Personal Information:

Department of Mathematics
Institute for Research in Fundamental Sciences (IPM)
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Research Interests: Arithmetic Algebraic Geometry, in particular:

- **Perfectoid Geometry**, p-Divisible Groups and their Moduli Spaces, Cohomology of **Rapoport-Zink Spaces** and **Shimura Varieties**, **Langlands Program**, Galois Representations

- A-Motives, **Drinfeld Modular Varieties**, z-Divisible Local Anderson Modules

- **Intersection Theory** and K**-Theory**

Post PhD positions:

- Starting January 2017: Associate Professor at **IPM**, Iran.

- October 2016 - January 2017: Visiting Professor at **ETHZ**, Switzerland.

- September 2014 - August 2016: Visiting Assistant Professor at **Purdue University**, USA.

- Summer and Fall 2012: Visiting Scholar at **MIT**, USA.

- September 2011 - August 2014: Postdoc and Harry Bateman Instructor at **Caltech**, USA.

Educations:

- Fall 2010: Visiting Prof. Dr. Thomas Zink at the **University of Bielefeld**, Germany.

- Spring 2010: Visiting Prof. Dr. Ching-Li Chai at the **University of Pennsylvania**, USA.

- 2006 - 2011: Ph.D. in Mathematics at **ETHZ**, Switzerland, under the supervision of Prof. Dr. Richard Pink.

- October 2005 - February 2006: Masters Thesis at **ETHZ**, Switzerland, under the supervision of Prof. Dr. Richard Pink.

- 2002 - 2005: Diplome (B.S. and M.S.) in Mathematics at **EPFL**, Switzerland.

- 2000 - 2002: 2 years of Mathematics at **Sharif University of Technology**, Iran.

Preprints and Publications:

1. *Exterior Powers of π-Divisible Modules over Fields*: J. Number Theory 138 (2014), 119-174, 55 pages.

2. *Exterior Powers of Lubin-Tate Groups*: J. Théor. Nombres Bordeaux 27, 1 (2015), 77-148, 71 pages.

3. *Tensor Operations on z-Divisible Local Anderson Modules*: J. Number Theory 213 (2020), 116-151, 39 pages.

4. *A Cartesian Diagram of Rapoport-Zink Towers over Universal Covers of p-Divisible Groups*: Communications in Number Theory and Physics, 14, 4 (2020), 669-737, 38 pages.

5. *Explicit Isomorphism between Cartier and Dieudonné Modules*: Journal of Algebra 570 (2021), 611-635, 24 pages.

6. *(G, μ)-Windows and Deformations of (G, μ)-Displays* (joint with Oliver Bültel): (*submitted*), 60 pages.

7. *On Certain Morphisms between Flag Varieties*: (*submitted*), 17 pages.

8. *Drinfeld Displays*: (*submitted*), 27 pages.

9. *Multilinear Theory of Commutative Group Schemes*: preprint, 51 pages.

10. *Intersection Theory of Proper Morphisms*: preprint, 50 pages.

11. *Resolutions in Model Categories*: in preparation.

12. *Cycles in the Cohomology of Rapoport-Zink Towers coming from the Lubin-Tate Tower (joint with Elena Mantovan)*: in preparation.

13. *Exotic Homomorphisms between Inner Forms of $GL(n, \mathbb{Q}_p)$ and the First Steps towards a Local Proof of the Jacquet-Langlands Correspondence*: in progress.

Awards: In 2011, I was awarded the Swiss National Science Foundation research grant PBEZP - 137334 (the most prestigious Swiss grant for fresh PhD's).

Invited Talks:

- **8th Frontiers in Mathematics Conference**, Tehran, Iran, April 6, 2021

- **1st FGC-IPM Joint Number Theory Meeting**, Istanbul-Tehran, March 15, 2021

- **Université Paris 13**, Paris, France, October 2, 2020.

- **IPM**, Tehran, Iran, December 13, 2018.

- **Université Paris 13**, Paris, France, May 14, 2018.

- **IPM**, Tehran, Iran, November 22, 2017.

- **EPFL**, Lausanne, Switzerland, May 11, 2017.

- **IPM**, Tehran, Iran, April 26, 2017.

- **ETHZ**, Zürich, Switzerland, November 25, 2016.

- **University of Indiana at Bloomington**, Bloomington, USA, April 18, 2016.

- **Caltech**, Pasadena, USA, October 29, 2015.

- **AMS Sectional Meeting**, Chicago, USA, October 3, 2015.

- **University of Notre Dame**, Notre Dame, USA, April 29, 2015.

- **University of Chicago**, Chicago, USA, March 3, 2015.

- **Northwestern University**, Evanston, USA, March 2, 2015.

- **Purdue University**, West Lafayette, USA, September 25, 2014.

- **UCLA**, Los Angeles, USA, November 14, 2013.

- **UCI**, Irvine, USA, October 22, 2013.

- **UCSD**, San Diego, USA, April 18, 2013.

- **Caltech**, Pasadena, USA, February 7, 2013.

- **MIT**, Cambridge, USA, October 30, 2012.

- **UCLA**, Los Angeles, USA, March 5, 2012.

- **Caltech**, Pasadena, USA, February 3, 2012.

- **Caltech**, Pasadena, USA, December 8, 2011.

- **University of Pennsylvania**, Philadelphia, USA, May 10, 2010.

- Mini-course: **IPM**, Tehran, Iran, July 22 - August 12, 2009.

- **IPM**, Tehran, Iran, July 13, 2006.

Teaching Experience:

- September 2017-September 2020, at IPM: Topics in Arithmetic Geometry

- Fall 2016: Visiting Professor at ETHZ:

    - Perfectoid Spaces

- 2014-2016: Visiting Professor at Purdue University:

    - Differential Equations and Linear Algebra

- 2011-2014: Instructor at California Institute of Technology:

    - Perfectoid Spaces
    - Arithmetic Theory of Abelian Varieties
    - Graduate Algebra
    - Local Class Field Theory
    - Algebraic Geometry
    - Graduate Number Theory

- 2006-2011: Teaching Assistant at ETHZ:

    - Topology
    - Expander Graphs
    - Graph Theory
    - Algebra

- Teaching Assistant at EPFL:

    - Linear Algebra

Other Academic Activities:

- 2011-2013: at California Institute of Technology:

  - Member of a PhD defense examination committee
  - Member of three general examinations committees
  - Member of three candidacy examinations committees
  - Mentored two students for independent studies
  - Mentored student (Ayah Almousa) for MURF (Minority Undergraduate Research Fellowship)
  - Mentored student (Joshua Nevin) for SURF (Summer Undergraduate Research Fellowship)

- Graduate Students at IPM:

  - Amirhossein Ekhlasi
  - Aliakbar Hosseini
  - Ali Partofard

Language Skills:

- Persian: mother tongue.

- English, French, German: fluent.

- Arabic, Italian: medium.