Farzaneh Alizadeh

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EDUCATION

PHD **Pure Mathematics, Geometry** 2017 – 2021
University of Bonab, Bonab, Iran
Thesis: Nonclassical Lie symmetries for fractional differential equations

MSc **Pure Mathematics, Geometry** 2012 – 2014
University of Bonab, Bonab, Iran
Thesis: Painlevé analysis, Lie symmetries and invariant solutions of potential Kadomstev-Petviashvili equation with time dependent coefficients

BSc **Applied Mathematics** 2007 – 2011
University college of science and technology, Urmia, Iran

WORK EXPERIENCE

Courses at University of Bonab, Azad University of Tehran: 2019 – Present

- Calculus I
- Differential Equations
- Calculus II
- Numerical computations
- Statistics and Probability

THESIS & PROJECTS

PhD Thesis: Nonclassical Lie symmetries for fractional differential equations 2017 – 2021

Recently, partial differential equations of fractional order have been the focus of many researchers. These types of equations are used to more accurately describe physical phenomena and related models. One of the most common difficulties of these types of models is finding the analytical solutions of the obtained equations, even though there are only a few restricted numerical methods that can solve different kinds of fractional order equations. In our work, we applied the Lie group method to solve fractional partial differential equations and showed that Lie group transformations can be used as a suitable and powerful tool for solving differential equations. These transformations are applied to construct a set of solutions for differential equations using classical and non-classical symmetries. Since it is very difficult or impossible to obtain exact solutions for a variety of fractional differential equations, finding exact solutions to these equations is very important. The main purpose of my PhD thesis was to, consider the non-classical symmetries, and present a new class of analytical solutions of this type of equations that can not be calculated by classical symmetries.

RESEARCH AREAS OF INTEREST

- Lie symmetry analysis method (Classical and Nonclassical symmetries)
- Finding exact solutions for fractional order PDEs
- Finding exact solutions for variable order fractional differential equations
- Finding exact solutions for fractional time delay equations

PUBLICATIONS

M.S Hashemi, A. Haji-Badali, F. Alizadeh, D. Baleanu
Integrability, invariant and soliton solutions of generalized Kadomtsev-Petviashvili-modified equal width equation; *Optik*, (2017).
https://doi.org/10.1016/j.ijleo.2017.03.114

M.S Hashemi, A. Haji-Badali, F. Alizadeh
Non–Classical Lie symmetry and conservation laws of the nonlinear time–fractional Kundu–Eckhaus (KE) equation; *Pramana*, (2021) .
https://doi.org/10.1007/s12043-021-02135-8

M.S Hashemi, A. Haji-Badali, F. Alizadeh, M. Inc
Nonclassical Lie symmetry and conservation laws of the nonlinear time-fractional Korteweg–de Vries equation; *Communications in Theoretical Physics*, (2021).
https://doi.org/10.1088/1572-9494/ac09df

F. Alizadeh, M.S Hashemi, A. Haji-Badali
Lie symmetries, exact solutions, and conservation laws of the nonlinear time-fractional Benjamin-Ono equation; *Computational Methods for Differential Equations*, (2021).
https://doi.org/10.22034/cmde.2021,45436,1911

M.S. Hashemi, A. Haji-Badali, F. Alizadeh, X-J Yang
Non-classical Lie symmetries for nonlinear time fractional Heisenberg equations; *Mathematical Methods in the Applied Sciences*, (2022).
https://doi.org/10.1002/mma.8353

M.S. Hashemi, A. Haji-Badali, F. Alizadeh, M. Inch
Classical and non–classical Lie symmetry analysis, conservation laws and exact solutions of the time–fractional Chen–Lee–Liu equation; *Computational and Applied Mathematics*, (2023).
https://doi.org/10.1007/s40314-023-02217-w

F. Alizadeh, E. Hincal, K. Hosseini, M.S. Hashemi, A. Das
The (2 + 1)-dimensional generalized time-fractional Zakharov Kuznetsov Benjamin Bona Mahony equation: its classical and nonclassical symmetries, exact solutions, and conservation laws; *Optical and Quantum Electronics*, (2023).
https://doi.org/10.1007/s11082-023-05387-3

K Hosseini, F Alizadeh, E Hinçal, D Baleanu, A Akgül, AM Hassan
Lie symmetries, bifurcation analysis, and Jacobi elliptic function solutions to the nonlinear Kodama equation; *Results in Physics*, (2023).
https://doi.org/10.1016/j.rinp.2023.107129

K. Hosseini, F. Alizadeh, K. Sadri, E. Hinçal, A. Akbulut, H.M. Alshehri, M.S. Osman
Lie vector fields, conservation laws, bifurcation analysis, and Jacobi elliptic solutions to the Zakharov–Kuznetsov modified equal-width equation, *Optical and Quantum Electronics*, (2023). (accepted)

K. Hosseini, F. Alizadeh, E. Hinçal, B. Kaymakamzade, K. Dehingia, M.S. Osman
Generalized nonlinear Schrödinger equation with logarithmic nonlinearity and their Gaussian solitary waves, *Journal of Optics*. (Submitted)

K. Hosseini, E. Hinçal, F. Alizadeh, D. Baleanu, Hashim M. Alshehr
Bifurcation analysis, chaotic characteristics, and Jacobi elliptic function structures to a generalized nonlinear Schrödinger equation, *Nonlinear Engineering. Modeling and Application*. (Submitted)

F. Alizadeh, K. Hosseini, E. Hinçal, B. Kaymakamzade, K. Dehingia
Lie symmetries, invariant solutions, and conservation laws of a generalized (2+1)-dimensional logarithmic Schrödinger equation. (Ready to submit)

K. Hosseini, F. Alizadeh, E. Hincal, D. Baleanu, M.S. Osman
Resonant multi-wave and positive multi-complexiton to a generalized Hirota bilinear equation. (Ready to submit)

M.S. Hashemi, A. Haji-Badali, F. Alizadeh
Classical and non-classical symmetries and analytical solutions of the system of fractional HGF differential equations; *Mathematical Researches*, Journal of Science Kharazmi University, (2021). (ISC)

M.S. Hashemi, A. Haji-Badali, F. Alizadeh
Classical Lie symmetry group analysis and exact solutions of the fractional modified (2+1)-dimensional Zakharov-Kuznetsov equation; *Journal of New Researches in Mathematics*, (2022). (ISC)

PRESENTATIONS & CONFERENCES

M.S. Hashemi, A. Haji-Badali, F. Alizadeh
Lie symmetry analysis of the nonlinear time-fractional Coupled Equal Width Wave Equation (CEWE); First Online Conference on Modern Fractional Calculus and its Applications (OCMFCA-2020), Biruni University, Istanbul, Turkey, (2020). (International Conference)

M.S. Hashemi, A. Haji-Badali, F. Alizadeh
Lie symmetry analysis of the nonlinear Geophysical Korteweg-de Vries (GPKdV) equation; The 11th Seminar on Geometry and Topology, Yasuj University, (2021). (Seminar)

M.S. Hashemi, A. Haji-Badali, F. Alizadeh
INTEGRABLE OF A NONLINEAR PARTIAL DIFFERENTIAL EQUATION; 12th Seminar on Differential Equations and Dynamical System, University of Tabriz, (2015). (Seminar)

F. Alizadeh, A. Haji-Badali, M. Asadollahzadeh
A note on Contact Lorentz Manifold, the 7th seminar on Geometry & Topology, Iran University of Science and Technology, (2013). (Seminar)

AWARDS & SCHOLARSHIPS

Best Researcher Award at the University of Bonab 2021

COMPUTER SKILLS

Matlab: Good
Maple: Excellent
LaTex: Excellent
ICDL Certificate

LANGUAGE SKILLS

English Reading: Good, Writing: Good, Speaking: Good, Listening: Good

REFERENCES

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Professor sajjad.hashemi396@gmail.com (+98914) 3415494

Ali Haji-Badali University of Bonab, Bonab, Iran
Professor haji.badali@bonabu.ac.ir (+98914) 1204632

PERSONAL INFORMATION

Date of Birth : 03/04/1987
Nationality : Iranian
Marital Status : Married
Number of children : 0
gender : Female