

Curriculum Vitae

Mahdi Nasiri Garabolagh

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Education

- Sep 2017 – present M.Sc. in Physics, Department of Physics, Sharif University of Technology, Tehran, Iran
Thesis: *Not submitted yet*, Supervisor: Prof Reza Ejtehad, Co-Supervisor: Dr Taha Yasseri
- Sep 2013 - Sep 2017 B.Sc. in Physics, GPA: 17.75/20 (3.76/4.0 in WES Scale),
Department of Physics & Energy Engineering
Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
Thesis (project): **Various Inflationary Cosmology Models**, supervisor: Prof Davoud Kamani
- Sep 2009 - Jun 2013 Amir-almomenin High School, Tabriz, Iran
A Branch of National Organization for Development of Exceptional Talents (NODET)
High school diploma, GPA: 19.45/20 (4.0/4.0 in WES Scale)

Research Interests

Complex Systems Physics, Data Science, Computational Social Science, Quantitative Finance, Predictive analytics, Machine Learning, Deep Learning

Technical Skills

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| • Data Mining | Machine learning, Statistical learning | (good) |
| • Data storage | MySQL | (working knowledge) |
| • Data Analytics | R, Python, Gephi | (Excellent) |
| • Simulation | Maple, MATLAB, MATHEMATICA, VMD | (working knowledge) |
| • General | Microsoft Office (Word, Excel, PowerPoint), Photoshop, Windows, Mac,
Linux, C++, Html | (Proficient) |

Teaching Experiences

- Teaching Assistant, **Introductory Astronomy & Astrophysics**, Amirkabir university (fall 2016)
- Tutor, **Essential Preliminaries of Linear Algebra & Group Theory**, Amirkabir University (fall 2015)
A Series of lectures conducted by Students Scientific Organization for interested freshmen undergraduates
- Tutor, **General physics I & II** for high school students, Shafagh high school, Tabriz, Iran (summer 2015)
- Tutor, English language, Safir-e-Danesh Institute, Tabriz, Iran (summer 2013)

Research Experiences

- **M.Sc. Thesis** **(Title yet to be decided)** (Winter 2018 – present)
In this thesis, which will be a research on the intersection of Statistical Physics and Computational Social Science, We will study the different effects of social learning on the Wisdom of crowd phenomena. Various methods from Statistical physics, social sciences and data science will be involved for achieving this goal.
- **B.Sc. Thesis** **Various Inflationary Cosmology Models** (spring 2016 – Jun 2017)
Supervisor: Prof. Davoud Kamani
In this Project we studied different models of inflationary cosmology. We investigated the cosmic inflation as a result of an energy in the vacuum (Dark energy) which is caused by the existence of different quantum fields, then we represented these energies in different space-time metrics and interpreting the outcome universe models. Our main focus was on Scalar fields. In addition we analyzed the effects of anti-symmetric second ranked tensor fields on inflationary models. Also we studied some models of Inflation in the supergravity framework.
- **Particle Physics** **Standard Model of Particle Physics** (winter 2016)
A project for Particle Physics course in which standard model was introduced and some new developments such as Higgs boson discovery and the revelations gained from some supersymmetric theories were discussed. In addition some achievements from QCD (Quantum Chromodynamics) theory were also mentioned.
- **Astronomy** **RR-Lyrae Variables & Their Applications** (winter 2015)
A project for Introductory Astronomy course. Variable stars are interesting cosmic phenomena that because of their varying luminosity can be used as standard candles for measuring astronomical distances. In this project some applications of different variable stars, specifically RR-Lyrae stars, were discussed.
- **Philosophy of science** **The Effects of Physical Science in Human Kind's Thoughts** (winter 2015)
A project for Philosophy of Ethics course in which the effects of developments in Physical sciences, specifically Physics, on the ethics of the generations in the past two centuries were discussed.
- **Mathematical Physics** **The role of Symmetry In Physics** (fall 2014)
A project for Mathematical Physics I course in which the applications of group theory and symmetry in physics were discussed.

Selective Courses

- **Attended** Differential Geometry, Topology, Mathematical Physics I,II,III Analytical Mechanics I,II Differentiable Manifolds, Quantum Mechanics I,II Electromagnetism I,II, Waves, Thermodynamics, Statistical Mechanics, Solid State Physics I, Particle Physics, Introductory Astronomy, Differentiable Manifolds, Advanced Programming
- **Audited** Advanced Linear Algebra, Mathematical Analysis, Algebraic Quantum Mechanics, Machine Learning, Statistical Learning, Advanced Statistics, General Relativity, Quantum Field Theory, Cosmology

Schools & Workshops

- 8th National **Topology & Geometry** Conference, Amirkabir University (fall 2015)
- Workshop on **Configuration Space & Projective Geometry**, Amirkabir University (fall 2015)
- National conference on **Particle Physics & Fields**, Shahid Beheshti University (winter 2014)
- Workshop on Simulation Code **Monte-Carlo FLUKA**, Sharif University (winter 2014)
- National Conference on **Cosmology & Gravitation**, Sharif University (fall 2014)

Honors & Awards

- Offered straight admission to M.Sc. program at Amirkabir University Of Technology (fall 2016)
- Ranked 2nd among B.Sc. class of 2017, with over 40 students. (fall 2016)
- Amirkabir University of Technology's Academic Scholarship as an **Exceptionally Talented** student based on Nation-Wide University Entrance Exam (fall 2015)
- Ranked as **top 1 %** in overall university entrance exam for bachelor degree among more than 300,000 students. (summer 2013)
- Ranked **1st** in the province of Eastern Azerbaijan, Iran in Physics Lab competition in secondary school (winter 2011)
- Admitted to **NODET High-School** (National Organization for Development of Exceptional Talents) through an entrance examination among 1300 competitors. (summer 2009)

Extracurricular

- Two consecutive years of activities in **Students Scientific Association**
- Organizer of three different seminars & lectures on **Modified Gravity & Theoretical High Energy Physics** (fall 2014 & spring 2015)
- Member of Executive Committee, Tournament of Physical Photography
- Organizer of two "**English free discussion**" classes

A group of 15-20 students, in which students discuss a particular Physical topic in English. Sometimes professors are invited to participate in the discussions in order to let the students use their experiences about the topic

Language Proficiency

Turkish (Azeri): Mother-Tongue Persian: Native

English: Fluent (TOEFL IBT: 108 Listening: 30 Reading: 29 Speaking: 24 Writing: 25)

GRE General: Verbal: 152 Quantitative: 164 (87%) Writing: 3.5 (42%)

References

Davoud Kamani

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