

Hassan Attarchi

US permanent resident

Email: hattarchi@gatech.edu
<http://people.math.gatech.edu/~hattarchi3/>

Phone: (+1) 470 553 5653

EDUCATION & POSITIONS:

- **2016-Present:** Ph.D. student, School of Mathematics, Georgia Institute of Technology, (Atlanta, USA)
- **2014-2015:** Visiting scholar, Golestan University (Gorgan, IR.)
- **2013:** Visiting scholar, Khaje Nasir Toosi University of Technology (Tehran)
- **2008-2012:** Ph.D. in Mathematics, Department of Mathematics and Computer Science, Tehran Polytechnic (Tehran)
- **2006-2008:** MS in Mathematics, Department of Mathematics and Computer Science, Tehran Polytechnic (Tehran)
- **2002-2006:** BS in Mathematics, Department of Mathematics and Computer Science, Tehran Polytechnic (Tehran)

RESEARCH INTEREST AREAS

- **Dynamical Systems:** Hamiltonian systems, Hyperbolic systems, Billiards problem, PDEs.
- **Differential Geometry:** Finsler and Riemannian manifolds, Contact and symplectic structures.
- **Statistics:** Minor degree in Statistics, focus on hypothesis testing.

SKILLS

- **Numerical Methods about solving ODEs and PDEs**
- **Testing Statistical Hypothesis, Statistical Estimation and Linear Statistical Models**
- **MATLAB - Python - R**

PUBLICATIONS

- **H. Attarchi** and L.A. Bunimovich, Collision of a Hard Ball with Singular Points of the Boundary, *Chaos*, 31 (2021), 013123.
- **H. Attarchi** and L.A. Bunimovich, Bridge to Hyperbolic Polygonal Billiards, *Pure and Applied Functional Analysis*, 5 (2020), 1249-1256.
- **H. Attarchi** and L.A. Bunimovich, Why Escape Is Faster Than Expected, *Journal of Physics A: Mathematical and Theoretical*, 53 (2020), 435002.
- **H. Attarchi**, M. Bolding, and L.A. Bunimovich, Ehrenfests' Wind-Tree Model is Dynamically Richer than the Lorentz Gas, *Journal of Statistical Physics*, 180 (2020), 440-458.
- **H. Attarchi**, 3-Kenmotsu manifolds, *Lobachevskii Journal of Mathematics*, 41 (2020), 320-325.
- **H. Attarchi** and et. Al., Towards a Novel Family of Algorithms in Pursuit Navigation, *Journal of Dynamical Systems & Geometric Theories*, 18 (2020), 15-26.
- **H. Attarchi** and M.M. Rezaii, The Warped Product of Hamiltonian Spaces, *Journal of Mathematical Physics, Analysis, Geometry*, 10 (2014), 300-308.
- **H. Attarchi** and M.M. Rezaii, Cartan Spaces and Natural Foliations on the Cotangent Bundle, *International Journal of Geometry Method in Modern Physics*, 10 (2013), 1250089.

- **H. Attarchi**, B. Bidabad, and M.M. Rezaii, A Novel Navigation Method for Pursuing a Moving Target, Iranian Journal of Science & Technology, Transaction A, 34 (2010), 313-320.

CONFERENCES & TALKS

- Ehrenfest Wind-Tree Model is Dynamically Richer Than the Lorentz Gas,
 - 3rd BYMAT Conference, Dec. 2020.
- Why Escape Is Faster Than Expected,
 - Midwest Dynamical Systems Early Career Conference, Nov. 2020.
- Bridge to Hyperbolic Polygonal Billiards,
 - Penn State Workshop in Dynamical Systems and Related Topics, Oct. 2020.
- Physical Billiard in Ehrenfests' Wind-Tree Model,
 - Georgia Institute of Technology, Weekly dynamical systems working seminar, Nov. 2019.
- Strings and Escape Rate,
 - Georgia Institute of Technology, SIAM Georgia Tech Student Conference, Mar. 2019.
- On Billiards close to dispersing,
 - Georgia Institute of Technology, Weekly dynamical systems working seminar, Nov. 2017.
- Dynamical systems with elastic reflections,
 - Georgia Institute of Technology, Weekly dynamical systems working seminar, Oct. 2017.
- Sasakian Structure on the Indicatrix Bundle of a Finsler Manifold,
 - Georgia Institute of Technology, Weekly geometry topology seminar, Aug. 2015.
- Morse Theorem and Dynamical Systems,
 - Tehran Polytechnic, Weekly seminars of differential geometry, Apr. 2014.
- An Introduction to the Transformations on Manifolds II,
 - Tehran Polytechnic, Weekly seminars of differential geometry, Dec. 2013.
- An Introduction to the Transformations on Manifolds I,
 - Tehran Polytechnic, Weekly seminars of differential geometry, Dec. 2013.
- HyperKahler Contact Distribution in 3-Sasakain Manifolds,
 - International Conference on Functional Equations, Geometric Functions and Applications, May 2012.
- Natural Foliations of Cotangent Bundle in Cartan Spaces,
 - 42nd Annual Iranian Mathematics Conference, Sep. 2011.

TEACHING EXPERIENCE

- Georgia Institute of Technology (Atlanta, US):
 - Instructor of Math 2551 (Multivariable Calculus, On-line), Spring 2021.
 - Head of TAs in Math 1551 (Differential Calculus, On-line), Fall 2020.
 - Instructor of Math 1551 (Differential Calculus, On-line), Summer 2020.
 - Instructor of Math 2551 (Multivariable Calculus, In-person/on-line), Spring 2020.
 - Head of TAs in Math 1553 (Introduction to Linear Algebra), Fall 2019.
 - Instructor of Math 1553 (Introduction to Linear Algebra), Summer 2019.
 - Instructor of Math 3670 (Statistics and Application), Spring 2019.
 - Instructor of Math 1553 (Introduction to Linear Algebra), Summer 2018.
 - Instructor of Math 2551 (Multivariable Calculus), Spring 2018.
 - Instructor of Math 1551 (Differential Calculus), Fall 2017.
 - Teacher assistant of Math 1553 (Introduction to Linear Algebra), Summer 2017.
 - Teacher assistant of Math 2551 (Multivariable Calculus), Spring 2016, Summer 2016, Fall

2016, and Spring 2017.

- Gwinnett Technical College (Georgia, US):
 - Instructor of Math 1111 (College Algebra), Three sections, Fall 2019.
- AmirKabir University of Technology (Tehran Polytechnic):
 - Instructor of Multivariable Calculus, Three semesters during 2011-2014.
 - Instructor of Theory of Differential Equations, Three semesters during 2010-2013.
 - Teacher assistant of Differential Calculus, Three semesters during 2006-2010.
 - Teacher assistant of Multivariable Calculus, Five semesters during 2006-2010.
- Al-Zahra University (Tehran):
 - Instructor of Differential Calculus, 2012.
 - Instructor of Multivariable Calculus, 2012.
- Khaje Nasir Toosi University of Technology (Tehran):
 - Instructor of Differential Calculus, 2013.
 - Instructor of Differential Equation, 2013.
- Golestan University (Gorgan, IR.):
 - Instructor of Mathematics Analysis, 2014 and 2015.
 - Instructor of Multivariable Calculus, 2015.
 - Instructor of Differential Equation, 2015.
 - Instructor of Topology, 2014
 - Instructor of Local Differential geometry, 2014.

REVIEWING & EDITING

- Committee member of two master theses:
 - Thesis title: Natural metrics on tangent bundles, (Alzahra University, Tehran - 2014)
 - Thesis title: Parallel transport and curvature, (Alzahra University, Tehran - 2014)
- Refereeing articles for journals:
 - Chaos
 - Gravitation and Cosmology
 - Journal of Guidance, Control, and Dynamics (AIAA)
 - The Journal of Navigation
 - Applied Mathematics & Information Sciences (AMIS)
 - IMA Journal of Mathematical Control and Information
- Reviewing research proposals:
 - President's Undergraduate Research Awards (PURA) (Georgia Institute of Technology, Atlanta, USA - 2019)

AWARDS & HONORS

- Ranked 97th among more than 400,000 participants in national university entrance exam in Mathematics & Technical testing group, September 2002, IR.