifolds
- Differential Geometry
- Knot Theory 1, 2
- Calculus 1, 2, 3
- Graded Manifolds
- Lie Groups 1
- Hyperbolic Geometry 1, 2
- Dynamical Systems (with Dr Nassiri)
- K- theory 1, 2 (with Dr Mirzaii)
- Characteristic Classes (with Dr Mirzaii)
- Lie Groups and Lie Algebras 1(with Dr Asadi)
- Lie Algebras (with Dr Asadi)
- Infinite Dimensional Lie Algebras (with Dr Asadi)
- Weil Homomorphism and Chern Classes
- Young Tableaux
- Differential Topology 1

Supervised Thesis

M.Sc

1. Cyclic Cohomology of Noncommutative Tori, M.Sc Thesis, IASBS, July 2000
2. Geodesic Deformations of Riemannian Manifolds, M.Sc Thesis , IASBS , February 2002

3. Quantum Supergroups and Topological Invariants of Knots, M. Sc Thesis, IASBS, March 2007
4. Chern Classes for Super Vector Bundles, M. Sc Thesis, IASBS , September 2007
5. Clifford Bundles and Getzler Calculus, M. Sc Thesis, IASBS, March 2008
6. Continued Fractions, Discrete Groups and Complex Dynamics, M. Sc Thesis, IASBS, October 2008
7. Spectral Graph Theory, M. Sc Thesis, IASBS, December 2008
8. Hamilton's Ricci Flow, M. Sc Thesis, IASBS, January 2010
9. The Poincare - Bendixson Theorem on the Klein Bottle for Continuous Vector Fields, M. Sc Thesis, IASBS, January 2010
10. Spin Structures on Manifolds, M. Sc Thesis, IASBS, February 2010
11. Riemannian Geometry of Orbifolds, M. Sc Thesis, IASBS, December 2010
12. (with Dr M. Nasiri) The Nash- Moser Theorem and its Applications, M. Sc Thesis, January 2011
13. An Introduction to Lorentz Spinors Theory, M. Sc Thesis, January 2012
14. A Generalization of Lusternik - Schnirelman Theory, M. Sc Thesis, January 2012
15. Equivariant K- Theory, M. Sc Thesis, April 2012
16. Kahlerian Manifolds with Constant Bisectional Curvature, September 2012
17. Generalization of Differential Geometry over General Base Rings, October 2012
18. Differential Calculus Over Rings, March 2013
19. $\mathbb{C}P^n$ - Projective Spaces, March 2014
20. (with Dr J. Taghizade) Einstein's Field Equations, March 2014
21. Holonomy Groups of Symmetric Spaces, April 2014
22. (with Dr H. Zare) Cohomology of Grassmann Manifolds, September 2016
23. (with Dr Johari Nad) Characterization of Classical Riemannian Manifolds By Curvature Operators, September 2016
24. (with Dr Johari Nad) Codimension One Homology of a Complete Manifold with Nonnegative Ricci Curvature, January 2017
25. (with Dr Johari Nad) On a Class of Complete Riemannian Manifolds With Finite Fundamental Groups, April 2017
26. (with Dr Johari Nad) On The Fundamental Group of Riemannian Manifolds With Negative Ricci Curvature, April 2017
27. Simple Homotopy and Whitehead Groups, March 2018

28. Frobenius Algebras And 2-Dimensional Topological Quantum Field Theories, April 2018

29. De Rham Cohomology Of Supermanifolds, March 2020

Ph.D

- (with Matilde Marcolli) Green's Function of the Boundary at Infinity of Hyperbolic 3 - Manifolds, PhD Thesis, IASBS, January 2010
- A Class of Homogeneous Superspaces Associated to Odd Involutions, March 2020
- Cohomology of n -Grassmannians, February 2021
- Analytic approach to a generalization of Chern classes in supergeometry, January 2022
- A Generalization of the Homotopy Classification Theorem for Vector Bundles in Super Geometry, January 2023

Other Activities

- Visit and Do Joint Research , Centre de Recherches Mathematiques (CRM) , University of Montreal , Canada , July 15 _ September 15, 2001
- Visit and Do Joint Research, Department of Mathematics, University of Ottawa, Canada, May 22 - November 21, 2018

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