



Seyyed Ahmad Hosseini

*Associate Professor of Applied Mathematics-Numerical Analysis
Golestan University*

Curriculum Vitae

Personal data

Date of birth 21st March, 1982
Place of birth Kordkuy, Iran
Marital Status Married
Child Niwan (1 Nov. 2020)
ORCID ID 0000-0002-1855-5413
SCOPUS ID 55605778953

Teaching activities

2013–present Advanced Numerical Analysis, Foundations of Numerical Analysis, Numerical Computations, Numerical Methods for Differential Equations, Numerical Linear Algebra, Functional Analysis, Calculus I, Calculus II (Multivariable Calculus), Mathematical Software, Partial Differential Equations, Linear Optimization, Foundations of Computer Sciences, Foundations of Mathematical Sciences, and Discrete Mathematics at Golestan University

2008–2012 Calculus I, Calculus II, Numerical Computations, and Engineering Mathematics at the University of Tabriz

Present research/Professional speciality

- Numerical methods for Volterra integral and integro–differential equations
- Linear barycentric rational interpolation and its applications
- Numerical methods for ordinary differential and differential-algebraic equations

Institutional responsibilities

12.2019–02.2023 Head of the International Relations and Cooperation Office of Golestan University.

Department of Mathematics, Faculty of Sciences, Golestan University, Beheshti St., Gorgan, Iran

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Prizes, awards, fellowships

- 2024 A research fellowship from Martin Luther University, Institute for Mathematics, Martin Luther University, Halle (Salle), Germany.
- 2023 A research fellowship from the Swiss National Science Foundation (SNSF) for scientific exchanges program, Faculty of Informatics, Università della Svizzera italiana, Lugano, Switzerland.
- 2021 Scholarship for research stays for university academics and scientists, supported by the DAAD (German Academic Exchange Service), Institute for Mathematics, Martin Luther University, Halle (Salle), Germany.
- 2020 A financial support for scientific research to promote international exchanges, granted by the Research Fund of the University of Fribourg, Fribourg, Switzerland.
- 2019 A financial support for scientific research to promote international exchanges, granted by the Research Fund of the University of Fribourg, Fribourg, Switzerland.
- 2018 Scholarship for research stays for university academics and scientists, supported by the DAAD, Institute for Mathematics, Martin Luther University, Halle (Salle), Germany.
- 2016 Scholarship for a research stay at Post-Doctorate level, supported by international relations office of the University of Fribourg, Fribourg, Switzerland.
- 2012 Scholarship for a research stay at PhD level, supported by international relations office of the University of Fribourg, Fribourg, Switzerland.

Visiting positions

- 08.2024 09.2024 Sabbatical research at the Institute for Mathematics (with Dr. H. Podhaisky), Martin Luther University, Halle (Salle), Germany.
- 09.2023 02.2024 Sabbatical research at the Faculty of Informatics (with Prof. K. Hormann), Università della Svizzera italiana, Lugano, Switzerland.
- 07.2021 09.2021 Sabbatical research at the Institute for Mathematics (with Dr. H. Podhaisky), Martin Luther University, Halle (Salle), Germany.
- 07.2019 08.2019 Scientific collaboration with Prof. J.-P. Berrut, University of Fribourg, Fribourg, Switzerland.
- 07.2018 09.2018 Sabbatical research at the Institute for Mathematics (with Dr. H. Podhaisky), Martin Luther University, Halle (Salle), Germany.
- 08.2016 09.2016 Sabbatical research at the Department of Mathematics (with Prof. J.-P. Berrut), University of Fribourg, Fribourg, Switzerland.
- 01.2012 07.2012 A 6-month period for research under the supervision of Prof. J.-P. Berrut, University of Fribourg, Fribourg, Switzerland.

Workshops & Conferences

- 2024 International conference on the Numerical Solution of Differential and Differential-Algebraic Equations (NUMDIFF-17), 09–13 Sep. 2024, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany.

- 2024 The 10th Seminar on Numerical Analysis and its Applications, 03–04 July 2024, University of Tabriz, Tabriz, Iran.
- 2021 International conference on the Numerical Solution of Differential and Differential-Algebraic Equations (NUMDIFF-16), 06–10 Sep. 2021, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany.
- 2018 International conference on the Numerical Solution of Differential and Differential-Algebraic Equations (NUMDIFF-15), 03–07 Sep. 2018, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany.
- 2017 International conference on Computational Methods and Function Theory (CMFT 2017), 10–15 July 2017, Maria Curie-Skłodowska University, Lublin, Poland.
- 2015 International conference on scientific computation and differential equations (SciCADE 2015), 14–18 Sep. 2015, University of Potsdam, Potsdam, Germany.
- 2015 The 12th Seminar on Differential Equations and Dynamical Systems, 27–29 May 2015, University of Tabriz, Tabriz, Iran.
- 2013 The 44th Annual Iranian Mathematics Conference, 27–30 Aug. 2013, Ferdowsi University of Mashhad, Mashhad, Iran.
- 2013 A one-day Workshop on “Parallel and fast computing”, 13 March 2013, University of Tabriz, Tabriz, Iran.
- 2012 A one-day Workshop on “Relationship between mathematics and industry”, 28 Aug. 2012, University of Tabriz, Tabriz, Iran.
- 2012 The 43rd Annual Iranian Mathematical Conference, 27–30 Aug. 2012, University of Tabriz, Tabriz, Iran.

Publications

Journal articles:

1. A. Abdi, K. Hormann, **S.A. Hosseini**, Linear barycentric rational Hermite quadrature and its application to Volterra integral equations, *J. Comput. Appl. Math.* 474 (2026) 117009.
2. **S.A. Hosseini**, A quadrature method for Volterra integral equations of the first kind, *Iranian Journal of Numerical Analysis and Optimization* 15 (2025) 1589–1606.
3. A. Abdi, **S.A. Hosseini**, H. Podhaisky, The linear barycentric rational backward differentiation formulae for stiff ODEs on nonuniform grids, *Numer. Algor.* 98 (2025) 877–902.
4. A. Abdi, J.-P. Berrut, **S.A. Hosseini**, Explicit methods based on barycentric rational interpolants for solving non-stiff Volterra integral equations, *Appl. Numer. Math.* 174 (2022) 127–141.
5. A. Abdi, **S.A. Hosseini**, H. Podhaisky, Numerical methods based on the Floater–Hormann interpolants for stiff VIEs, *Numer. Algor.* 85 (2020) 867–886.
6. A. Abdi, **S.A. Hosseini**, H. Podhaisky, Adaptive linear barycentric rational finite differences method for stiff ODEs, *J. Comput. Appl. Math.* 357 (2019) 204–214.
7. A. Abdi, **S.A. Hosseini**, The barycentric rational difference-quadrature scheme for systems of Volterra integro-differential equations, *SIAM J. Sci. Comput.* 40 (2018) A1936–A1960.
8. A. Abdi, J.-P. Berrut, **S.A. Hosseini**, The linear barycentric rational method for a class of delay Volterra integro-differential equations, *J. Sci. Comput.* 75 (2018) 1757–1775.

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9. A. Abdi, **S.A. Hosseini** Symplectic and symmetric methods for the numerical solution of some mathematical models of celestial objects (In Persian), *J. New Researches in Mathematics* 3 (2017) 109–118.
10. **S.A. Hosseini**, A. Abdi, On the numerical stability of the linear barycentric rational quadrature method for Volterra integral equations, *Appl. Numer. Math.* 100 (2016) 1–13.
11. **S.A. Hosseini**, S. Shahmorad, F. Talati, A matrix based method for two dimensional nonlinear Volterra-Fredholm integral equations, *Numer. Algor.* 68 (2015) 511–529.
12. J.-P. Berrut, **S.A. Hosseini**, G. Klein, The linear barycentric rational quadrature method for Volterra integral equations, *SIAM J. Sci. Comput.* 36 (2014) A105–A123.
13. **S.A. Hosseini**, S. Shahmorad, A. Tari, Existence of an L^p -solution for two dimensional integral equations of the Hammerstein type, *Bull. Iranian Math. Soc.* 40 (2014) 851–862.
14. **S.A. Hosseini**, S. Shahmorad, H. Masoumi, Extension of the operational Tau method for solving 1-D nonlinear transient heat conduction equations, *Journal of King Saud University-Science* 25 (2013) 283–288.

Conference articles (Proceedings):

1. **S.A. Hosseini**, A. Abdi, J.-P. Berrut, An explicit composite barycentric rational quadrature method for non-stiff VIEs, The 10th Seminar on Numerical Analysis and its Applications, 03–04 July 2024, University of Tabriz, Tabriz, Iran, pp. 1–5.
2. **S.A. Hosseini**, A. Abdi, The stability behavior of the composite barycentric rational quadrature method for the numerical solution of VIEs, The 12th Seminar on Differential Equations and Dynamical Systems, 27–29 May 2015, University of Tabriz, Tabriz, Iran, pp. 267–271.
3. **S.A. Hosseini**, The composite barycentric rational quadrature method for Volterra integral equations, The 44th Annual Iranian Mathematics Conference, 27–30 Aug. 2013, Ferdowsi University of Mashhad, Mashhad, Iran, pp. 1054–1057.
4. **S.A. Hosseini**, S. Shahmorad, Tau matrix method for 2D nonlinear Volterra-Fredholm integral equations, The 44th Annual Iranian Mathematics Conference, 27–30 Aug. 2013, Ferdowsi University of Mashhad, Mashhad, Iran, pp. 1058–1061.
5. **S.A. Hosseini**, S. Shahmorad, A computational method for solving two dimensional nonlinear Fredholm integral equations, The 43rd Annual Iranian Mathematics Conference, 27–30 Aug. 2012, University of Tabriz, Tabriz, Iran, pp. 611–614.

Conference articles (Abstracts):

1. **S.A. Hosseini**, A. Abdi, K. Hormann, A class of composite barycentric rational Hermite quadrature method for Volterra integral equations, NUMDIFF-17, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany, 09–13 Sep. 2024.
2. **S.A. Hosseini**, A. Abdi, Efficient methods for Volterra integro-differential equations based on barycentric interpolants, NUMDIFF-16, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany, 6–10 Sep. 2021.
3. **S.A. Hosseini**, A. Abdi, H. Podhaisky, Rational finite differences method based on the barycentric interpolants for ODEs, NUMDIFF-15, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany, 3–7 Sep. 2018.

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4. A. Abdi, **S.A. Hosseini**, G. Hojjati, A class of multivalued-multistage schemes for the numerical solution of Volterra integral equations, NUMDIFF-15, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany, 3–7 Sep. 2018..
5. A. Abdi, J.-P. Berrut, **S.A. Hosseini**, The linear barycentric rational method for a class of delay Volterra integro-differential equations, SciCADE 2017, University of Bath, Bath, UK, 11–15 Sep. 2017.
6. **S. A. Hosseini**, A. Abdi, On the numerical solution of nonlinear systems of delay Volterra integro-differential equations with constant delay, CMFT 2017, Maria Curie-Skłodowska University, Lublin, Poland, 10–15 July 2017.
7. A. Abdi, G. Hojjati, **S. A. Hosseini**, Multistage-multivalued methods with inherent stability property for ordinary differential equations, CMFT 2017, Maria Curie-Skłodowska University, Lublin, Poland, 10–15 July 2017.
8. G. Hojjati, A. Abdi, **S. A. Hosseini**, Geometric second derivative numerical methods for solving Hamiltonian problems CMFT 2017, Maria Curie-Skłodowska University, Lublin, Poland, 10–15 July 2017.
9. **S. A. Hosseini**, A. Abdi, Theoretical results on the stability of the linear barycentric rational quadrature methods, SciCADE 2015, University of Potsdam, Potsdam, Germany, 14–18 Sep. 2015.

Book:

1. A. Abdi, **S.A. Hosseini**, Foundations of Numerical Analysis with MATLAB, Tabriz University Press, 2015 (In Persian).

Supervised Master Theses

- 2022–2023 **F. Farmoudeh Yamche**, Title of thesis: *BDF-type methods based on barycentric rational interpolants for initial value problems.*
- 2021–2022 **S.R. HosseiniTabar**, Title of thesis: *The multivariate polynomial interpolation.*
- 2021–2022 **M. Hasanghasemi**, Title of thesis: *The linear barycentric rational collocation method for Volterra integro-differential equations.*
- 2019–2022 **F. Kodi**, Title of thesis: *Topics in the spectral and barycentric rational pseudospectral methods for integral equations.*
- 2019–2021 **T. Pouraman**, Title of thesis: *The linear barycentric rational quadrature method for auto-convolution Volterra integral equations.*
- 2016–2018 **F. Maghsoudlou**, Title of thesis: *An extension of the linear barycentric rational interpolants and its applications.*

Presentations

- 2024 *A class of composite barycentric rational Hermite quadrature method for Volterra integral equations*, NUMDIFF-17, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany, 9 Sep. 2024.
- 2024 *An explicit composite barycentric rational quadrature method for non-stiff VIEs*, SNAA-10, University of Tabriz, Tabriz, Iran, 4 July 2024.

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- 2021 *Efficeint methods for Volterra integro-differential equations based on barycentric interpolants*, NUMDIFF-16, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany, 6 Sep. 2021.
- 2018 *Rational finite differences method based on the barycentric interpolants for ODEs*, NUMDIFF-15, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany, 4 Sep. 2018.
- 2018 *The linear barycentric rational method for a class of delay Volterra integro-differential equations*, Faculty of Mathematical Sciences, University of Tabriz, Tabriz, Iran, 30 Jan. 2018.
- 2017 *On the numerical solution of nonlinear systems of delay Volterra integro-differential equations with constant delay*, CMFT 2017, Maria Curie-Skłodowska University, Lublin, Poland, 11 July 2017.
- 2015 *Theoretical results on the stability of the linear barycentric rational quadrature methods*, SciCADE 2015, University of Potsdam, Potsdam, Germany, 16 Sep. 2015.
- 2015 *The stability behavior of the composite barycentric rational quadrature method for the numerical solution of VIEs*, The 12th Seminar on Differential Equations and Dynamical Systems, University of Tabriz, Tabriz, Iran, 28 May 2015.
- 2014 *On the numerical stability of the linear barycentric rational quadrature method for Volterra integral equations*, Faculty of Mathematical Sciences, University of Tabriz, Tabriz, Iran, 30 Dec. 2014.
- 2013 *The composite barycentric rational quadrature method for Volterra integral equations*, The 44th Annual Iranian Mathematics Conference, Ferdowsi University of Mashhad, Mashhad, Iran, 27 Aug. 2013.
- 2013 *Numerical solution of two dimensional nonlinear partial intergo-differential equations by the operational Tau method*, The Presentation of the PhD viva examination, Faculty of Mathematical Sciences, University of Tabriz, Tabriz, Iran, 27 Feb. 2013.
- 2013 *The linear barycentric rational quadrature method for Volterra integral equations*, Faculty of Mathematical Sciences, University of Tabriz, Tabriz, Iran, 8 Jan. 2013.
- 2012 *A computational method for solving two dimensional nonlinear Fredholm integral equations*, The 43rd Annual Iranian Mathematics Conference, University of Tabriz, Tabriz, Iran, 27 Aug. 2012.

Computer skills

Intermediate C programming, Julia

Advanced Matlab, Maple, Mathematica, L^AT_EX, X_YL^AT_EX, X_YPersian

Languages

Persian **Mother Tongue**

English **Advanced**

Conversational fluent

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