

# C.V. of Mehdi Nadjafikhah Prof. of Math.

---

“Department of Pure Mathematics”, “Department of Computer Sciences” and “Computetional Geometry Lab”, School of Mathematics and Computer Sciences, Iran University of Science and Technology, Narmak, Tehran, 1684613114, I.R.IRAN.

**E-mail:** [m\\_nadjafikhah AT iust.ac.ir](mailto:m_nadjafikhah@iust.ac.ir), [mnadjafikhah AT gmail.com](mailto:mnadjafikhah@gmail.com)

**Webpage:** [http://webpages.iust.ac.ir/m\\_nadjafikhah](http://webpages.iust.ac.ir/m_nadjafikhah)

**Social Networks:** [Instagram](#), [Telegram](#), [Facebook](#)

**Me on:** [Google Scholar](#), [Publons](#), [ResearchGate](#), [ResearcherID](#), [arXiv](#), [ISC](#).

**Tel:** + 98 - 21 - 73225426 (Office), + 98 - 21 - 73225400 (Secretary)

**Fax:** + 98 - 21 - 73228426



---

**Born:** 13 May 1970 (23 Ordibehesht 1349), Tehran, I.R.Iran.<sup>1</sup>

## Education:

- **Bs.C.**, 1992, IUST, Mathematics - Pure Mathematics.
- **Ms.C.**, 1994, IUST, Pure Mathematics - Geometry and Topology; Theory of  $G$ -structures and equivalence problems. Advisor: Prof. E. Esrafilian.
- **Ph.D.**, 1998, IUST, Pure Mathematics - Differential Geometry; Theory of finite order  $G$ -structures. Advisor: Prof. E. Esrafilian.

## Professional Experience:

- **Head of Department of Pure Mathematics** : School of Mathematics and Computer Sciences, IUST, I.R.Iran, 2024-.
- **Professor of Mathematics** : Department of Pure Mathematics, School of Mathematics and Computer Sciences, IUST, I.R.Iran, 2018-.
- **Professor of Mathematics** : Department of Computer Sciences, School of Mathematics and Computer Sciences, IUST, I.R.Iran, 2020-.
- **Dean of Computetional Geometry Lab** : IUST, I.R.Iran, 2019-.
- **Dean of School of Mathematics** : IUST, I.R.Iran, 2014-2019.
- **Associate Professor of Mathematics** : Department of Pure Mathematics, School of Mathematics, IUST, I.R.Iran, 2008-2018.
- **Associate Professor of Mathematics** : Department of Mathematics, Faculty of Science, IAU, VPB, I.R.Iran, 2008-2015.
- **Research Administrator of School of Mathematics** : IUST, I.R.Iran, 2008-2014.
- **Assistant Professor of Mathematics** : Department of Pure Mathematics, Faculty of Sciences, IAU, VPB, I.R.Iran, 2004-2008.
- **Head of Department of Pure Mathematics** : School of Mathematics, IUST, I.R.Iran, 2000-2004.
- **Assistant Professor of Mathematics** : Department of Pure Mathematics, School of Mathematics, IUST, I.R.Iran, 1998-2008.

---

<sup>1</sup>Last update: **March 16, 2025** (in 24 pages). IUST is the abbreviated form of “Iran University of Science and Technology”. IAU is the abbreviated form of “Islamic Azad University”. VPB is the abbreviated form of “Varamin Pishva Branch”.

## Teaching Duties:

- **For Ph.D. students:** Exterior differential systems 1, Exterior differential systems 2, Equivalence invariant and symmetry 1, Equivalence invariant and symmetry 2, Applications of Lie groups to DEs 1, Applications of Lie groups to DEs 2, Riemannian geometry, Selected topics in differential geometry, Topological and Lie groups. (9 items)
- **For graduate students:** Differentiable manifolds 1, Differentiable manifolds 2, Lie groups and Lie algebras 1, Lie groups and Lie algebras 2, Differential topology 1, Differential topology 2, Dynamical systems 1, Dynamical systems 2, Selected topics in differential geometry. (9 items)
- **For undergraduate students:** Advanced engineering mathematics, Basic algebraic topology, Basic differential topology, Basic projective geometry, Calculus 1, Calculus 2, Discrete mathematics, Elementary Lie group analysis, Elementary dynamical systems, Engineering mathematics, Foundations of geometry, Foundations of logics and set theory for computer sciences, Foundations of mathematics, Foundations of computer sciences and programming, Foundations of mathematics for computer sciences, Foundations of matrices and linear algebra, Foundations of matrices and linear algebra for computer sciences, Foundations of combinatorial mathematics for computer sciences, General mathematics A, General mathematics AA, General mathematics AAA, General topology, Global differential geometry, History of mathematics, Local differential geometry, Mathematical analysis 1, Mathematical analysis 2, Mathematical analysis 3, Ordinary differential equations, Partial differential equations, Probability and statistics for engineers. (31 items)

## My Interests:

My research interests revolve around the applications of symmetry and Lie groups to differential equations, and vice versa. I'm also interested in the use of geometry in dynamic systems. In particular, solitons integrability and super-symmetric equations. Personally, I am interested in visual arts and reading. I draw and always study philosophical, logical, psychological and historical books.

## Professional Service:

- Member of Organizing Committee, In 2nd International Conference of Applied Mathematics, IUST, Tehran, Iran, Oct. 25-27, 2000.
- Member of Organizing Committee, In 4th Seminar on Mathematical Analysis and its Applications, IUST, Tehran, Iran, Feb. 4-5, 2004.
- Member of Organizing Committee, In the 7th International Iranian Workshop on Stochastic Processes, School of Mathematics, IUST, Nov. 30 and Dec. 1-2, 2010, Tehran, Iran.
- Dean of Organizing Committee of 7th Seminar on Geometry and Topology, IUST, Thehran, Iran, Jan. 29-30, 2014.
- Member of Editorial Board, Journal of Mathematics Research, ISSN: 1916-9809, 2010-2014, ([Journal](#))
- Member of Editorial Board, Journal of Statistics and Mathematics, ISSN: 0976-8807, 2010-2013, ([Journal](#))
- Member of Editorial Board, International Journal of Fundamental Physical Sciences (IJFPS), ISSN: 2231-8186, 2010-2014, ([Journal](#))
- Member of Editorial Board, Mathematical Sciences, ISSN: 2008-1359, 2009-, ([Journal](#))
- Member of Editorial Board, International Journal of Mathematical Physics, ISSN: 2630-4600, 2019-, ([Journal](#))
- Member of Associate Editorial Board, Asian Journal of Mathematics & Statistics, ISSN: 2077-2068, 2012-, ([Journal](#))

- Member of Associate Editorial Board, Current Research in Physics, ISSN: 2154–3127, 2012-, ([Journal](#))
- Member of Academic Committee of The 45th Annual Iranian Mathematics Conference (AIMC 45), Seman University, Semnan, Iran, 2014.
- Member of Academic Committee of The 46th Annual Iranian Mathematics Conference (AIMC 46), Yazd University, Yazd, Iran, 2015.
- Member of Academic Committee of Differential Geometry and Differential Equations' Seminars, Amir Kabir University, Tehran, Iran, 2015.
- Member of Academic Committee of The 9th Seminar on Geometry and Topology, University of Maragheh, Iran, 2017.
- Secretary of the Executive Committee of 49th Annual Iranian Mathematical Conference, IUST, 2018.
- I am also referee for the following journals: Communications in Nonlinear Science and Numerical Simulation, Punjab University Journal of Mathematics, Boundary Value Problems, Nonlinear Dynamics, Abstract and Applied Analysis, Advances in Difference Equations, ESAIM - Control, Optimisation and Calculus of Variations, Geometry, Indian Journal of Mathematics, and 12 other journals.

## Ph.D. Students (now and former):

1. **Ahmad-Reza Forough** :: *Gardner method in Cartan equivalence problem and its applications on partial differential equations*, IUST, 2003-2007. :: Islamic Azad University, Tehran North Branch.
2. **Ali Mahdipour-Shirayeh** :: *Cartan's method of equivalence, symmetry and exterior differential systems*, IUST, 2005-2009. :: University of Waterloo, Canada. ([link](#))
3. **Seyed-Reza Hejazi** :: *Contact geometry and symmetry analysis of differential equations*, IUST, 2007-2011. :: Sharood University of Technology, Shahrood. ([link](#))
4. **Rouholah Bakhshandeh-Chamazkoti** :: *Method of equivalence and its applications*, IUST, 2008-2012. :: Noshivani Babol University of Technology, Babol, Mazandaran, Iran. ([link](#))
5. **Narges Yaftian**, *Mathematical creativity and mathematical education*, IUST, 2008-2013 :: Shahid Rajaei University, Tehran, Iran.
6. **Fateme Ahangari** :: *Application of Lie groups in the study of partial differential equations*, IUST, 2009-2013 :: Alzahra University, Tehran.
7. **Vahid Shirvani-Shahenayati** :: *Lie transformation groups and its application to partial differential equations derived from fluid mechanics*, KIAU, 2009-2013 :: Islamic Azad University, Islamabad Garb Branch.
8. **Naser Asadi** :: *Applications moving frames and Lie pseudo-groups in differential equations*, KIAU, 2009-2013.
9. **Parastoo Kabi-Nejad** :: *Symmetries and conservation laws for differential equations*, IUST, 2010-2015. :: Iran University of Science and technology.
10. **Mehdi Jafari** :: *Application of Lie group analysis in geometry of Walker manifolds*, PNU, 2010-2013 :: Payame Noor University.
11. **Ardavan Mokhtary** :: *Application of geometric equivalence method in control theory and differential equations*, PNU, 2010-2014 :: Payame Noor University.
12. **Reza Dastranj** :: *Lie group analysis of differential equations*, KIAU, 2010-2014 :: Masaryk University, Czech Republic.
13. **Mostafa Hesami-Arshad** :: *Application of Cartan's equivalence method in differential equations*, KIAU, 2010-2014 :: Islamic Azad University, Toyserkan Branch.

14. **Abolhassan Mahdavi** :: *Application of approximate symmetries in perturbed differential equations*, KIAU, 2010-2014 :: Islamic Azad University, Ilam Branch.
15. **Leila Hamedi-Mobara** :: *The application of Lie groups in reducing of partial differential equations and investigation about the reductions of the Zabolotskaya–Khokhlov equation*, PNU, 2011-2016 :: Islamic Azad University, Fouman and Shaft Branch.
16. **Hamid-Reza Yazdani** :: *Application of the wavelet in the geometry of differential equations*, PNU, 2011-2017.
17. **Narges Pourrostami** :: *Lie symmetry analysis and adjoint equations*, PNU, 2011-2017.
18. **Mohammad Rahimian** :: *Approximate Lie symmetry theory and applications of the study of perturbed differential equations*, KIAU, 2011-2017 :: Islamic Azad University, Masjed Soleiman Branch.
19. **Khodayar Goodarzi** :: *Lie symmetry theory,  $\lambda$ -symmetry,  $\mu$ -symmetry and its relation with fractional partial differential equations*, KIAU, 2011-2015 :: Islamic Azad University, Broujerd Branch.
20. **Maryam Khorshidi** :: *Lie symmetry theory and its relation with fractional partial differential equations*, KIAU, 2011-2015.
21. **Yousef Masoudi** :: *Moving frames and conservation laws*, KIAU, 2012-2017. :: Islamic Azad University, Naghadeh Branch.
22. **Afsoon Goodarzian** :: *Solving and properties of geodesic equations of a family of Finsler metrics*, KIAU, 2012-2018.
23. **Maryam Jamreh** :: *Geometry of Ricci solitons on semi-Riemannian manifolds*, IUST, 2012-2019.
24. **Elnaz Alimirzaloo** :: *Geometric structure of Burger's equation and its generalizations*, IUST, 2013-2021.
25. **Saeid Shagholi** :: *Optimization mathematical model of infectious diseases*, IUST, 2013-2019. :: Semnan University.
26. **Hamid Razaghi** :: *Perturbation analysis of mathematical models in engineering and physical sciences with a small parameter*, PNU, 2013-2021.
27. **Nishtman Zandi** :: *The study of Conformal-Einsteins equations*, PNU, 2014-2023. (Collabrated by **Yadolla AryaNejad**) Ph.D.S-PN-8
28. **Seyedeh-Mansoureh Mirala** :: *On the Birkhoffian systems*, PNU, 2013-. (Collabrated by **Mohammad Chaichi**)
29. **Mahdieh Yourdkhany** :: *PDEs and their symmetries*, KIAU, 2015-2020.
30. **Maryam Yourdkhany** :: *Symmetry and invariance of DEs*, KIAU, 2015-2020.
31. **Zahra Momen-nezhad** :: *Symmetry and thair applications in PDEs*, KIAU, 2013-2020.
32. **Davood Farokhi** :: *On geometrical symmetries and coservation laws for some space-times on riemannian manifolds*, KIAU, 2015-2020. (Collabrated by **Ruholah Bakhshandeh-Ch.**)
33. **Rabon Ghafari** :: *Dynamic data visualization in the market economy*, IUST, 2019-.
34. **Samar AL-Nassar** :: *Geometric structure and exact solutions of Fokker-Plank equations*, IUST, 2020-2023 :: University of Thi-Qar, Iraq.
35. **Hind Al-Bdeiri** :: *Geometric analysis of approximate solution of fractional dynamical system for (HTLV-1) Virus of  $CD_4^+$  T-cells*, IUST, 2021-2024. :: University of Al-Qadisiya, Iraq.
36. **Mohammad Nasiri** :: *Computational conformal geometry and Manifold Learning*, IUST, 2021-.
37. **Mehdi Mirzavand** :: , IUST, 2022-.

38. **Maryam Dehbandi** :: , IUST, 2022-.
39. **Fatemeh Kashkoei** :: , IUST, 2022-.
40. **Omid Adeli** :: , IUST, 2023-.
41. **Mansour Hossein-Haji-Hassan** :: , IUST, 2023-.

## M.Sc. Students (now and former):

1. **Naghme Moshtaghy** :: *On the “I.A. Kogan, Inductive approach to Cartans moving frame method with applications to classical invariant theory, University of Minnesota, 2000”*, IUST, 2000-2002.
2. **Majid Khalili** :: *General theory of the moving frames*, IUST, 2000-2002.
3. **Arash Shamloo** :: *On the “A.D. Lewis, Energy preserving affine connections, 1997”*, IUST, 2001-2003. :: University of Saskatchewan, Canada.
4. **Hasan Najafi-Alishah** :: *Affine connection control systems*, IUST, 2001-2003. :: Instituto Superior Técnico, Portugal.
5. **Hamid-Reza Salimi-Moghadam** :: *On the “D.V. Alekseevsky and P.W. Michor, Differential geometry of Cartan connections, Publ. Math. Debrecen, 47/3-4 (1995), 349375”*, IUST, 2002-2004. :: Isfahan University, I.R.Iran. ([link](#))
6. **Esmaeil Noroozi** :: *Relation between affine connections and constraints*, IUST, 2003-2005.
7. **Ali Mahdipour-Shiraye** :: *On the “E.T. Newman and P. Nurowski, Projective connections associated with second order ordinary differential equations, 2003 Class. Quantum Grav. 20 23–25.”*, IUST, 2003-2005. :: University of Waterloo, Canada. ([link](#))
8. **Hasan Mahmoodi** :: *On the “P.J. Olver, Joint invariant signatures, Found. Comput. Math. 1 (2001), 3-67.”*, IUST, 2003-2005.
9. **Rooholah Azizi** :: *Galilean space times*, IUST, 2003-2005.
10. **Seyed-Mahdi Mousavi** :: *On the “A.N. Bernal, M. Sanchez, Leibnizian, Galilean and newtonian structures of space time, Journal of Mathematical Physics, 44 (3), 1129–1149”*, IUST, 2004-2006. :: Windsor University, Canada.
11. **Ali-Reza Rahmani** :: *On the “A.D. Lewis, Affine connection control systems, 1999.”*, IUST, 2004-2006.
12. **Najme Mohammad-Jafari** :: *Overdetermined equivalence problems and its applications in control*, NTB, 2004-2006.
13. **Kalamollah Shakeri** :: *Cartan’s equivalence method*, NTB, 2004-2006.
14. **Mohammad-Hosein Tavasoli** :: *Geometry and nonlinear connections*, NTB, 2004-2006.
15. **Kamran Farhad-Zadeh** :: *Exterior differential systems*, NTB, 2005–2007.
16. **Seyed-Reza Hejazi** :: *Theory of differential invariants*, IUST, 2005-2007. :: Sharood University of Technology, Shahrood. ([link](#))
17. **Mahdi Nemati** :: *On “P.J. Olver, G. Sapiro and A. Tannenbaum, Differential invariant signatures and flows in computer vision: a symmetry group approach, in: Geometry-Driven Diffusion in Computer Vision, B.M. Ter Haar Romeny, ed., Kluwer Acad. Publ., Dordrecht, Netherlands, 1994, pp. 255–306.”*, IUST, 2005-2007.
18. **Parastoo Kabi-Nejad** :: *On the “P.J. Olver, Differential invariants of surfaces, Diff. Geom. Appl. 27 (2009), 230–239.”*, IUST, 2006-2008. Ph.D. Student IUST, I.R. Iran.

19. **Sara Mehdipour** :: On the “P.J. Olver, Geometric foundations of numerical algorithms and symmetry, *Appl. Alg. Engin. Comp. Commun.* 11 (2001), 417–436.”, IUST, 2006-2008.
20. **Tahere Reza-Khoshdany** :: On the “P.J. Olver, Invariant submanifold flows, *J. Phys. A* 41 (2008), 344017.”, IUST, 2006-2008.
21. **Roololah Bakhshande-Chamazkooti** :: On the “P.J. Olver, Generating differential invariants, *J. Math. Anal. Appl.* 333 (2007), 450–471.”, IUST, 2006-2008. :: Noshivani Babol University of Technology, Babol, Mazandaran, Iran. ([link](#))
22. **Mehdi Bikdeloo** :: On the “R. Atkins, The geometry of a pair of second order ordinary differential equations and Euclidean spaces, *Canad. Math. Bull.* Vol. 49 (2), 2006 pp. 170–184.”, IUST, 2007-2009.
23. **Nahal Nasir-Zadeh** :: On the “O.I. Morozov, Symmetries of differential equations via Cartan’s method of equivalence, *Journal of Physics A, Mathematical and General*, 2002, V 35, pp. 2965–2977.”, IUST, 2007-2009.
24. **Sajad Nazari** :: On the “P.J. Olver and J. Pohjanpelto, Maurer-Cartan forms and the structure of Lie pseudo-groups, *Selecta Math.* 11 (2005), 99–126.”, IUST, 2007-2009.
25. **Saeed Dodangeh** :: On the “E. Hubert, Differential invariants of a Lie group action: syzygies on a generating set, *Journal of Symbolic Computation*, Vol 44, 4, 2009, 382–416.”, IUST, 2008-2010.
26. **Elahe Oftadeh** :: On the “O. Morozov, Symmetries of differential equations and Cartan’s equivalence method, *Proceedings of Institute of Mathematics of NAS of Ukraine*, 2004, Vol. 50, Part 1, 196–203.”, NTB, 2008-2010.
27. **Maryam Abdolsamadi** :: On the “O. Morozov, Structure of symmetry groups via Cartan’s method, *Survey of four approach, SIGMA* 1 (2005), 006.”, NTB, 2008-2010.
28. **Parvane Ahmadi** :: An introduction to symmetry methods in the solution of differential equations that accrue in Chemistry and Chemical Biology, NTB, 2009-2011.
29. **Amin Dehghani** :: Group classification of the differential equations with a delay, IUST, 2009-2011.
30. **Mohammad-Javad Afshari** :: On the “N.H. Ibragimov, V.F. Kovalev and V.V. Pustovalov, Symmetries of integro-differential equations: a survey of methods illustrated by the Benney equations. *Nonlinear Dyn.* 28(2), 135–153 (2002).”, IUST, 2009-2011. Ph.D. student of IASBS, Zanjan, I.R. Iran.
31. **Saeede Rashidi** :: On the “V.A. Baikov, R.K. Gazizov and N.H. Ibragimov. *Approximate symmetries. Math. Sbornik*, 136 (178), No.3:435-450, 1988. English transl., *Math. USSR Sb.*, 64 (1989), No.2, 427–441.”, IUST, 2009-2011.
32. **Maryam Khoda-Moradi** :: On the “G. Gaeta and P. Morando, On the geometry of lambda-symmetries and PDE reduction, *J. Phys. A: Math. Gen.* 37 (2004) 6955–6975.”, NTB, 2009-2011.
33. **Maryam Karimi** :: On the “R.O. Popovich and A. Sergeev, Conservation laws and normal forms of evolution equations, *Phys. Lett. A* 374: 2210-2217, 2010.”, NTB, 2011-2013.
34. **Mohammad-Reza Razavi-Motlagh** :: Lie group analysis of 2–dimensional nonlinear heat equations, IUST, 2010-2012.
35. **Mohammad Doosti** :: Invariant Lagrangians and integration of nonlinear equations, IUST, 2010-2012.
36. **Fathollah Kheradmand** :: Control of nonholonomic mechanical systems, IUST, 2010-2012.
37. **Neda Mirzaee** :: Lie group analysis of Burgers’ equation, IUST, 2010-2012.
38. **Maryam Yaghesh** :: On “R. Cimpoiasu and R. Constantinescu, Symmetries and invariants for the 2D-Ricci flow model, *Journal of Nonlinear Mathematical Physics* Vol 13, No 2 (2006), 285–292.”, IUST, 2010-2012.

39. **Omid Chekini** :: *Method of construction of conservation laws*, IUST, 2011-2013.
40. **Hamide Saghaei** :: *Lie-Bäcklund and Noether symmetries*, IUST, 2011-2013.
41. **Reza Mohammadi** :: *On the “R. Bryant, P.A. Griffiths and D.A. Grossman, Exterior differential systems and Euler-Lagrange partial differential equations, University of Chicago Press, Chicago, IL, 2003.”*, IUST, 2011-2013.
42. **Zahra Pahlevani-Tehrani** :: *On the “F. Valiquette, Solving local equivalence problems with the equivariant moving frame method, SIGMA 9 (2013), 029.”*, IUST, 2011-2013.
43. **Mohammad Mahdi-Gilak** :: *On the Schwarzschild spacetime*, IUST, 2012-2014.
44. **Mohammad Pak-Nezhad** :: *On the “M. Nadjafikhah and F. Ahangari, Symmetry analysis and conservation laws for the Hunter-Saxton equation, Commun. Theor. Phys. 59 (2013) 335–348.”*, IUST, 2012-2014.
45. **Najmeh Shafiee** :: *On “E. Calabi, P.J. Olver and A. Tannenbaum, Affine geometry, curve flows, and invariant numerical approximations, Adv. in Math. 124 (1996), 154–196.”*, IUST, 2012-2014.
46. **Aboozar Dastpak** :: *On the “P.J. Olver, Differential invariants of maximally symmetric submanifolds, J. Lie Theory 19 (2009), 79–99”*, IUST, 2012-2014.
47. **Samira Zeinali-Pour** :: *On the “J. Cheh, P.J. Olver and J. Pohjanpelto, Algorithms for differential invariants of symmetry groups of differential equations, Found. Comput. Math. 8 (2008), 501–532.”*, IUST, 2012-2014.
48. **Omid Adeli** :: *Curve evolution and level sets*, IUST, 2012-2014.
49. **Masumeh Khodaverdi-Samani** :: *Three-manifolds with positive Ricci curvature*, IUST, 2012-2014.
50. **Nasim Daryani** :: *Diffeological spaces*, IUST, 2013-2015.
51. **Saeid Rezaei** :: *On the classification of complex and real algebras*, IUST, 2015-2017.
52. **Mina Bayat** :: *On “Kh. Goodarzi and M. Nadjafikhah,  $\mu$ -symmetry and  $\mu$ -conservation law for the extended mKdV equation, Journal of Nonlinear Mathematical Physics, Vol. 21, No. 3, 2014, 371–381.”*, IUST, 2013-2015.
53. **Fatemeh Fahimi-Shijani** :: *On the Backlund transformations*, IUST, 2013-2015.
54. **Mohsen Kashe-Farahani** :: *Symbolic softwares for Lie symmetry analysis*, IUST, 2013-2015.
55. **Mohammad-Amin Sedghi** :: *Symmetry of nonlinear control systems and its applications*, IUST, 2014-2016.
56. **Fatemeh-Sadat Mousavi-Nejad** :: *Special conformal group and nonlinear Poisson equation*, IUST, 2014-2016.
57. **Ali Asgari** :: *On the “D.J. Hoff and P.J. Olver, Automatic solution of jigsaw puzzles, Journal of Mathematical Imaging and Vision volume 49, 234250, 2014”*, IUST, 2014-2016.
58. **Kourosh Torab-Parhiz** :: *Geometric study of vector fields*, IUST-Noor, 2014-2017.
59. **Amin Taghi-Nejad** :: *Cartan’s view of Klein’s Erlangen program*, IUST-Noor, 2014-2016.
60. **Dariush Rahman-Setayesh** :: *Geometric structure of  $n$ -bar linkages*, IUST, 2015-2017.
61. **Saeed Ghanbari** :: *On the “E. Hebey, Sobolev spaces on Riemannian manifolds, Lecture Notes in Mathematics, 1635. Springer-Verlag, Berlin, 1996”*, IUST, 2016-2019.
62. **Hossein Beyranvand** :: *On the “A. Ruiz, C. Muriel and P.J. Olver, Commutator of  $C^\infty$ -symmetries and reduction of Euler-Lagrange equations, J. Phys. A 51, 2018”*, IUST, 2016-2018.

63. **Somayyeh Soltani** :: *The Einstein-Cartan theory*, IUST-Noor, 2016-2018.
64. **Shabnam Shaban-Zadeh** :: *Matrix Lie groups*, IUST-Noor, 2016-2019.
65. **Seyyed-Asghar Taghavi** :: *An applied veiw to moving frame theory*, IUST, 2017-2020.
66. **Seyede-Zeynab Afarin** :: *On the “K. Crane, C. Weischedel and M. Wardetzky, The heat method for distance computation, Communications of the ACM 60 (11) 90-99, 2017”*, IUST, 2018-2020.
67. **Mehdi Mirzavand** :: *On the “N. Sharp, Y. Soliman and K. Crane, The vector heat method, ACM Trans. Graph., Vol. 38, No. 3, Article 00. Publication date: June 2019.”*, IUST, 2018-2020.
68. **Ali-Akbar Ammi** :: *On the “M.Nadjafikhah and M. Jafari, Computation of partially invariant solutions for the Einstein Walker manifolds identifying equations, Commun Nonlinear Sci Numer Simulat 18 (2013) 3317-3324”*, IUST, 2019-2021.
69. **Payam Pashapour** :: *On the “N. Sharp and K. Crane, Varational surface cutting, ACM Trans. Graph., Vol. 37, No. 4, Article 156. 2018”*, IUST, 2019-2022.
70. **Fatemeh Asadi** :: *Applications of fractals in architecture*, IUST, 2019-2021.
71. **Roya Tarighatnia** :: *Computational modeling of curves and surfaces*, IUST, 2019-2021.
72. **Hosein Zarei** :: *Content analysis of high school geometry in Iran and the United States*, IUST, 2020-2022.
73. **Fateme Basiri** :: *Interactive seamless fusion of multiview video textures*, IUST, 2020-2023.
74. **Marzieh Safari** :: *Poisson Surface Reconstruction with Envelope Constraints*, IUST, 2021-2023.
75. **Robab Rajabzadeh** :: *Lie symmetry analysis of fractional differential equations*, IUST, 2021-2023.
76. **Hamid-Reza Karbasian** :: *Elementary geometric algorithms by Phyton*, IUST, 2021-2024.
77. **Fatemeh Ramezani** :: , IUST, 2022-.
78. **Seyed-Ali Musheh** :: , IUST, 2022-.

## Projects:

1. *Cooling: A package for material engineering*, Technical report, Farda Industrial Company, 1372 (1993).
2. *Finite order geometric structures*, Technical report, IUST, 1374 (1995). (Collaborated by **E. Esrafilian**)
3. *Teaching calculus I by Maple*, Technical report, IUST, 1379 (2000).
4. *Calculation methods in equivalence problem of second order equations*, Technical report, IUST, 1380 (2001).
5. *Classification of 3rd order curves up to Euclidean transformations*, Technical report, IUST, 1383 (2004).
6. *Calculation in Cartan-Kähler theory*, Technical report, IUST, 1384 (2005).
7. *Exterior differential systems and its applications in geometry*, Technical report, IUST, 1385 (2006).
8. *Cartan’s equivalence problem and its applications in differential equations*, Technical report, IUST, 1385 (2006). (Collaborated by **R. Aghayan**, **A.R. Forough** and **A. Mahdipour-Sh.**)
9. *Solution of equivalence problem and P.J. Olver*, Technical report, IUST, 1386 (2007).
10. *Classification of solutions of partial differential equations by Lie algebras*, Technical report, IUST, 1387 (2008).



11. *Banach Lie groups and Banach Lie algebras and their applications in symmetries of differential equations*, Technical report, IUST, 1388 (2009).
12. *Symmetry in distributions and its application in differential equations*, Technical report, IUST, 1389 (2010).
13. *Local symmetries and its applications*, Technical report, KIAU, 1389 (2010). (Collaborated by **F. Ahangari**)
14. *Potential symmetries and conservation laws for two dimensional non-linear heat equations*, Technical report, VPB, 1389 (2010). (Collaborated by **R. Bakhshandeh-Ch.**)
15. *Approximate symmetries of differential equations and its applications in evolutionary differential equations*, Technical report, IUST, 1390 (2011).
16. *Nonclassical symmetries of differential equations and its applications*, Technical report, IUST, 1391 (2012).
17. *Application of Lie symmetries in dynamical systems*, Technical report, IUST, 1392 (2013).
18. *Application of Lie symmetries in wavelet and its applications in differential equations*, Technical report, IUST, 1393 (2014).
19. *Application symmetries in analysing of dynamical systems*, Technical report, IUST, 1394 (2015).
20. *Study dynamical systems by Lie symmetries*, Technical report, IUST, 1395 (2016).
21. *Application of symmetries in wavlets*, Technical report, IUST, 1396 (2017).
22. *Analytic Solution of Partial Order PDDEs*, IUST, (2018).
23. *Improving the differential geometric computing methods*, Technical report, IUST, 1397 (2020).
24. *Symmetry study of fractional differential equations*, Technical report, IUST, 1398 (2021).

## Books:

- [1] *Simple Geometry*, Madreseh Pub. Co., First edition, 1997, Persian. ISBN : 978-964-353-336-6
- [2] *Preparing for exams: Numerical Computations*, Bahman Borna Pub. Co., 2nd edition, 2000, Persian. (Collaborated by **U. Ebrahimdoost-K.** and **Ali Rajabi-A.**) ISBN: 964-928-025-1
- [3] *Simple differential geometry*, Sahele Andisheye Tehran Pub. Co., 2nd edition, 2002, Persian. ISBN: 964-944-715-6
- [4] *Preparing for exams: Engeneering Mathematics*, Sahele Andisheye Tehran Pub. Co., 2nd edition, 2004, Persian. (Collaborated by **M. Karami** and **A. Rajabi-A.**) ISBN: 964-944-719-9
- [5] *Calculus 1*, Sahele Andisheye Tehran, First edition, 2007, Persian. ISBN: 964-968-237-6. New edition and reprint by Fanavarinovin Pub. Co., 2023, ISBN : 978-622-541-229-3.
- [6] *Calculus 2*, Sahele Andisheye Tehran Pub. Co., 3rd edition, 2007, Persian. ISBN: 964-968-238-4. New edition and reprint by Fanavarinovin Pub. Co., 2023, ISBN : 978-622-541-227-9.
- [7] *Final term exams of Calculus 1*, Sahele Andisheye Tehran Pub. Co., 1nd edition, 2009, Persian. ISBN: 978-600-511-720-2
- [8] *Final term exams of Calculus 2*, Sahele Andisheye Tehran Pub. Co., 1nd edition, 2009, Persian. ISBN : 978-964-944-711-7
- [9] *Basic Algebraic Topology*, Sahele Andisheye Tehran Pub. Co., 1nd edition, 2009, A persian translation of “Z. Kasniowski, A First Course in Algebraic topology, Cambridge University Press, 1980”). ISBN : 987-964-968-235-X.

- [10] *Calculus on Manifolds*, Sahele Andisheye Tehran Pub. Co., 1nd edition, 2009, A persian translation of "M. Spivak, Calculus on Manifolds, Publish or Perish, 1965". ISBN : 987-964-968-234-1
- [11] *Elementary Ordinary Differential Equations*, Sahele Andisheye Tehran Pub. Co., 1nd edition, 2009, Persian. (Collaborated by **A. Golbabaee**) ISBN : 987-600-511-721-9
- [12] *A First Course in Differentiable Manifolds*, IUST, 2018, Persian. ISBN : 978-964-454-322-7 *A First Course in Differentiable Manifolds*, LAP LAMBERT Academic Publishing, 2022, An english translation of "M. Nadjafikhah, A First Course in Differentiable Manifolds, IUST, 2018". ISBN : 978-620-552-025-3
- [13] *Applications of Lie Groups in Differentiable Equations*, IUST, 2023, Persian. ISBN : 978-964-454-579-5
- [14] *Logical Methods - The Art of Thinking Abstractly and Mathematically*, A persian translation of "Roger Antonsen, Logical methods - the art of thinking abstractly and mathematically. Springer, 2023. ISBN: 978-303-063-776-7.",

## Lecture Notes:

- [1] Calculus I, 1380.
- [2] Calculus II, 1380.
- [3] Foundations of geometry, Translation of *R.S. Millman and G.D. Parker, A Metric Approach with Models, New York, NY, Springer-Verlag, 1981, 1991. Second Edition.*, 1381.
- [4] Differential topology, Translation of *V. Guillemin and A. Pollack, Differential Topology Englewood Cliffs, NJ, Prentice Hall, 1974.*, 1376. (Pdf)
- [5] Mathematical analysis III, Translation of *M. Spivak, Calculus on Manifolds.*, 1375.
- [6] *Theory of geometric structures*, A persian translation of "P. Molino, Theory of geometric structures: equivalence problem, 1977.", IUST, 1376.
- [7] Lectures in geometry, Translation of *M.M. Postnikov, Lectures in Geometry, Semester 1: Analytic Geometry, Mir Pub. Co., 1976.*, 1368. (Pdf)
- [8] Foundations of differentiable manifolds and Lie groups, Translation of *F.W. Warner, Foundations of Differentiable Manifolds and Lie Groups, Graduate Texts in Mathematics, Springer, edition 1, 1983.*, 1370.
- [9] Differential topology 1, Translation of *Th. Broucker and K. Janich, Introduction to Differential Topology, Cambridge University Press, 1982.*, 1379. (Pdf)
- [10] Ordinary differential equations, *IUST, 1390.* (Online) (Pdf)
- [11] Introduction to Lie groups and transformation groups, Translation of *Ph. Tondeur, Introduction to Lie Groups and Transformation Groups, Springer Verlag, 1969*, 1386. (Pdf)
- [12] Lie groups and compact groups, Translation of *J.F. Price, N.J. Hitchin, Lie Groups and Compact Groups, London Mathematical Society Lecture Note Series, Cambridge University Press, 1977.*, 1381. (Pdf)
- [13] Calculus III, 1381.
- [14] Differential geometry and analytic mechanics, Translation of *C. Godbillon, Géométrie différentielle et mécanique analytique, Collection Methods, Hermann, Paris, 1969.* in to Persian, 2013. (Pdf)
- [15] Transitive Lie psedogroups, Translation of *C. Albert and P. Molino, Psedogroupes des Lie transitifs: I. Structures principes, Herman Pub. Co., 1984.*, 1376.
- [16] Contemporary differential geometry, Vol. 1, Translation of *M. Spivak, A Comprehensive Introduction to Differential Geometry, Boston, MA, Publish or Perish, 1970-79. Second Edition, Vol 1.*, 1384.

- [17] Contemporary differential geometry, Vol. 2, Translation of *M. Spivak, A Comprehensive Introduction to Differential Geometry, Boston, MA, Publish or Perish, 1970-79. Second Edition, Vol 2.*, 1384.
- [18] Simple differential geometry, 1380. (Pdf)
- [19] *Nonlinear Dynamics and Chaos*, A persian translation of “S. Strogutz, Nonlinear Dynamics and Chaos: With Applications to Physics, Biology, Chemistry, and Engineering, Chapman and Hall/CRC; 3rd ed., 2024. ISBN: 9780367026509.”, IUST, 2024.
- [20] Foundations of mathematics, *IUST, 1390*. (Collaborated by **A.R. Forough**) (Online)
- [21] Differential equations and group methods for scientists and engineers, Translation of *J.M. Hill, Differential Equations and Group Methods for Scientists and Engineers, CRC Press, 1 edition, 1992*, (Collaborated by **S. Dodangeh**), 1388. (Pdf)
- [22] Symmetry methods for differential equations, Translation of *P.E. Hydon, Symmetry Methods for Differential Equations: a Beginner’s Guide, Cambridge University Press, 2000*, (Collaborated by **E. Oftadeh, M. Abdolsamadi**, and **P. Ahmadi**), 1389. (Pdf)
- [23] Exterior differential systems and its applications, Translation of *E. Cartan, Les systemes differentiels exterieurs et leus applications geometriques, Hermann, Paris, 1971*. in to English, 2012. (Pdf)
- [24] Group analysis of differential equations, Translation of *L.V. Ovsiannikov, Group analysis of differential equations, Academic Press, 2014*, 2015.
- [25] Introduction to differentiable manifolds, Translation of *L.W. Tu, An introduction to manifolds, Second edition, Universitext, Springer, New York, 2011*. in to English, *IUST, 1390*. (Collaborated by **A.R. Forough**) (Pdf)
- [26] *Application of Lie groups to differential equations*, A persian translation of “P.J. Olver, Application of Lie groups to differential equations. Springer, Graduate Texts in Mathematics, 1986”, 2024. ISBN: 9780387950006.
- [27] Equivalence, invariants, and symmetry, Translation of *P.J. Olver, Equivalence, invariants, and symmetry. Cambridge University Press, Cambridge, 1995*, 2018.
- [28] Lecture notes on geometrical aspects of partial differential equations, Translation of *V.V. Zharinov, Lecture notes on geometrical aspects of partial differential equations, World Scientific, 1992*, 2016.
- [29] *Theory of moving coframes*, Persian translation of some papers of Peter Olver, Marc Fels and Juha Pohjanpelto in to Persian, IUST, 2019.
- [30] *Lie algebras, representation and classification*, IUST, 2020.
- [31] *Logic and Language Models for Computer Science*, A persian translation of “D. Richards and H. Hamburger, Logic and Language Models for Computer Science, 4 th. ed., 2023. ISBN: 978-981-12-6067-4.”
- [32] *A Course in Python: The Core of the Language*, A persian translation of “R. Hazrat, A Course in Python: The Core of the Language, Springer, 2023. ISBN: 9783031497797.”, IUST, 2024.
- [33] *Solomon Golombs Course on Undergraduate Combinatorics*, A persian translation of “S.W. Golomb and A.L. Solomon, Golombs Course on Undergraduate Combinatorics, Springer, 2021. ASIN : B09G62C1B6.”, IUST, 2023.
- [34] *Data Science*, A persian translation of “Pierson, Data Science For Dummies, 2021”
- [35] *Trigonometry*, A persian translation of “I.M. Gelfand and M. Saul, Trigonometry, Birkhäuser, 2001. ISBN: 9780817639143.”
- [36] *Logic and Structure*, A persian translation of “D. van Dalen, Logic and Structure, Springer, 5th ed., 2012. ISBN: 9781447145578.”, IUST 2024.

- [37] *Simply Nietzsche*, A persian translation of “P. Kail, Simply Nietzsche (Great Lives), Simply Charly, Illustrated edition (2019), ISBN: 978-1-943657-51-3.”, 2022.
- [38] *Variational bi-complex*, A persian translation of “I. Anderson, Variational bi-complex, Notes, 1988.”, IUST, 2024.

## Published (or Accepted) Papers:

- [1] *Gauge equivalence problem on differential operators under fiber-preserving transformation*, J. Mahani Math. Res. 2024; 13(2): 595–60 (Collaborated by **M. Bakhshandeh-Ch.** and **R. Bakhshandeh-Ch.**) (doi) (Journal)
- [2] *Lie symmetry analysis of a (TFD) system for transmission of HTVL virus type I to human CD4<sup>+</sup> T-cells*, Journal of Interdisciplinary Mathematics, Vol. 27 (2024), No. 4, pp. 975–990. (Collaborated by **H. Al-Bderi**) (doi) (Journal)
- [3] *A note on Lie symmetry analysis, optimal system, new solitary wave solutions and conservation laws of the Pavlov equation*, J. Electrical Systems 20-24 (2024): 2139—2149. (Collaborated by **H. Al-Bderi**) (Pdf) (Journal)
- [4] *Lie symmetry analysis and some new exact solutions of the FokkerPlanck equation*, Arab. J. Math. (2023). (Collaborated by **S.K. Al-Nassar**) (doi) (Journal)
- [5] *On Noethers conservation laws of the Sine-Gordon equation using moving frames*, Int. J. Nonlinear Anal. Appl. Vol. 14, No. 1, 2493-2506, 2023. (Collaborated by **Y. Masoudi** and **M. Toomanian**) (doi) (Journal)
- [6] *Applying moving frames to finding conservation laws of the nonlinear Klein-Gordon equation*, Computational Methods for Differential Equations, Vol. 11, No. 2, 2023, pp. 399-411. (Collaborated by **Y. Masoudi** and **M. Toomanian**) (doi) (Journal)
- [7] *Lie symmetries, self-adjointness, and conservation laws of the Mong-Amere equation*, Iranian Journal of Optimization, Vol. 14, No. 3, 2022. (Collaborated by **Z. Momennezhad**) (Journal)
- [8] *Conservation laws and moving frame method on of Vaidya-Bonner space-time*, Sahand Communications in Mathematical Analysis, Vol. 19, No. 3, 2022, 65-76. (Collaborated by **R. Bakhshandeh Ch.** and **D. Farrokhi**) (doi) (Journal)
- [9] *Computation of  $\mu$ -symmetry and  $\mu$ -conservation law for the Camassa-Holm and Hunter-Saxton equations*, Accepted by AUT Journal of Mathematics and Computing, 2022. (Collaborated by **S. Shaban**) (doi) (Journal) (Preprint)
- [10] *Symmetry and invariance of the Reynolds equation*, Journal of Mathematical Extension, Vol. 16, No. 8, (5) 1-11, 2022. (Collaborated by **Mar. Yourdkhany**) (doi) (Journal)
- [11] *Conformal Einstein pp-wave as quantum solutions*, Journal of Mathematical Extension, Vol. 16, 2022. (Collaborated by **Y. Aryanejad** and **N. Zandi**) (Journal)
- [12] *Geodesics for a general  $(\alpha, \beta)$ -metric in two dimensional Finsler spaces*, Accepted by International Journal of Industrial Mathematics, 2020. (Collaborated by **A. Goodarzian** and **M. Toomanian**)
- [13] *Some dynamical properties of fractional-order cholera model*, Accepted by Dynamic Systems and Applications, 2020. (Collaborated by **S. Shagholi**)
- [14] *Compact Lorentzian h-almost Ricci solitons*, Accepted by Journal of Mathematical Physics, Analysis, Geometry, 2020. (Collaborated by **M. Jamreh** and **C. Boubel**)
- [15] *Symmetry analysis of Vaidya-Bonner metric*, Int. J. Nonlinear Anal. Appl. 13 (2022) No. 1, 563-571. (Collaborated by **R. Bakhshandeh Ch.** and **D. Farrokhi**) (doi) (Journal)

- [16] *On Homogeneous weakly stretch Finsler metrics*, Bull. Iran. Math. Soc. 48, 1930 (2022). (Collaborated by **H. Tondro-Vishkaei**, **M. Toomanian** and **R. Chavosh-Katamy**) (doi) (Journal)
- [17] *Order reduction of non-Lie symmetry equation  $\ddot{x} = (f(t, x) + g(t, x)\dot{x})e^x$  through  $\lambda$ -symmetry method*, Hyperscience International Journal, 1(1), 5056 (2021). (Collaborated by **Kh. Goodarzi**) (Journal)
- [18] *Conservation laws and exact solutions of the  $(3 + 1)$ -dimensional JimboMiwa equation*, Advances in Difference Equations, Vol. 2021, No. 1, 1-17, 2021. (Collaborated by **E. Alimirzalou** and **J. Manafian**) (doi) (Journal)
- [19] *On the symmetry properties of a nonlinear acoustics model*, Hyperscience International Journal, 1(1), 4449., 2021. (Collaborated by **L. Hamed-Mobara**) (Journal)
- [20] *Apply new optimized MRA & invariant solutions on the generalized-FKPP equation*, International Journal of Mathematical Modelling & Computations, 2021. (Collaborated by **H.R. Yazdani** and **M. Toomanian**) (doi) (Journal)
- [21] *Some new exact solutions of  $(3 + 1)$ -dimensional Burgers system via Lie symmetry analysis*, Advances in Difference Equations, Vol. 2021, No. 1, 1-17, 2021. (Collaborated by **E. Alimirzalou** and **J. Manafian**) (doi) (Journal)
- [22] *Conservation laws and Lie symmetry analysis of foam drainage equation*, AUT J. Math. Com., 2(1) (2021) 37-44. (Collaborated by **O. Chekini**) (doi) (Journal)
- [23] *Group Formalism of Lie transformations, Exact Solutions and Conservation laws of Non-Linear Time-Fractional Kramers Equation*, International Journal of Geometric Methods in Modern Physics Vol. 17, No. 12, 2050190 (2020). (Collaborated by **Z. Momennezhad**) (doi) (Journal)
- [24] *Lie group analysis for short pulse equation*, AUT J. Math. Com., 1(2) (2020) 223-227. (doi) (Journal)
- [25] *Lie symmetries and exact solutions for one dimensional modified Kuramoto-Sivashinsky equation*, APPS, Vol. 22, 169–180, 2020. (Collaborated by **S. Dodangeh**) (Journal)
- [26] *Symmetry classification and conservation laws for higher order Camassa-Holm equation*, Computational Methods for Differential Equations, Vol. 8, No. 2, 364–372, 2020. (Collaborated by **V. Shirvani-Sh.**) (doi) (Journal) (Preprint)
- [27] *Apply new wavelet transform method on the generalized-FKPP equation*, Computational Methods for Differential Equations, Vol. 8, No. 2, 259–267, 2020. (Collaborated by **H.R. Yazdani**) (doi) (Journal)
- [28] *COMBOS2: an algorithm to the input output equations of dynamic biosystems via Gaussian elimination*, Journal of Taibah University for Science, 14:1, 896-907, 2020. (Collaborated by **A. Kalamy-Yazdi** and **J. Distefano III**) (doi) (Journal)
- [29] *Preliminary group classification and some exact solutions of 2-Hessian equation*, Bulletin of the Iranian Mathematical Society, Vol. 46, No. 4, 1–18, 2020. (Collaborated by **Mah. Yourdkhany** and **M. Toomanian**) (doi) (Preprint) (Journal)
- [30] *Conservation laws and exact solutions of the time-fractional harmonic oscillator equation*, Journal of Geometry and Physics, 153 (2020) 103661. (Collaborated by **Mar. Yourdkhany**) (doi) (Journal)
- [31] *Conservation laws and some exact solutions of time fractional Buckmaster equation*, International Journal of Geometric Methods in Modern Physics, 2050040, 2020. (Collaborated by **Mah. Yourdkhany** and **M. Toomanian**) (doi) (Journal)
- [32] *Approximate symmetries and invariant solutions for a family of the generalizations of the Burgers-Korteweg-de Vries model*, AUT Journal of Modeling and Simulation (AJMS), Vol. 51, No. 2, 2019. (Collaborated by **H. Razzaghi** and **Y. Alipour-Fakhri**) (doi) (Journal)
- [33] *On Birkhoffian systems with Poisson bracket*, Punjab University Journal of Mathematics, Vol. 51, No. 12, 83–91, 2019. (Collaborated by **M. Mirala**) (doi) (Journal)

- [34] *Some non-trivial and non-gradient closed pseudo-Riemannian steady Ricci solitons*, Journal of Mathematical Physics, Analysis, Geometry, Vol. 15, No. 4, 526–542, 2019. (Collaborated by **M. Jamreh**) (doi) (Journal)
- [35] *Generalized symmetries and higher-order conservation laws of the Camassa-Holm equation*, International Journal of Fundamental Physical Sciences (IJFPS), Vol 9, No 2, 20–25, 2019. (Collaborated by **P. Kabi-Nejad**) (doi) (Journal)
- [36] *Lie symmetry analysis and conservation laws of ZDE*, Applied Mathematics, Vol. 21, 175–183, 2019. (Collaborated by **N. Asadi**) (Journal)
- [37] *Approximate symmetry and exact solutions of the perturbed nonlinear Klein-Gordon equation*, Computational Methods for Differential Equations, Vol. 7, No. 2, 266–275, 2019. (Collaborated by **M. Rahimian**) (doi) (Journal)
- [38] *Invariant solutions of generalized Fisher-KPP equation*, MathLAB Journal, 2(1), 2019, 126–132. (Collaborated by **M. Khameforush-Yazdi**) (doi) (Journal)
- [39] *Some exact solutions of KdV-Burgers-Kuramoto equation*, J. Phys. Commun. 3, 035025, 2019. (Collaborated by **E. Alimirzalou**) (doi) (Journal)
- [40] *Solving differential equations by wavelet transform method based on the mother wavelets & differential invariants*, Journal of Prime Research in Mathematics Vol. 14, 2018, 74–86. (Collaborated by **H.R. Yazdani** and **M. Toomanian**) (doi) (Journal)
- [41] *Moving frames and conservation laws of a Lagrangian invariant under the Hyperbolic Rotation-Translation group*, Hokkaido Math. J., Volume 47, Number 3, 557–579, 2018. (Collaborated by **Y. Masoudi**) (doi) (Journal)
- [42] *Main scalars for a three dimensional Finsler space with a general  $(\alpha, \beta)$ -metric*, International Journal of Pure and Applied Mathematics, Volume 119 No. 4, 670-683, 2018. (Collaborated by **A. Goodarzian** and **M. Toomanian**) (doi) (Journal)
- [43] *Symmetry group classification for generalized reaction-diffusion-convection equation*, Applied Sciences, Vol.20, 2018, 139-147. (Collaborated by **S. Dodangeh**) (doi) (Journal)
- [44] *Geodesics for square metric in a two dimensional Finsler space*, International Journal of Pure and Applied Mathematics, Volume 119 No. 12, 15503-15513, 2018. (Collaborated by **A. Goodarzian** and **M. Toomanian**) (doi) (Journal)
- [45] *On main scalar of two dimensional Finsler spaces with  $(\alpha, \beta)$ -metric*, International Journal of Applied Mathematics and Statistics, Vol. 57, No. 3, 2018. (Collaborated by **A. Goodarzian** and **M. Toomanian**) (doi) (Journal)
- [46] *Solving differential equations by new optimized MRA and invariant solutions*, Journal of Computational and Applied Mathematics, Vol. 8, No. 3, 291–303, 2017. (Collaborated by **H.R. Yazdani**) (doi) (Journal)
- [47] *Symmetries of generalized Fisher equation with  $t$ -dependent coefficient*, International Journal of Pure and Applied Mathematics, Vol 117(3), 401–413, 2017. (Collaborated by **H.R. Yazdani**) (doi) (Journal)
- [48] *Mathematical modeling of optimized SIRS epidemic model and some dynamical behavior of the solution*, Int. J. Nonlinear Anal. Appl. 8 No. 2, 125-134, 2017. (Collaborated by **S. Shagholi**) (doi) (Journal)
- [49] *On the changes of variables associated with the Hamiltonian structure of the Harry-Dym equation*, Global journal of advanced research on classical and modern geometry, Vol.6, (2017), Issue 2, 83–90. (Collaborated by **P. Kabi-Nejad**) (doi) (Journal)
- [50] *Closed pseudo-Riemannian Ricci solitons*, Journal of Mathematical Physics 58, 101505 (2017). (Collaborated by **M. Jamreh**) (doi) (Journal)

- [51] *Solving differential equations by new wavelet type transform method based on the wavelets and symmetry groups*, J Generalized Lie Theory Appl, 2017, 11:2, 2017. (Collaborated by **H.R. Yazdani**) (doi) (Journal)
- [52] *Symmetry classification of newtonian incompressible fluids equations flow in turbulent boundary layers*, Vestnik KRAUNC. Fiz.-mat. nauki, 18:2, 41–52, 2017. (Collaborated by **S.R. Hejazi**) (doi) (Journal) (Preprint)
- [53] *Solving differential equations by new wavelet transform method based on the quasi-wavelets and differential invariants*, Punjab University Journal of Mathematics, Vol. 49(3), 149–162, 2017. (Collaborated by **H.R. Yazdani**) (doi) (Journal)
- [54] *Symmetries of the generalized fisher equation with  $x$ -dependent coefficient*, International Journal of Mathematics and Computation, Vol 28(4), 2017. (Collaborated by **H.R. Yazdani**) (doi) (Journal)
- [55] *Approximate symmetry and exact solutions of the singularly perturbed Boussinesq equation*, Commun Nonlinear Sci Numer Simulat 53, 1–9, 2017. (Collaborated by **M. Rahimian** and **M. Toomanian**) (doi) (Journal)
- [56] *Approximate symmetry and solutions of the nonlinear Klein-Gordon equation with a small parameter*, Int. J. Geom. Methods Mod. Phys., Vol. 14, 1750046, 2017. (Collaborated by **M. Rahimian** and **M. Toomanian**) (doi) (Journal)
- [57] *Approximate nonlinear self-adjointness and approximate conservation laws of the Gardner equation*, Punjab University Journal of Mathematics, Vol. 49(1), 25–30, 2017. (Collaborated by **N. Pourrostami**) (doi) (Journal)
- [58] *Reductions and conservation laws for BBM and modified BBM equations*, Open Math, 14: 11381148, 2016. (Collaborated by **M. Khorshidi**, **H. Jafari** and **M. Al-Qurashi**) (doi) (Journal)
- [59] *Lie symmetry analysis and conservation laws of dissipative nonlinear evolution equations with ellipticity*, J. Sci. I. A. U., Vol. 25, No. 98.2, 3–10, 2016. (Collaborated by **M. Khorshidi**) (doi) (Pdf)
- [60] *Self-adjointness, group classification and conservation laws of an extended Camassa-Holm equation*, Journal of Generalized Lie Theory and Applications, 2016. (Collaborated by **N. Pourrostami**) (doi) (Journal)
- [61] *The stability of a connection on Hermitian vector bundles over a Riemannian manifold*, Asian-European J. Math., 2016. (Collaborated by **R. Bakhshandeh-Ch.**) (doi) (Journal)
- [62] *Geometrical structure of Boiti-Leon-Manna-Pempinelli equation*, Indian Journal of Science and Technology, Vol 8(33), 2015. (Collaborated by **N. Asadi**) (doi) (Journal)
- [63] *Fractional derivative generalization of Noether's theorem*, Open Math. 2015; 13: 940–947, doi: 10.1515/math-2015-0086. (Collaborated by **M. Khorshidi** and **H. Jafari**) (doi) (Journal)
- [64] *The equivalence problem problem for a class of linear fourth order telegraph equations*, JP Journal of Geometry and Topology Volume 17(2), 95 – 107, 2015. (Collaborated by **M. Hesamiarshad**) (doi) (Journal)
- [65] *Invariant solutions and conservation laws for a three-dimensional K-S equation*, Malaya J. Mat. 3(3), 296–302, 2015. (Collaborated by **R. Dastranj** and **M. Toomanian**) (doi) (Journal)
- [66] *Classical and partial symmetries of the Benney equation*, Malaya J. Mat. 3(1), 8692, 2015. (Collaborated by **O. Chekini**) (doi) (Journal)
- [67] *The new Lie point reductions and similarity solutions for the Gordon-type equation of the Milne metric*, Int. J. Geom. Methods Mod. Phys. Vol. 12, 2015. (Collaborated by **L. Hamedi-Mobara**) (doi) (Journal)

- [68] *Two approaches to the calculation of approximate symmetry of Ostrovsky equation with small parameter*, Mathematical Physics, Analysis and Geometry, 18:3, 2015. (Collaborated by **A. Mahdavi** and **M. Toomanian**) (doi) (Journal)
- [69] *Conservation laws and Hamiltonian symmetries of Whitham-Broer-Kaup equations*, Indian Journal of Science and Technology, (2015) 0974–6846. (Collaborated by **P. Kabi-Nejad**) (doi) (Journal)
- [70] *Non-classical symmetries and group invariant solutions for Kuramoto-Sivashinsky equation*, Selcuk J. Appl. Math. Vol. 16. No. 2. 16–21, 2015. (Collaborated by **S. Dodangeh**) (doi) (Journal) (Pdf)
- [71] *Integrating factor, first integral and  $\lambda$ -symmetry for  $n$ -th order ODEs*, J. Sci. I. A. U., Vol. 23, No. 90.2, pp. 41–48, 2014. (Collaborated by **Kh. Goodarzi**) (doi) (Pdf)
- [72] *Lie symmetry properties for an Euler-Bernoulli model of flexible beam robots*, IOSR Journal of Mathematics, Vol. 10, Is 6 Ver. III (Nov - Dec. 2014), 38–46. (Collaborated by **L. Hamedi-Mobara**) (doi) (Journal)
- [73] *Approximate symmetry and approximate solution of the  $\phi$ -equation with a small parameter*, Gen. Math. Notes, Vol. 24, No. 1, Sep 2014, 40–51. (Collaborated by **A. Mahdavi**) (doi) (Journal)
- [74] *Web geometry of a system of  $n$  first order autonomous ordinary differential equations*, J Dyn Control Syst, DOI: 10.1007/s10883-014-9249-0, 2014. (Collaborated by **R. Bakhshandeh-Ch.**) (doi) (Preprint) (Journal)
- [75] *Signature submanifolds for some equivalence problems*, Journal of Linear and Topological Algebra, Vol. 03, No. 03, 2014, 121- 130. (Collaborated by **Z. Pahlevani-Teh.**) (doi) (Journal)
- [76] *Invariant solutions of Barlett and Whitaker's equations*, Malaya J. Mat. 2(2)(2014) 103-107. (Collaborated by **O. Chekini**) (doi) (Journal)
- [77] *Symmetry analysis and conservation laws for description of waves in bubbly liquid*, International Journal of Non-Linear Mechanics, 67, (2014) 47–51. (Collaborated by **R. Dastranj**) (doi) (Journal)
- [78] *Symmetry analysis of Black-Scholes equation for small values of volatility and rate of return*, Journal of Interpolation and Approximation in Scientific Computing, Volume 2014, Year 2014 Article ID jiasc-00054. (Collaborated by **A. Mokhtary**) (doi) (Journal)
- [79] *Analysis of the symmetries and conservation laws of the nonlinear Jaulent-Miodek equation*, Abstract and Applied Analysis, Vol. 2014, Article ID 476025. (Collaborated by **M. Hesamiarshad**) (doi) (Journal)
- [80]  *$\lambda$ -symmetry and  $\lambda$ -conservation law for the extended mKdV equation*, Journal of Nonlinear Mathematical Physics, Volume 21, Issue 3, 2014. (Collaborated by **Kh. Goodarzi**) (doi) (Journal)
- [81] *The equivariant moving frame method of third order differential equations*, Bull. Malays. Math. Sci. Soc. (2) 37(2), pp. 487–498, 2014. (Collaborated by **R. Bakhshandeh-Ch.**) (doi) (Journal)
- [82] *Geometric structure and some exact solutions of Plateau equation*, Physical Science International Journal, 4(5): 692–698, 2014. (Collaborated by **N. Asadi**) (doi) (Journal)
- [83] *Conservation laws and exact solutions of the Whitham-type equations*, Commun Nonlinear Sci Numer Simulat, 19, pp. 2212–2219, 2014., 2014. (Collaborated by **V. Shirvani-Sh.**) (doi) (Journal)
- [84] *Approximate symmetries of the Harry Dym equation*, ISRN Mathematical Physics, Vol. 2013, Article ID 109170. (Collaborated by **P. Kabi-Nejad**) (doi) (Journal)
- [85] *Approximate symmetry analysis of a class of perturbed nonlinear reaction-diffusion equations*, Abstract and Applied Analysis, Volume 2013, Article ID 395847. (Collaborated by **A. Mahdavi**) (doi) (Journal)
- [86] *Cartan equivalence problem for third order differential operators*, Turkish Journal of Mathematics, 37 (6), 2013, pp. 949–958. (Collaborated by **R. Bakhshandeh-Ch.**) (doi) (Preprint) (Journal)



- [87] *On the variational problems without having desired variational symmetries*, Journal of Mathematics, Vol. 2013, Article ID 685212. (Collaborated by **S. Dodangeh** and **P. Kabi-Nejad**) (doi) (Preprint) (Journal)
- [88] *The frontage of creativity and mathematical creativity*, Procedia - Social and Behavioral Sciences, Vol. 90, 2013, pp. 344-350. (Collaborated by **N. Yaftian**) (doi) (Journal)
- [89] *Symmetry analysis and conservation laws for the Hunter-Saxton equation*, Commun. Theor. Phys. 59 (2013) 335-348. (Collaborated by **F. Ahangari**) (doi) (Journal)
- [90] *Approximate Hamiltonian symmetry group and recursion operators for perturbed evolution equations*, Advances in Mathematical Physics, Vol. 2013, Article ID 568632. (Collaborated by **A. Mokhtary**) (doi) (Journal)
- [91] *Some general new Einstein Walker manifolds*, Advanced in Mathematical Physics, Vol. 2013, Article ID 591852. (Collaborated by **M. Jafari**) (doi) (Preprint) (Journal)
- [92] *Symmetry reduction of the two dimensional Ricci flow equation*, Geometry, Vol. 2013, Article ID 373701. (Collaborated by **M. Jafari**) (doi) (Journal)
- [93] *Computation of partially invariant solutions for the einstein Walker manifolds' identifying equations*, Commun Nonlinear Sci Numer Simulat 18 (2013) 3317-3324. (Collaborated by **M. Jafari**) (doi) (Journal)
- [94] *Geometry of distributions and F-Gordon equation*, Mathematical Sciences 2012, 6:49. (Collaborated by **R. Aghayan**) (doi) (Preprint) (Journal)
- [95] *A physical example of algebraic hyperstructures: Leptons*, Indian Journal of Physics, Volume 86, Issue 11, 1027-1032, 2012. (Collaborated by **A. Dehghan Nezhad**, **S.M. Moosavi Nejad**, and **B. Davvaz**) (doi) (Preprint) (Journal)
- [96] *Lie symmetries and conservation laws of the Hirota-Ramani equation*, Commun Nonlinear Sci Numer Simulat 17 (2012) 4064-4073. (Collaborated by **V. Shirvani-Sh.**) (doi) (Preprint)
- [97] *Group analysis via weak symmetries for Benjamin-Bona-Mahony equation*, International Journal of Mathematical and Computational Sciences, 6, 2012, 10-15. (Collaborated by **F. Ahangari** and **S. Dodangeh**) (doi) (Preprint) (Journal)
- [98] *Lie symmetry analysis of the two dimensional generalized Karamoto-Sivashinsky equation*, Mathematical Sciences 2012, 6:3. (Collaborated by **F. Ahangari**) (doi) (Journal)
- [99] *Creativity and mathematical creativity: Some definitions and characteristics*, Procedia - Social and Behavioral Sciences 31 (2012) 285 - 291. (Collaborated by **N. Yaftian** and **Sh. Bakhshalizadeh**) (doi) (Journal)
- [100] *Symmetry analysis and conservation laws of the geodesic equations for the Reissner-Nordström de Sitter black hole with a global monopole*, Communications in Nonlinear Science and Numerical Simulation, 17 (6) pp. 2350-2361 (2012) (Collaborated by **F. Ahangari**) (doi) (Journal)
- [101] *Potential symmetries and conservation laws for generalized quasilinear hyperbolic equations*, Appl. Math. Mech. -Engl. Ed., 32 (12), 1607-1614 (2011) (Collaborated by **R. Bakhshandeh-Ch.** and **F. Ahangari**) (doi) (Preprint) (Journal)
- [102] *Symmetry analysis and similarity reduction of the Korteweg-deVries-Zakharov-Kuznetsov equation*, Asian-European Journal of Mathematics (AEJM), Vol. 5, No. 1 (2012) (Collaborated by **F. Ahangari**) (doi) (Journal)
- [103] *Lie symmetry analysis of Kudryashov-Sinelshchikov equation*, Mathematical Problems in Engineering, Volume 2011 (2011), Article ID 457697, 9 pages. (Collaborated by **V. Shirvani-Sh.**) (doi) (Journal)
- [104] *The perspective of creativity in the process of learning mathematics*, Journal of Technology of Education, Vol. 5, No. 4, 251-264 (2011). (Collaborated by **N. Yaftian** and **Sh. Bakhshalizadeh**) (doi) (Journal)

- [105] *Symmetry reduction of the two dimensional damped Kuramoto-Sivanshsky equation*, Communications in Theoretical Physics, 56 (2011) 211–217. (Collaborated by **F. Ahangari**) (doi) (Journal)
- [106] *Symmetry analysis of telegraph equation*, Asian-European Journal of Mathematics, Vol. 4, No. 1 (2011) 117-126. (Collaborated by **S.R. Hejazi**) (doi) (Preprint) (Journal)
- [107] *Symmetry analysis of wave equation on hyperbolic space*, International Journal of Nonlinear Science, Vol.11 (2011) No.1, 35–43. (Collaborated by **A.R. Zaeim**) (doi) (Journal)
- [108] *On the properties of invariants of forms*, Applied Sciences, Vol 12, 2011, pp. 109–114. (Collaborated by **P. Kabi-Nejad**) (doi) (Preprint) (Journal)
- [109] *Classification of curves in affine geometry*, Differential Geometry - Dynamical Systems, Vol.13, 2011, pp. 191–200. (Collaborated by **A. Mahdipour-Sh.**) (doi) (Preprint) (Journal)
- [110] *Symmetry classification for the nonlinear heat conductivity equation*, Lobachevskii Journal of Mathematics, 2010, Vol. 31, No. 4, pp. 347358. (Collaborated by **A. Mahdipour-Sh.**) (doi) (Preprint) (Journal)
- [111] *Symmetry of quadratic homogeneous differential systems*, Differential Geometry - Dynamical Systems, Vol.12, 2010, pp. 118–127. (Collaborated by **A. Mahdipour-Sh.**) (doi) (Preprint) (Journal)
- [112] *Preliminary group classification of a class of 2d nonlinear heat equations*, The European Physical Journal B, 2010. (Collaborated by **R. Bakhshandeh-Ch.**) (doi) (Preprint), (Journal)
- [113] *The special linear representations of compact Lie groups*, Mathematical Sciences, Vol. 4, No. 3 (2010) 343-352. (Collaborated by **R. Bakhshandeh-Ch.**) (doi) (Preprint) (Journal)
- [114] *Classification the integral curves of second degree homogeneous ODE*, Mathematical Sciences, Vol. 4, No. 4 (2010) 365-375. (Collaborated by **M. Mirafzal**) (doi) (Journal)
- [115] *Classification of similarity solutions for inviscid Burgers' equation*, Adv. appl. Clifford alg. 20 (2010), 71–77. (doi) (Journal)
- [116] *Symmetry group classification for general Burger's equation*, Communications in Nonlinear Science and Numerical Simulations, Volume 15, Issue 9, 2010, Pages 2303-2310, doi : 10.1016/j.cnsns.2009.09.031. (Collaborated by **R. Bakhshandeh-Ch.**) (doi) (Preprint) (Journal)
- [117] *A symmetry classification for a class of  $(2 + 1)$ -nonlinear wave equation*, Nonlinear Analysis: Theory and applications, Volume 71, Issue 11, 1 December 2009, Pages 5164-5169. (Collaborated by **R. Bakhshandeh-Ch.** and **A. Mahdipour-Sh.**) (doi) (Journal)
- [118] *Fuzzy differential invariants (FDI)*, Chaos, Solitons and Fractals, No. 42, pp. 167-1683, 2009. (Collaborated by **R. Bakhshandeh-Ch.**) (doi) (Journal)
- [119] *Galilean geometry of motions*, Applied Sciences, Vol.11, pp. 91-105, 2009. (Collaborated by **A.R. Forough**) (doi) (Preprint) (Journal)
- [120] *Generating  $SL(2)$ -differential invariants by Hilbert's operators*, Mathematical Sciences, Vol. 3, No. 1, 2009, pp. 17-24. (Collaborated by **P. Kabi-Nejad**) (doi) (Journal)
- [121] *Lie symmetries and solutions of KdV equation*, International Mathematical Forum, 4, 2009, no. 4, 165 - 176. (Collaborated by **S.R. Hejazi**) (doi) (Journal)
- [122] *Lie symmetries of inviscid Burger's equation*, Adv. appl. Clifford alg. 19 (2009), 101–112, doi : 10.1007/s00006-008-0127-2. (doi) (Journal)
- [123] *Symmetry analysis for a new form of the vortex mode equation*, Differential Geometry - Dynamical Systems, Vol.11, 2009, pp. 144-154. (Collaborated by **A. Mahdipour-Sh.**) (doi) (Preprint) (Journal)
- [124] *Symmetry analysis of cylindrical Laplace equation*, Balkan Journal of Geometry and Its Applications, Vol. 14, No. 2, 2009, pp. 63-74. (Collaborated by **S.R. Hejazi**) (doi) (Journal)

- [125] *Fuzzy Lie groups*, Mathematical Sciences, Vol. 2, No. 2 (2008) 193-206. (Collaborated by **R. Bakhshandeh-Ch.**) (doi) (Journal) (Preprint)
- [126] *Affine classification of  $n$ -curves*, Balkan Journal of Geometry and Its Applications, 13(2): pp. 66-73, 2008. (Collaborated by **A. Mahdipour-Sh.**) (doi) (Journal)
- [127] *First integrals of a special system of ordinary differential equations*, International Journal of Engineering, Volume 21, 4, Transactions B: Applications, December 2008, Art. #6, pp. 375–383. (Collaborated by **S.R. Hejazi**) (doi) (Journal)
- [128] *Self equivalence 3rd order odes by time-fixed transformations*, Applied Science, 10: 176-183, 2008. (Collaborated by **A.R. Forough**) (doi) (Preprint) (Journal)
- [129] *The generalized classical time-space*, Mathematical Sciences, Vol. 2, No. 4 (2008) 327-334. (Collaborated by **S.M. Mousavi**) (doi) (Preprint) (Journal)
- [130] *Differential invariants of  $SL(2)$  and  $SL(3)$ -group actions on  $\mathbb{R}^2$* , Mathematical Sciences, 1(3): 75-84, 2007. (Collaborated by **S.R. Hejazi**) (doi) (Preprint) (Journal)
- [131] *Time-fixed geometry of 2nd order ordinary differential equations*, IUST International Journal of Engineering Science, 18(1): 13-18, 2007. (Collaborated by **A.R. Forough**) (doi) (Journal) (Pdf)
- [132] *Classification of cubics up to affine transformations*, Differential geometry & Dynamical Systems, 8(1): 184-195, 2006. (Collaborated by **A.R. Forough**) (doi) (Preprint) (Journal)
- [133] *The Lie algebra of smooth sections of a  $T$ -bundle*, IUST International Journal of Engineering Science, 17(3-4): 81-85, 2006. (Collaborated by **H.R. Salimi-Mo.**) (doi) (Journal) (Pdf)
- [134]  *$T$ -bundle: A generalization of tangent bundle*, IUST International Journal of Engineering Science, 16(4): 39-45, 2005. (Collaborated by **H.R. Salimi-Mo.**) (doi) (Journal) (Pdf)
- [135] *On the classification of certain curves up to projective transformations*, Differential geometry and Dynamical Systems, 6: 14-22, 2004. (doi) (Journal)
- [136] *Affine differential invariants for planar curves*, Balkan Journal of geometry and its applications, 7(1): 69-78, 2002. (doi) (Journal)
- [137] *A representation of the prolongations of a  $G$ -structure*, Punjab University Journal of Mathematics, 30: 109-123, 1997. (Collaborated by **E. Esrafilian**) (doi) (Journal)
- [138] *The tangent bundle of higher order*, In Second World Congress of Nonlinear Analysts, volume 30, 8, pages 5003-5007, 1997. (Collaborated by **E. Esrafilian**) (doi) (Journal)
- [139] *Do not search the finite rings in far away*, Roshd, Magazine of Mathematical Education, 33: 13-25, 1992, Persian. (doi) (Pdf)
- [140]  *$r/2$ -circles and  $r/2$ -spheres*, Roshd, Magazine of Mathematical Education, 27: 35-41, 1990, Persian. (doi) (Pdf)

## Paper in Conferences:

- [1] *Inverse variational calculus*, 10th Mathematics Conference of PNU, Shiraz, Iran, May 18-19, 2022. (Pdf) (Conf)
- [2] *Symmetry analysis of cylindrical Helmholtz equation*, Submitted by “Analytical and Numerical Methods in Differential Equations” Conference, 2021. (Collaborated by **A. Mahdipour-Sh.**) (Preprint) (Conf)
- [3] *Finding Noethers conservation laws of the Sine-Gordon equation using moving frames*, The 9th Seminar on Geometry and Topology, Uni. of Maragheh, 26-27 Jul. 2017. (Collaborated by **Y. Masoudi** and **M. Toomanian**) (Pdf)

- [4] *Sophus Lie dream: Application of groups in differential equations*, The 9th Seminar on Geometry and Topology, Uni. of Maragheh, 26-27 Jul. 2017. (Invited speaker) (Pdf)
- [5] *Geometrical structure and exact solutions of nonstationary transonic gas flows equation via two dimensional optimal system*, The 9th Seminar on Geometry and Topology, Uni. of Maragheh, 26-27 Jul. 2017. (Collaborated by **N. Asadi** and **M. Toomanian**) (Pdf)
- [6] *Symmetry group of nonlinear Poisson equation*, The 9th Seminar on Geometry and Topology, Uni. of Maragheh, 26-27 Jul. 2017. (Collaborated by **F.S. Mousavi-Nezhad**)
- [7] *Non-classical symmetries of generalized FKPP equation with  $x$ -dependent coefficient*, The 8th Seminar on Geometry and Topology, Amirkabir Uni. Tech., Dec. 17-19, 2015. (Collaborated by **H.R. Yazdani**) (Pdf)
- [8] *The similarity solutions of the gravitational waves of the Milne space-time*, The 8th Seminar on Geometry and Topology, Amirkabir Uni. Tech., Dec. 17-19, 2015. (Collaborated by **L. Hamed-Mobara**) (Pdf)
- [9] *Classifying the differential invariants of Lie symmetry groups of Korteweg-deVries equation by the equivariant moving frame method*, The 45th Annual Iranian Conference of Mathematics, Semnan Univ., Aug. 26-29, 2014. (Collaborated by **Z. Pahlevani-Teh.**) (Pdf)
- [10] *Integration factor and  $\lambda$ -symmetry for third order differential equations*, 45th Annual Iranian Conference of Mathematics, Semnan Univ., Aug. 26-29, 2014. (Collaborated by **Kh. Goodarzi**) (Pdf)
- [11] *Lie symmetry classification of  $u_t - u_{x^2t} + f(u)u_x - a u_x u_{x^2} - b u u_{x^3} = 0$* , 45th Annual Iranian Conference of Mathematics, Semnan Univ., Aug. 26-29, 2014. (Collaborated by **N. Pourrostami**)
- [12] *Lie symmetries of the fractional-partial diffusion equations*, The 7th Seminar on Geometry and Topology, Jan 29-30, 2014. (Collaborated by **V. Shirvani-Sh.** and **M. Korshidi**) (Pdf)
- [13] *Solving equivalence problems with equivariant moving frame method under finite dimensional Lie group actions*, The 7th Seminar on Geometry and Topology, Jan 29-30, 2014. (Collaborated by **V. Shirvani-Sh.** and **Z. Pahlevani-Teh.**) (Pdf)
- [14] *Application of Lie symmetries to construct conservation laws of PDEs*, The 7th Seminar on Geometry and Topology, Jan 29-30, 2014. (Collaborated by **V. Shirvani-Sh.** and **M. Toomanian**) (Pdf)
- [15]  *$\lambda$ -symmetries and solution of ordinary differential equations*, The 7th Seminar on Geometry and Topology, Jan 29-30, 2014. (Collaborated by **K. Yaghesh**) (Pdf)
- [16] *The equivalence problem for equations of the form  $u_{xxx} = u_t + A(t, x)u_x + B(t, x)u + C(t, x)$* , The 7th Seminar on Geometry and Topology, Jan 29-30, 2014. (Collaborated by **M. Hesamiarshad**) (Pdf)
- [17] *Conservation laws of the Kupershmidt equation by the scaling method*, The 7th Seminar on Geometry and Topology, Jan 29-30, 2014. (Collaborated by **P. Kabi-Nejad**) (Pdf)
- [18] *Apply Fushchych method on celebrated version of Fisher-KPP equation*, The 7th Seminar on Geometry and Topology, Jan 29-30, 2014. (Collaborated by **H.R. Yazdani**) (Pdf)
- [19] *The Milne metric and reductions of its Gordon type equation*, The 7th Seminar on Geometry and Topology, Jan 29-30, 2014. (Collaborated by **L. Hamed-Mobara**) (Pdf)
- [20] *Group analysis of three dimensional Euler equations of gas dynamics*, The 7th Seminar on Geometry and Topology, Jan 29-30, 2014. (Preprint) (Pdf)
- [21] *Exact solution of generalized inviscid Burgers' equation*, The 7th Seminar on Geometry and Topology, Jan 29-30, 2014. (Preprint) (Pdf)
- [22] *Exact solutions via Lie symmetries of the BBM equation*, 5th Iranian Conference on Applied Mathematics, September 2-4, 2013, Bu-Ali Sina University. (Collaborated by **M. Khorshidi**) (Pdf)

- [23] *Interaction between solutions of the Euler-Lagrange equation and the Hamilton's equation*, 44th Annual Iranian Conference of Mathematics, Ferdosi University of Mashhad, Mashhad-Iran, 2013. (Collaborated by **P. Kabi-Nejad**) (Pdf)
- [24] *Invariant solutions for DNE equation with ellipticity*, 44rd Annual Iranian Conference of Mathematics, Ferdosi University of Mashhad, Mashhad-Iran, 2013. (Collaborated by **M. Khorshidi**) (Pdf)
- [25] *Lie symmetries of the Ostrovsky-Vakhnenko equation*, 5th Iranian Conference on Applied Mathematics, Bu-Ali Sina University, September 2–4, 2013. (Collaborated by **M. Hesamiarshad**) (Pdf)
- [26] *Cartan equivalence problem for linear differential operators*, 33rd Annual Iranian Conference of Mathematics, University of Tabriz, Tabriz-Iran, Agu. 27-30, 2012. (Collaborated by **R. Bakhshandeh-Ch.**) (Pdf)
- [27] *Integral invariants of Hamiltonian systems*, 33rd Annual Iranian Conference of Mathematics, University of Tabriz, Tabriz-Iran, Agu. 27-30, 2012. (Collaborated by **P. Kabi-Nejad**) (Pdf)
- [28] *Classification of subgroups for symmetry group of a differential equation*, Fourth Group Theory Conference of Iran Payam Noor University of Isfahan, Isfahan, Iran, March 7-9, 2012. (Collaborated by **M. Jafari**) (Pdf)
- [29] *Symmetries and invariants of 2–dimensional Ricci flow equation*, Sixth seminar on geometry and topology, Bonab Uni., Sep. 18-20, 2011. (Collaborated by **M. Jafari**)
- [30] *Maurer-Cartan equations for Lie symmetry pseudo-groups of Hunter Soxon equation*, Sixth seminar on geometry and topology, Bonab Uni., Sep. 18-20, 2011. (Collaborated by **N. Asadi**) (Pdf)
- [31] *Symplectic classification of exterior 2–forms*, Sixth seminar on geometry and topology, Bonab Uni., Sep. 18-20, 2011. (Collaborated by **S.R. Hejazi**)
- [32] *Hamiltonian structure of the WBK equations*, Sixth seminar on geometry and topology, Bonab Uni., Sep. 18-20, 2011. (Collaborated by **P. Kabi-Nejad**) (Pdf)
- [33] *Fostering mathematical creativity in learning environments*, The third national conference on education, May 18 & 19, 2011, Shahid Rajaei Uni., Tehran, Iran. (Collaborated by **N. Yaftian** and **Sh. Bakhshalizadeh**) (Pdf)
- [34] *Lie symmetry analysis of the Grad-Shafranov equation*, The 42nd Annual Iranian Mathematics Conference: Valie-Asr University, Rafsanjan, Iran, 5-8 Sep. 2011. (Collaborated by **P. Kabi-Nejad**) (Pdf)
- [35] *Application of systems of second order differential equations in characterization of totally geodesic foliations*, The 4th Applied Mathematics Conference, 1388, Zahedan, Iran, March 10–12, 2010. (Persian) (Collaborated by **F. Ahangari**) (Pdf)
- [36] *Mathematical creativity and mathematical education*, National Conference on modern instructional method, May 19 & 20, 2010, Shahid Rajaei Uni., Tehran, Iran. (Collaborated by **N. Yaftian** and **Sh. Bakhshalizadeh**) (Pdf)
- [37] *Structure of symmetry groups via Maurer-Cartan's forms*, The 1st Regional Conference on Mathematics and its Applications in Engineering Sciences, 24 February 2010. (Persian) (with **M. Abdolsamadi**) (Pdf)
- [38] *Application of Cartan's equivalence method in symmetries of differential equations*, The 1st Regional Conference on Mathematics and its Applications in Engineering Sciences, 24 February 2010. (Persian) (Collaborated by **E. Oftadeh**) (Pdf)
- [39] *Symmetry method in solving differential equations in chemistry and biochemistry*, The 1st Regional Conference on Mathematics and its Applications in Engineering Sciences, 24 February 2010. (Persian) (Collaborated by **P. Ahmadi**) (Pdf)

- [40] *Characterization of different types of foliations on the tangent bundle of a Finsler Manifold*, 41st Annual Iranian Conference of Mathematics, Urmia University, Urmia-Iran, September 12-15, 2010. (Collaborated by **F. Ahangari**) ([Pdf](#))
- [41] *Symplectic classification of 2-forms in dimension 4*, 41st Annual Iranian Conference of Mathematics, Urmia University, Urmia-Iran, September 12-15, 2010. (Collaborated by **S.R. Hejazi**) ([Pdf](#))
- [42] *Cartan equivalence problem for Riemannian metrics*, 41st Iranian International Conference on Mathematics 12-15 September 2010, University of Urmia, Urmia-Iran, September 12-15, 2010. (Collaborated by **R. Bakhshandeh-Ch.**) ([Pdf](#))
- [43] *Generalization of Cartan's method of equivalence to immersions*, 3th Mathematical Annual National Conference of PNU, 19-20 May 2010, Mashhad, Iran. (Persian) (Collaborated by **Y. Azadi-Ko.**) ([Pdf](#))
- [44] *Point and contact symmetry for a non-linear differential equation*, In 5th seminar on geometry and topology, 12-14 May 2009, University of Kurdistan, Sanandaj, Iran. (Collaborated by **A. Mahdipour-Sh.**) ([Pdf](#))
- [45] *Classification of Lie symmetries for general Burger's equation*, 40st Iranian Mathematics Conference, 2009. ([link](#)) (Collaborated by **R. Bakhshandeh-Ch.**)
- [46] *Differential forms for finding symmetries of differential equations*, The 5th Seminar on Geometry and Topology 12-14 May 2009, University of Kurdistan, Sanandaj, Iran, 2009. (Collaborated by **S.R. Hejazi**) ([Pdf](#))
- [47] *Equivalence of surfaces*, The 1st International conference of Mathematics and its Applications, page 89, 2008. (Collaborated by **S.A. Shirafkan**)
- [48] *On Cartan's method of moving frames*, submitted by In 39th Iranian Mathematical Conference, Shahid Bahonar University, Kerman, 491-494, 2008. (Collaborated by **A. Mahdipour-Sh.**)
- [49] *Solution of nonlinear ordinary differential equations by first integrals*, In 8th Seminar on Differential Equations and Dynamical Systems, Isfahan, pp. 29-32, 2008. (Collaborated by **S.R. Hejazi**) ([Pdf](#))
- [50] *Generalized classical time-space*, In 4st Seminar of Geometry and Topology, page 13, 2007. (Collaborated by **S.M. Mousavi**)
- [51] *The exterior differential system*, In 38st Iranian Mathematics Conference, page 12, 2006. (Collaborated by **R. Aghayan**)
- [52] *Cartan equivalence method for 3rd order odes up to time-fixed transformations*, In 37st Iranian Mathematics Conference, pages 63-65, 2006. (Collaborated by **A.R. Forough**)
- [53] *Cartan construction for finite dimensional Lie pseudo-groups*, In 4st Seminar of Geometry and Topology, page 12, 2006. (Collaborated by **A. Mahdipour-Sh.**)
- [54] *Equivalence 2nd order odes by time-fixed transformations*, In 4st Seminar of Geometry and Topology, page 14, 2006. (Collaborated by **A.R. Forough**)
- [55] *Exterior differential systems with symmetry*, In 38st Iranian Mathematics Conference, page 13, 2006. (Collaborated by **R. Aghayan**)
- [56] *Geometrical foundations of numerical algorithms and symmetry*, In 38st Iranian Mathematics Conference, page 180, 2006. (Collaborated by **Sara Mehdipour**)
- [57] *Finsler vector bundles and metrizable connections*, In 36st Iranian Mathematics Conference, pages 52-54, 2005. (Collaborated by **A. Mahdipour-Sh.**)
- [58] *Isometric group of Finsler spaces*, In 38st Iranian Mathematics Conference, pages 45-47, 2005. (Collaborated by **A. Mahdipour-Sh.** and **H.R. Salimi-Mo.**)
- [59] *Classification of homogeneous fourth order equations with real coefficients up to affine transformations*, In 4th Seminar on Mathematical Analysis and its Applications, pages 134-137, 2004.

- [60] *A new solution for the affine equivalence problem*, In 2nd Joint Seminar on Applied Mathematics, 2003.
- [61] *Classification of curves  $y^3 = c_3x^3 + c_2x^2 + c_1x + c_0$  up to projective transformations*, In 34st Iranian Mathematics Conference, 2003, Persian.
- [62] *Galilean space-times*, In 3 st Seminar of Geometry and Topology, page 18, 2003, Tabriz University, Persian. (Collaborated by **A.R. Forough**)
- [63] *T–bundle*, In 3st Seminar of Geometry and Topology, page 19, 2003. Tabriz University, Persian. (Collaborated by **H.R. Salimi-Mo.**)
- [64] *Decomposition of higher order geometric structures*, In First Seminar of Geometry and Topology, pages 131-139, 2001.
- [65] *Correspondence between  $G$ –parameter Lie groups of local diffeomorphisms and  $\mathfrak{g}$ –regular  $k$ –vector Fields*, In 31st Iranian Mathematics Conference, pages 38-49, 2000. (Collaborated by **E. Esrafilian**) [\(link\)](#) [\(Pdf\)](#)
- [66]  *$E^k$ –functor, a new geometric object which is a generalization of the ordinary tangent object*, In 31st Iranian Mathematics Conference, pages 56-67, 2000. (Collaborated by **E. Esrafilian**) [\(link\)](#) [\(Pdf\)](#)
- [67] *Computer aided Lie theory of differential equations*, In 2nd International Conference of Applied Mathematics, pages 25-27, 2000.
- [68] *Geometry of differential equations*, In 2nd Joint Seminar on Applied Mathematics, 2000.

## Recent and past preprints:

- [1] *Lie bifurcation theory of the full extended Korteweg-de Vries equation*, Submitted by Computational Methods for Differential Equations, 2025.
- [2] *The algebra of differential invariants for the Dym equation*, Submitted by Journal of Geometry and Physics, 2023. (Collaborated by **N.M. Akvanpour**)
- [3] *Fiber preserving equivalence of forth ODE's*, Submitted to Jounal of Differential Equations, 2023. (Collaborated by **N.M. Akvanpour**)
- [4] *Using Classical Symmetries to solve Initial Value Problems of Fokker-Planck equation*, Submitted by Iraqi Journal For Computer Science and Mathematics, 2023. (Collaborated by **S. Al-Nassar**)
- [5] *Equivalence Method on Second Order Autonomous ODEs in Dynamical System*, 2023. (Collaborated by **R. Bakhshandeh-Ch.** and **M. Bakhshandeh**)
- [6] *Lie symmetry analysis and conservation laws of the time fractional Burger-Fisher equation*, Submitted by Chaos, Solitons and Fractals, 2022. (Collaborated by **E. Alimirzalou**)
- [7] *Projectively flat  $\beta$ –change of generalized fourth root finsler metrics*, Submitted by Balakan Journal of Geometry and Its Applications,, 2022. **M. Hesamfar**)
- [8] *Nonlinear self-adjointness and conservation laws of the two dimensional generalized Kuramoto-Sivashinsky equation*, Submitted by AUT Journal of Mathematics and Computing, 2022. (Collaborated by **N. Pourrostami**)
- [9] *A short proof of Ado's theorem*, Submitted by Khayyam Journal of Mathematics, 2022.
- [10] *Cartan equivalence method on fifth-order differential operator*, Submitted by Journal of Pseudo-Differential Operators and Applications (JPDO), 2020. (Collaborated by **R. Bakhshandeh-Ch.** and **M. Bakhshandeh**)
- [11] *On conformal geometry of 4th dimmensional Lorentzian two-symmetric manifolds*, Submitted by Acta Mathematica Hungarica, 2020. (Collaborated by **Yadollah Aryanejad** and **Nishteman Zandi**)

- [12] *Periodic generalized Birkhoff systems*, 2020. (Collaborated by **M. Mirala**)
- [13] *A method for recognition of geodesics in three dimensional Finsler spaces with  $(\alpha, \beta)$ -metrics*, Submitted by Differential Equations & Applications, 2019. (Collaborated by **A. Goodarzian** and **M. Toomanian**)
- [14] *Lie symmetries of radiation natural convection flow past an inclined surface*, Submitted by Sahand Communications in Mathematical Analysis , 2019. (Collaborated by **M. Abdolsamadi** and **E. Oftadeh**) (Preprint)
- [15] *Group properties and conservation laws of the nonlinear heat equation  $u_t = [f(u)u_x]_y$* , Submitted by Electronic Journal of Qualitative Theory of Differential Equations, 2019. (Collaborated by **R. Dastranj**)
- [16] *Contact equivalence problem for some linear third order evolution equations*, Submitted by Acta mathematica universitatis comenianae, 2019. (Collaborated by **M. Hesamiarshad**)
- [17] *Symmetry and  $\mu$ -symmetry analysis for the Camassa-Holm equation*, 2018. (Collaborated by **S. Shaban**)
- [18] *Symmetry and  $\mu$ -symmetry analysis for the mKdV type equation*, 2018. (Collaborated by **S. Shaban**)
- [19] *Nolinear self-adjointnes and conservation laws of the Korteweg-de Vries-Zakharov-Kuznetsov equation*, Submitted by International Journal of Applied Mathematics and Statistics, 2017. (Collaborated by **N. Pourrostami**)
- [20] *Dynamic epidemiological models for Dengue transmission*, 2017. (Collaborated by **S. Shagholi**)
- [21] *Parameter identifiability analysis for a new nonlinear epidemic model with indirect transmission using Gröbner bases*, 2017. (Collaborated by **A. Kalami-Yazdi**)
- [22] *Closed Pseudo-Riemannian gradient Ricci solitons*, Submitted by The Canadian Mathematical Bulletin, 2017. (Collaborated by **M. Jamreh**)