



# Seyyed Ahmad Hosseini

## Curriculum Vitae

*Assistant Professor of Applied Mathematics-Numerical  
Analysis at Golestan University*

### Personal Details

Gender Male  
Date of birth 21<sup>st</sup> March, 1982  
Place of birth Kordkuy, Iran  
Citizenship Iranian

### Teaching Experience

2013–Present Advanced Numerical Analysis, Foundations of Numerical Analysis, Numerical Computations, Numerical Methods for ODEs, Numerical Linear Algebra, Functional Analysis, Calculus 1, Calculus 2 (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 1, Calculus 2, Numerical Computations and Engineering Mathematics at the University of Tabriz

### Awards

- 2021 Scholarship for research stays for university academics and scientists, supported by German Academic Exchange Service (DAAD), 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 German Academic Exchange Service (DAAD), Institute for Mathematics, Martin Luther University, Halle (Salle), Germany.

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- 2016 Scholarship for research stay at Post-Doctorate level, supported by IRO of the University of Fribourg, Fribourg, Switzerland.
- 2012 Scholarship for research stay at PhD level, supported by IRO (International Relation Office) of the University of Fribourg, Fribourg, Switzerland.

## Present Research/Professional Speciality

- Numerical methods for Volterra integral equations
- Numerical methods for Volterra integro–differential equations (with and without delay)
- Linear barycentric rational interpolation and its applications
- Numerical methods for ordinary differential equations
- Numerical methods for differential-algebraic equations (Reading)

## Visiting Positions

- 2019 Scientific collaboration with Prof. J.-P. Berrut, University of Fribourg, Fribourg, Switzerland.
- 2018 Sabbatical research in the Institute for Mathematics (with Prof. H. Podhaisky), Martin Luther University, Halle (Salle), Germany.
- 2016 Sabbatical research in the Department of Mathematics (with Prof. J.-P. Berrut), University of Fribourg, Fribourg, Switzerland.
- 2012 A 6-month period for research under the supervision of Prof. J.-P. Berrut, University of Fribourg, Fribourg, Switzerland.

## Workshops & Conferences

- 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 12<sup>th</sup> Seminar on Differential Equations and Dynamical Systems, 27–29 May 2015, University of Tabriz, Tabriz, Iran.
- 2013 The 44<sup>th</sup> 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.

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## Publications

### *Journal articles:*

1. A. Abdi, J.-P. Berrut, **S.A. Hosseini**, Explicit methods based on barycentric rational interpolants for solving non-stiff Volterra integral equations, submitted to *Appl. Numer. Math.*
2. A. Abdi, **S.A. Hosseini**, H. Podhaisky, Numerical methods based on the Floater–Hormann interpolants for stiff VIEs, *Numer. Algorithms*, 85, (2020) 867–886.
3. 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.
4. A. Abdi, **S.A. Hosseini**, The barycentric rational difference-quadrature scheme for systems of Volterra integro-differential equations, *SIAM J. Sci. Comput.*, 40(3), (2018) A1936–A1960.
5. 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(3), (2018) 1757–1775.
6. 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 (11), (2017) 109–118.
7. **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.
8. **S.A. Hosseini**, S. Shahmorad, F. Talati, A matrix based method for two dimensional nonlinear Volterra-Fredholm integral equations, *Numer. Algorithms*, 68(3) (2015) 511–529.
9. J.-P. Berrut, **S.A. Hosseini**, G. Klein, The linear barycentric rational quadrature method for Volterra integral equations, *SIAM J. Sci. Comput.*, 36(1) (2014) A105–A123.
10. **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(4), (2014) 851–862.
11. **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(4) (2013) 283–288.

### *Conference articles (Proceedings):*

1. **S.A. Hosseini**, A. Abdi, The stability behavior of the composite barycentric rational quadrature method for the numerical solution of VIEs, The 12<sup>th</sup> Seminar on Differential Equations and Dynamical Systems, 27–29 May 2015, University of Tabriz, Tabriz, Iran, pp. 267–271.
2. **S.A. Hosseini**, The composite barycentric rational quadrature method for Volterra integral equations, The 44<sup>th</sup> Annual Iranian Mathematics Conference, 27–30 Aug. 2013, Ferdowsi University of Mashhad, Mashhad, Iran, pp. 1054–1057.
3. **S.A. Hosseini**, S. Shahmorad, Tau matrix method for 2D nonlinear Volterra-Fredholm integral equations, The 44<sup>th</sup> Annual Iranian Mathematics Conference, 27–30 Aug. 2013, Ferdowsi University of Mashhad, Mashhad, Iran, pp. 1058–1061.
4. **S.A. Hosseini**, S. Shahmorad, A computational method for solving two dimensional nonlinear Fredholm integral equations, The 43<sup>rd</sup> Annual Iranian Mathematics Conference, 27–30 Aug. 2012,

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University of Tabriz, Tabriz, Iran, pp. 611–614.

### **Conference articles (Abstracts):**

1. **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.
2. 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..
3. 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.
4. **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.
5. 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.
6. 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.
7. **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).

### **M.Sc. Students**

- 2021–cont'd **S.R. HosseiniTabar**, Title of thesis: *The multivariate polynomial interpolation.*
- 2021–cont'd **M. Hasanghasemi**, Title of thesis: *The linear barycentric rational collocation method for Volterra integro-differential equations.*
- 2019–cont'd **F. Kodi**, Title of thesis: *Topics in the spectral and barycentric rational pseudospectral methods for integral equation.*
- 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**

- 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.

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- 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 12<sup>th</sup> 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 44<sup>th</sup> 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 43<sup>rd</sup> Annual Iranian Mathematics Conference, University of Tabriz, Tabriz, Iran, 27 Aug. 2012.

## Computer skills

Intermediate	C programming, Microsoft Office, Microsoft Windows
Advanced	Matlab, Maple, Mathematica, $\LaTeX$ , $\text{F}\text{T}\text{E}\text{X}$ , $\text{X}\text{Y}\text{L}\text{A}\text{T}\text{E}\text{X}$ , $\text{X}\text{Y}\text{P}\text{e}\text{r}\text{s}\text{i}\text{a}\text{n}$