

Curriculum Vitae

SHANT BAGHRAM

14 February 2026

Contact Information

Department of Physics
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Personal Information

Shant Baghram
Ph.D. in Physics (Cosmology) from Sharif University of Technology (2011)
Date of Birth: 2 Dec.1982
Place of Birth: Tehran - Iran
Sex: Male
Nationality: Iranian (Armenian origin)

Current Academic Position

Professor
Department of Physics, Sharif University of Technology (SUT), Tehran-Iran.
(December 2025 -)
Associate Member
Regular Associate of the International Centre of Theoretical Physics (ICTP).
(January 2024 - December 2029)

Current Executive Position

Chair
Department of Physics, Sharif University of Technology (SUT), Tehran-Iran.
(21 January 2026 -)

Academic Employment History

- **Associate Professor**
Department of Physics, Sharif University of Technology (SUT), Tehran-Iran.
(September 2019 - December 2025)
- **Assistant Professor**
Department of Physics, Sharif University of Technology (SUT), Tehran-Iran.
(September 2014 - September 2019)
- **Associate Member**
Junior Associate of the International Centre of Theoretical Physics (ICTP).
(January 2017 - December 2022)

- **Part Time Researcher**

School of Astronomy, Institute for Research in Fundamental Sciences (IPM), Tehran-Iran. (March 2015 - August 2019)

- **Postdoctoral Researcher**

School of Astronomy, Institute for Research in Fundamental Sciences (IPM), Tehran-Iran. (September 2012 - September 2014)

- **Visiting Researcher**

Institut d'Astrophysique de Paris (IAP), granted from Centre of Cosmological studies (CCS). (August-September 2013)

- **Associate Postdoctoral Researcher**

Department of Physics and Astronomy **University of Waterloo** and **Perimeter Institute of theoretical Physics- PI**, Waterloo-Canada. (September 2011-September 2012)

- **Graduate Student Teacher Assistant and Researcher**

Department of Physics, Sharif University of Technology, Tehran-Iran. (September 2007- September 2011)

- **Research Associate**

Associate of School of Astronomy in Institute for Research in Fundamental Sciences (IPM), Tehran-Iran.(September 2008- September 2011)

- **Instructor**

Iranian National Astronomy Olympiad, Tehran-Iran. (Summer 2011)

Past Executive Position

2) **Vice Chair of Education**

Department of Physics, Sharif University of Technology (SUT), Tehran-Iran. (22 December 2022 - 20 January 2026)

1) **Director of Central Library of Sharif University of Technology**

(October 2018- December 2022)

Education

5) **Ph.D. in Physics-Cosmology**

Sharif University of technology(SUT), Tehran-Iran. (September 2011)

Total GPA without final thesis: 19.05/20 – Thesis Score: 20/20

Thesis Title:

Observational tests of Dark Energy and Modified Gravity Theories.

Thesis Supervisor: Prof. Sohrab Rahvar (SUT)

b) **Support Astronomer**

Attending a program in Observational Cosmology, Astronomy and a Support Astronomer in Isaac Newton Group of Telescopes(INT) in La Palma-Spain appointed by Iranian National Observatory (INO) (November 2010 - April 2011).

Under Supervisor: Prof. Chris Benn (INT).

a) **Ph.D. Research Visitor**

Perimeter Institute of theoretical Physics, Waterloo-Canada

(May-June, 2010).

Supervisor: Dr. Niayesh Afshordi (Perimeter Institute and Department of Physics and Astronomy University of Waterloo, Canada).

4) M.Sc. in Physics-Cosmology

Sharif University of Technology (SUT), Tehran-Iran. (September 2007).

Thesis Title: *Modified gravity as a source of Dark energy*

Thesis Supervisor: Prof. Sohrab Rahvar (SUT)

Prof. Mehdi Sheikh Jabbari (IPM)

Total GPA without final thesis: 17.65/20

Final thesis: 20/20.

3) B.Sc. in Physics

Sharif University of Technology(SUT), Tehran-Iran. (September 2005)

3-rd in the Class by Total GPA: 17.16/20.

2) High School Diploma - Physics and Mathematics

Shahid hadad Adel, Tehran-Iran. 2001.Total GPA: 19.70/20.

1) **TOEFL** 103/120 score (Internet base): 20 November 2006.

Membership

- 1) Member of International Astronomical Union (IAU).
- 2) Associate Members of International Centre for Theoretical Physics (ICTP).
- 3) Member of Physics Society of Iran (PSI).
- 4) Member of Astronomical Society of Iran (ASI).
- 5) Member of Armenian Astronomical Society (ArAS).
- 6) Member of Armenian Association of University Graduates in Iran.
- 7) Member of Work-group of Astronomy, Academy of Persian Language and literature.

Research Interest Cosmology in general.

My main research topic is the study of the Large Scale Structures (LSS) of the Universe and the structure formation processes in order to answer the fundamental questions in cosmology such as the cause of the accelerated expansion of the Universe (Dark Energy), the physics of the unseen skeleton of the structures in the Universe (Dark Matter) and the scenario that will describe how all this begins (The Physics of the Early Universe).

The above fundamental questions can be studied via smaller and more detailed questions such as:

- A: LSS and the Accelerated expansion of the Universe
- B: Dark Matter (DM) Substructures
- C: The primordial Universe and LSS
- D: Relativistic Cosmology and secondary anisotropies of CMB

(CMB Lensing, Polarization, SZ effect and ...)

E: Non Linear Structure Formation

(Excursion Set Theory, DM tracers and bias, statistics of cosmic web)

F: 21cm Cosmology

G: Cosmology of Gravitational wave

H: Cosmology of non-Local Gravity

I: Search of Extraterrestrial Artificial Intelligence

For more information please visit:

<http://sharif.edu/baghram/ResearchInterest.html>

Awards and Grants

13) Received an honorable mention for an essay in the Gravity Research Foundation (GRF) award - 2023.

"Dynamic Dark Energy from the Local Limit of Nonlocal Gravity"-arXiv:2305.07630

Javad Tabatabaei, Abdolali Banihashemi, Shant Baghram, Bahram Mashhoon

12) ICTP 2022 Prize (shared), International Centre for Theoretical Physics, Trieste , Italy.

11) "Abu Rayhan al-Biruni" prize of Academy of Science of Iran as a young Physicist under 40, 2020.

10) Honorable mention by Academy of Science of Iran as a young Physicist under 40, "Abu Rayhan al-Biruni" Ceremony 2019.

9) Sharif University of Technologys Office of Vice President for Research Grant No.: G960202 - " The study of Large Scale Structure in Cosmology and the interaction of neurons in neuroscience via stochastic process physics."

Collaborators: Prof. Mohammadreza Rahimitabar, Prof. Sohrab Rahvar and Dr. Saman Moghimi.

8) Distinguished Lecturer Sharif University of Technology 2018.

7) Appointed as Junior Associate of the International Centre of Theoretical Physics (ICTP)- from 01 January 2017 until 31 December 2022.

6) Received an honorable mention for an essay in the Gravity Research Foundation (GRF) award - 2014.

"Unraveling the nature of Gravity with our clumpy Universe"-arXiv:1411.7010
Shant Baghram, Saeed Tavasoli, Farhang Habibi, Roya Mohayaee and Joseph Silk.

5) Research fellowship award from Center of Cosmology studies sponsored Balzan foundation in collaboration with Oxford University, John Hopkins University and Institute of Astrophysics de Paris (IAP) for two month research in IAP (2013).

4) 1st place, among Ph.D. candidates in Physics Department, Sharif University of Technology (SUT)(2011).

3) Awarded as qualified Teacher Assistant in Physics Department, Sharif University, Academic year of (2009-2010).

2) Awarded M.Sc. student of Physics Department, Sharif University as an exceptional talent, academic year of (2006-2007).

1) Accepted as a M.Sc. candidate in Physics Department of Sharif University of Technology without an entrance exam as a qualified B.Sc. student(2005).

Scientific Visits

- 8) International Centre of Theoretical Physics (ICTP) - Trieste, Italy. 6/2023
- 7) International Centre of Theoretical Physics (ICTP) - Trieste, Italy. 8/2022
- 6) International Centre of Theoretical Physics (ICTP) - Trieste, Italy. 8/2019
- 5) International Centre of Theoretical Physics (ICTP) - Trieste, Italy. 8/2017
- 4) Nordic Institute for Theoretical Physics (NORDITA)-Stockholm, Sweden. 7/2017
- 3) Institut d'Astrophysique de Paris (IAP)- Paris, France. 8-9/2013
- 2) Isaac Newton Group of Telescopes(INT)- La Palma, Spain. 10/2016 -4/2011
- 1) Perimeter Institute of theoretical Physics (PI) - Waterloo, Canada 5-6/2010 .

Postdoctoral supervision-collaboration

- 3) Milad Noorikuhani, Sharif University of Technology(SUT), [2025-...]
- 2) Abdolali Banihashemi, Sharif University of Technology(SUT), [2023-2024]
Research papers: arXiv:2305.07630, arXiv:2308.08281, arXiv:2311.07749
- 1) Hoda Ghodsi, Sharif University of Technology(SUT), [2016]
Research paper: arXiv:1609.08012

Student Supervision

• Ph.D. Students

→Supervisor

- 5) Masoud Molaei, Sharif University of Technology(SUT), [18 September 2024 (Proposal Accepted)- ?]
Tentative Thesis title: *Electromagnetism and curved spacetime*
Advisor Prof. Bahram Mashhoon.
- 4) Javad Tabatabaei, Sharif University of Technology(SUT), [18 September 2024 (Proposal Accepted)- ?]
Tentative Thesis title: *Cosmology of nonlocal gravity*
Advisor Prof. Bahram Mashhoon.
- 3) Mohadeseh Khostinat, Sharif University of Technology(SUT), [29 August 2021 (Proposal Accepted)- 7 May 2025]
Tentative Thesis title: *Investigating the cosmic-web with one point and cross statistics*
- 2) Mohammad Ansari, Sharif University of Technology(SUT), [17 September 2019 (Proposal Accepted) - 18 September 2022]
Thesis title: *Cosmic web: excursion set of saddle points and nearest neighbor statistics*
- 1) Hamed Kameli, Sharif University of Technology(SUT), [16 September 2018 (Proposal Accepted) - 21 September 2021]
Thesis title: *Excursion Set Theory Application in Large Scale Structure Formation.*

→Co. Supervisor

- 1) Alireza Maleki, Sharif University of Technology(SUT), Feb. 2017 - 26 Nov. 2020
Primary supervisor: Prof. Sohrab Rahvar
Thesis title: *Investigation of dark matter halo with classical and quantum statistical approach*

- **Master Students**

→**Supervisor**

- 33) **Shaghayegh Yavari**, (SUT), Aug. 2025 - ?
"High redshift luminous galaxies as a tension for Λ CDM".
- 32) **Yahya Mohammadi**, (SUT), Aug. 2024 - ?
"Topics Non-Local Gravity".
- 31) **Dina Mousavi**, (SUT), Aug. 2023 - 8 Sep 2024
"Nonlinear Structure Formation in Beyond Cold Dark Matter Models with Nonzero Sound Speed".
- 30) **Haniyeh Tadayoni**, (SUT), Aug. 2023 - 14 Sep. 2024
In Collaboration with: Prof. Sohrab Rahvar (Physics Department - SUT) "The study of the Kinematic and Clustering dipoles using cosmological large-scale structure data".
- 29) **Arefeh Daei Rasouli**, (SUT), Aug. 2023 - 14 Sep. 2024
In Collaboration with: Prof. Sohrab Rahvar (Physics Department - SUT) "Investigating the Homogeneity and Isotropy of the Cosmos with Large-Scale Structure Data and the Consistency of Our Motion to CMB".
- 28) **Nooshin Torabi**, (SUT), Aug. 2023 - 8 Sep 2024
In Collaboration with: Prof. Sohrab Rahvar (Physics Department - SUT) "Gravitational Lensing of Gravitational Waves as a probe to study the distribution of matter in the Cosmos".
- 27) **Saba Pashaie**, (SUT), Aug. 2023 - 15 Sep. 2024
In Collaboration with: Dr. Reza Rezaei (Physics Department - SUT) "Structure and dynamics of matter in nearby spiral galaxies".
- 26) **Mohammad Hossein Amiri**, (SUT), Aug. 2022 - 17 Feb. 2024
"Cosmic Web, 1 points statistic in initial conditions".
- 25) **Zeynab Ashuri**, (SUT), Aug. 2022 - 7 Feb. 2024
"Investigating the halo distribution and bias inside cosmic voids in the context of EST".
- 24) **Melika Sarrami**, (SUT), Aug. 2021 - 15 Feb 2023
"Number Density of Dark Matter halos in Fuzzy dark matter models".
- 23) **Seyed Mohammad Javad Tabatabaie**, (SUT), Jan. 2022 - 11 Sep 2022
"Large scale structure implications of non-local gravity".
- 22) **Sajad Tabasi**, (SUT), Aug. 2021 - 7 Sep 2022
"Primordial Black holes and cosmological parameters".
- 21) **Yasaman Khalaj**, (SUT), Sep 2020 - 13 March 2022
"Change in sound horizon to reconcile the Hubble tension and late time LSS observables".
- 20) **Parnaz Sheikh Ansari**, (SUT), Sep 2020 - 13 March 2022
"Change in dynamics of late time Universe to reconcile the Hubble tension and late time LSS observables".
- 19) **Amir Shariat Gonabadi**, (SUT), Sep 2019 - 17 Feb. 2021
"Gravitational lensing of Gravitational wave".
co-supervisor: Prof. Sohrabb Rahvar.
- 18) **Zahra Baghkhani**, (SUT), Aug. 2019 - 16 Sep. 2020
"Cosmic Web and galaxy bias".
- 17) **Laya Ghodsi**, (SUT), Aug. 2019 - 16 Sep. 2020
"Cosmic web and the role of environment on the formation, evolution and clustering of the structures".
Followed by a position of a Ph.D. candidate in Department of Physics and Astronomy University of British Columbia (Canada).
- 16) **Aryan Rahimieh**, (SUT), Sep. Aug. 2018 - 16 July 2019
"Gravitational Waves Astronomy: Background Radiation, Relativistic Effects and Distribution Function of Sources".
Followed by a position of a Ph.D. candidate in Department of Physics and Astronomy Univer-

sity of Southern California (US).

15) **Sina Taamoli**, (SUT), Sep. Aug. 2018 - 16 July 2019
 "Cosmological nonlinear Structure Formation by Excursion set theory of Peaks".
 Followed by a position of a Ph.D. candidate in Department of Physics and Astronomy University of California Riverside (US).

14) **Amir Farzan Esmacili**, (SUT), Sep. 2017 - 19 January 2019
 "Neutrino footprints in Large Scale Structure".
 co-supervisor: Dr. Mahdi Torabian

13) **Nima Ronaghi**, (SUT), Sep. 2017 - 19 January 2019
 Nonlinear structure formation and relativistic effects on cosmological distance measurement".
 co-supervisor: Dr. Saman Moghimi
 Followed by a position of a Ph.D. candidate in Department of Physics and Astronomy University of York (Canada).

12) **Amirabbas Ghazizadeh**, (SUT), Sep. 2017 - 20 January 2019
 "Missing baryon problem and scaling relations of void galaxies".
 co-supervisor: Prof. Reza Mansouri

11) **Abbas Khanbeigi**, (SUT), Sep. 2016 - 20 January 2019
 "Relativistic Cosmology with Gravitational Waves".
 co-supervisor: Prof. Reza Mansouri

10) **Saeid Aliei**, (SUT), Sep. 2017 - 16 September 2018
 "Clustering and bias in voids and relativistic effects on cosmological distance measurements".
 Followed by a position of a Master candidate in ICTP (Italy).
 co-supervisor: Prof. Sohrab Rahvar

9) **Zahra Sattari**, (SUT), Sep. 2017 - 19 August 2018
 "The study of fossil galaxies by excursion set theory of nonlinear structure formation".
 Followed by a position of a Ph.D. candidate in Department of Physics and Astronomy University of California Riverside (US).
 co-supervisor: Prof. Sohrab Rahvar

8) **Mohammad Ali Islami**, (SUT), Sep. 2015-13 January 2018
 "Modified Gravity from theory to observation".
 co-supervisor: Dr. Nima Khosravi

7) **Maryam Rahimi**, (SUT), Sep. 2015- 24 Sep. 2017.
 "Primordial Black Holes as Dark Matter".

6) **Fatemeh Monfared**, (SUT), Sep. 2015-4 Sep. 2017.
 "Cosmology with the Sunyaev Zeldovich Effect".

5) **Mohammad Ansari**, (SUT), Sep. 2015- 17 Sep. 2017
 "Large Scale Structure as a probe of Early Universe Physics".
 (Followed by a position of a Ph.D. candidate in Physics Department Sharif University of Technology, tehran, Iran.)

4) **Mohammadreza Ayromlou**, (SUT), Sep. 2014- 25 Sep. 2016
 "Excursion Set Theory and stochastic processes".
 co-supervisor: Prof. Mohammadreza Rahimitabar
 (Followed by a position of a Ph.D. candidate of Astrophysics and Cosmology, Max Planck Institute for Astrophysics at Ludwig Maximilian University of Munich - Germany).

3) **Ali Hossein Torkamann Gholami**, (SUT), Sep. 2014- 11 Sep. 2016
 "Precision Cosmology with Redshift space distortion".

2) **Hasti Khoraminezhad**, (SUT), Sep. 2014- 28 August 2016.
 "Environmental dependence of Baryon Acoustic Oscillation".
 (Followed by a position of a Ph.D. candidate in Astrophysics Group - SISSA - Italy.)
 (Followed by a Postdoctoral fellowship University of Missouri)

1) **Farbod Hasani**, (SUT), Sep. 2014 - 2 Aug. 2016.
 "CMB Lensing and Dark Matter bias as a probe of beyond Λ CDM cosmology".
 co-supervisor: Prof. Hassan Firouzjahi
 (Followed by a position of a Ph.D. candidate in Geneva Cosmology Group as a part of the

Department of Theoretical Physics of the University of Geneva (Switzerland)).
(Followed by a Postdoctoral fellowship Institute of Theoretical Astrophysics, University of Oslo (Norway))

→**Co. Supervisor**

7) **Arefeh Alizadeh**, (SUT), Sep 2024 - Sep 2025

Primary supervisor: Dr. Nima Khosravi

”Dark Matter in Early Universe”.

6) **Saba Taherpour**, (SUT), Sep 2022 - Sep 2023

Primary supervisor: Dr. Sadegh Raeisi

”Dark Matter in Early Universe”.

5) **Masoud Molaee**, (SUT), Sep 2019 - 18 Feb. 2021

Primary supervisor: Prof. Bahram Mashoon

”Dirac Equation On Kerr Spacetime”.

4) **Elahe Khaloei**, (SUT), Sep. 2014- 18 Sep. 2015

Primary supervisor: Prof. Sohrab Rahvar

”Non Local Gravity as a dark matter”.

(Followed by a position of a Ph.D. candidate in Physics Department of Sharif University of Technology.)

3) **Arghavan Shafiee**, Alzahrah University. Sep. 2012- Mar. 2015

Primary supervisor: Dr. Ahmad Shariati

”Statistics of Cosmological Voids”.

2) **Elahe Hayati, Alzahrah**, University. Sep. 2012- Mar. 2015

Primary supervisor: Dr. Ahmad Shariati

”Massive high redshift galaxies as a challenge of standard cosmological model”.

1) **Amir Mollazadeh**, Kharazmi University. Sep. 2011- Mar. 2014

Primary supervisor: Dr. Shahram Khosravi (Kharazmi University).

”Studying inhomogeneous Dark Energy models by ISW-matter power spectrum cross correlation”.

(Followed by a position of a Ph.D. candidate in Department of Physics Kharazmi University)

→**Advisor**

3) **Farshid Dielami**, Kharazmi University. Sep 2012 - Feb. 2015

Primary supervisor: Dr. Shahram Khosravi (Kharazmi University).

”Anisotropic Dark Energy”.

2) **Ahmad Shamlou**, Kharazmi University. Sep 2012 - Feb. 2015

Primary supervisor: Dr. Shahram Khosravi (Kharazmi University).

”Small Scale power spectrum of Dark Matter”.

Followed by a position of a Ph.D. candidate in College of Art and Science Ohio University.

1) **Nareg Mirzatuhi**, (SUT), Sep.2011-Sep.2013

Primary supervisor: Reza Mansouri (SUT) and Sharham Khosravi (Kharazmi University).

”NonGaussian perturbation in EU and Inflationary models”.

(Followed by a position of a Ph.D. candidate in Department of Physics and Astronomy- University of Southern California (USC))

• **B.Sc. Students**

→**Project Advisor - (wor≡ with official registration)**

27) **Mohammadreza Khanabadi**, (SUT), May 2025- ? (wor)

”Lensing in gravitoelectromagnetism”

26) **Jina Mojahed**, (SUT), May 2025- ? (wor)

- ”Topics on Spin-Gravity Coupling”
 25) **Daniel Hakimi**, (SUT), May 2025- ? (wor)
 ”Topics on Spin-Gravity Coupling”
 24) **Arshia Jafari**, (SUT), Sep 2024- Aug 2025 (wor)
 ”Topics in non-local gravity”
 23) **Aria Hemmatian**, (SUT), Sep 2023- Sep 2024 (wor)
 ”Non-local gravity and 21cm cosmology”
 22) **Mohammad Ghorieshi**, (SUT), Sep 2023- Sep 2024
 ”Non-local gravity and 21cm cosmology” (wor)
 21) **Hossein Hatamnia**, (SUT), Jan 2023- Sep 2023
 ”Cosmic web and environment dependence” (wor)
 20) **Saghaiegh Emami**, (SUT), Aug 2022- Sep 2023
 ”21 cm cosmology”
 19) **Afshin Forutan**, (SUT), Aug 2022- Sep 2023 (wor)
 ”Multiwavelength Astronomy and AGN”
 18) **Amir Bonari**, (SUT), Aug 2022- Sep 2023 (wor)
 ”Habitable galaxies”
 17) **Nooshin Torabi**, (SUT), Sep 2021- Jan 2022. (wor)
 ”Weak Lensing of BAO”
 16) **Negin Khosravaninejad**, (SUT), June 2021- Jan 2022. (wor)
 ”Cosmic Web in neutrino cosmology”
 15) **Setareh Foroozan**, (SUT), Sep 2018 - Feb 2020 (wor)
 ”Merger History of Dark Matter Halos”
 (Followed by a position of a Ph.D. candidate in Department of Physics and Astronomy- University of Waterloo (Canada))
 14) **Arefe Abghari**, (SUT), Sep 2018 - Feb 2020 (wor)
 ”Merger History of Dark Matter Halos”
 (Followed by a position of a Ph.D. candidate in Department of Physics and Astronomy- British Columbia (Canada))
 13) **Laya Parkavosi**, (SUT), Sep 2018 - June 2019 (wor)
 ”Statistical Methods for Cosmology”
 (Followed by a position of a Master candidate Department of Physics SUT)
 12) **Royah Ahemeh**, (SUT), Sep 2017 - Aug. 2018 (wor)
 ”Modified Gravity”
 (Followed by a position of a Ph.D. candidate in Physics Department Leiden University (Netherlands))
 11) **Maryam Tajali**, (SUT), Sep 2017 - Aug. 2018 (wor)
 ”Galaxy formation and Evolution and its environmental dependence”
 (Followed by a position of a Master degree Leiden Observatory (Netherlands))
 Primary supervisor: Dr. Mojtabah Raouf - School of Astronomy, Institute for Research in Fundamental Science (IPM)
 10) **Laya Ghodsi**, (SUT), Sep 2017 - Aug. 2018 (wor)
 ”Galaxy formation and Evolution and its environmental dependence”
 Primary supervisor: Dr. Mojtabah Raouf - School of Astronomy, Institute for Research in Fundamental Science (IPM)
 Position afterwards: A Master student in Physics Department of Sharif University of Technology
 9) **Mahdi Ghezloo**, (SUT), Sep 2016 - Aug 2018
 ”Matrix formalism for Excursion set theory”.
 (Followed by a position of a Ph.D. candidate in Department of Physics and Astronomy- University of California Riverside)
 8) **Oveis Sheibani**, (SUT), Sep 2016 - July 2017
 Project: *Matrix formalism for Excursion set theory*.
 7) **Javad Nematollahi**, (SUT), Sep 2016 - July 2017

Project: *Modified Gravity*.

6) **Yasaman Najafi**,(SUT), Sep 2016 - July 2017 (wor)

”Cosmology with non zero curvature and a review on Neutrino Cosmology”.

(Followed by a position of a M.Sc. candidate in Argelander-Institut fr Astronomie (Germany))

5) **Farnik Nikakhtar**, Sharif University of Technology(SUT), Dec 2015 - July 2017

”Matrix formalism for Excursion set theory”.

(Followed by a position of a Ph.D. candidate in Department of Physics and Astronomy at University of Pennsylvania)

NSF graduate research fellow.

4) **Hassan Forghani**, (SUT), Sep 2015 - July 2017 (wor)

”Non Local Gravity”.

3) **Abtin Shahidi**,(SUT), Feb 2015 - July 2016

” 21 cm cosmology”.

(Followed by a position of a Ph.D. candidate in Department of Physics and Astronomy- University of California Riverside)

2) **Elham Eftekhari**, (SUT), Sep.2014-Feb.2015 (wor)

”Galactic Habitable zone”.

(Followed by a position of a Master of Science Candidate in Amir-Kabir University)

1) **Farbod Hasani**, (SUT), Feb.2013-Sep.2014

”CMB lensing”.

(Followed by a position of a Master of Science Candidate in Physics Department of Sharif University)

Editorial Board: Iranian journal of Astronomy and Astrophysics

Referee for:

- 10) Scientific Report
- 9) Journal of Cosmology and Astroparticle Physics (JCAP)
- 8) Physics of the Dark Universe
- 7) Astrophysical Journal (ApJ)
- 6) Modern Physics Letter A.
- 5) The European Physical Journal D (EPJ D).
- 4) The European Physical Journal C (EPJ C).
- 3) Journal of Theoretical and Applied Physics (JTAP).
- 2) Symmetry
- 1) Physics Letter B (PLB).

Publication

• **Book**

In Persian: *In search of understanding the Cosmos*, Bahram Mashhoon, Shant Baghram, Nashre–Now publication, First and Second publication: 2025.

• **Refereed Publications**

51) **Addressing Dipole Tension via Clustering in Λ CDM and beyond**

Arefeh Daei Rasouli, Haniyeh S. Tadayyoni, Shant Baghram, Sohrab Rahvar
Astrophysical Journal, 998, 207 (2026), arXiv:2505.02475.

50) **Microlensing Signatures of Dyson Sphere-like Structures around Primordial Black Holes as Technosignatures of Extraterrestrial Advanced Civilizations**

Shant Baghram

Astrophysical Journal, 997, 104 (2026), arXiv:2505.07924.

- 49) **Addressing the too-big-to-fail problem and the void phenomenon through a modified initial power spectrum**
Hamed Kameli, Shant Baghram
Monthly Notices of the Royal Astronomical Society, Volume 542, Issue 4, October 2025, Pages 3331–3345, arXiv:2505.02475.
- 48) **Luminosity Function of Galaxies in Voids: A Modification Inspired by Excursion Set Theory**
Zeynab Ashurikisomi, Shant Baghram
Astrophysical Journal, 988, 271 (2025), arXiv:2507.01626
- 47) **Elliptically Polarized Plane Gravitational Waves**
Masoud Molaee, Shant Baghram, Bahram Mashhoon
Physical Review D 111, 104035 (2025), arXiv:2501.11503
- 46) **Cosmic velocity, density and halo mass function: Insights from deep learning**
Saba Etehad-Razavi, Erfan Abbasgholinejad, Mohammad-Hadi Sotoudeh, Farbod Hassani, Sadegh Raeisi, Shant Baghram
Physical Review D 111, 043521 (2025), arXiv:2112.14743
- 45) **In Search of Extraterrestrial Artificial Intelligence Through Dyson Sphere-like structures around Primordial Black Holes**
Shant Baghram
Astrophysical Journal, 978:132 (2025), arXiv:2412.02671
- 44) **Local Peculiar Motions in McVittie and LTB Spacetimes**
Masoud Molaee, Shant Baghram, Bahram Mashhoon
European Physical Journal C 85, 44 (2025), arXiv:2112.14743
- 43) **One-point Statistics in various cosmic environments in the presence of massive neutrinos**
Mohadese Khoshtinat, Hossein Hatamnia, Shant Baghram
Monthly Notices of the Royal Astronomical Society, Volume 534, Issue 2 (2024), Pages 1166–1174, arXiv:2407.18233
- 42) **McVittie-Plummer Spacetime: Plummer Sphere Immersed in the FLRW Universe**
Javad Tabatabaei, Shant Baghram, Bahram Mashhoon,
Astrophysics J. 975 240 (2024), arXiv:2406.10990
- 41) **Clustering of dark matter in the cosmic web as a probe of massive neutrinos**
Mohadese Khoshtinat, Mohammad Ansarifard, Farbod Hassani, Shant Baghram
Monthly Notices of the Royal Astronomical Society, Volume 531, Issue 1, June 2024, Pages 575-584.
- 40) **Local Limit of Nonlocal Gravity: Cosmological Perturbations**
Javad Tabatabaei, Abdolali Banihashemi, Shant Baghram, Bahram Mashhoon
Astrophys. J. 965, 116 (2024), arXiv:2311.07749
- 39) **Local Limit of Nonlocal Gravity: A Teleparallel Extension of General Relativity**
Javad Tabatabaei, Shant Baghram, Bahram Mashhoon
Monthly Notices of the Royal Astronomical Society 530, 795-811 (2024), arXiv:2212.05536
- 38) **Anisotropic Cosmology in the Local Limit of Nonlocal Gravity**
Javad Tabatabaei, Abdolali Banihashemi, Shant Baghram, Bahram Mashhoon
Universe 9, 377 (2023), arXiv:2308.08281
- 37) **Dynamic Dark Energy from the Local Limit of Nonlocal Gravity**
Javad Tabatabaei, Abdolali Banihashemi, Shant Baghram, Bahram Mashhoon
International Journal of Modern Physics D, Vol. 32, No. 14, 2342009 (2023), arXiv:2305.07630
- 36) **Voids and Halo in Voids statistics as a probe of the Expansion History of the Universe**
Laya Parkavousi, Hamed Kameli, Shant Baghram
Monthly Notices of the Royal Astronomical Society, 526, 1495-1503 (2023), arXiv:2205.09028
- 35) **Structure of cosmic web in non-linear regime: the nearest neighbour and spherical contact distributions**
Mohammad Ansari Fard, Zahra Baghkani, Laya Ghodsi, Sina Taamoli, Farbod Hassani, Shant Baghram

- Monthly Notices of the Royal Astronomical Society, Volume 512, Issue 4, June 2022, Pages 5165-5182, arXiv:2106.13216
- 34) **Mass assembly history of dark matter halos in the light of H_0 tension**
Hamed Kameli, Shant Baghrum
Monthly Notices of the Royal Astronomical Society, Volume 511, Issue 2, 2022, Pages 1601,1608, arXiv:2008.13175
- 33) **A template-free approach for waveform extraction of gravitational wave events**
A. Akhshi, H. Alimohammadi, S. Baghrum, S. Rahvar, M. R. Rahimi Tabar, H. Arfaei
Scientific Reports 11, 20507 (2021), arXiv: 2005.11352
- 32) **CMB lensing in modified Λ CDM in the light of H_0 tension**
Hossein Moshafi, Shant Baghrum, Nima Khosravi
Phys. Rev. D 104, 063506 (2021), arxiv:2012.14377
- 31) **Primordial Black Holes in the Excursion Set Theory**
Encieh Erfani, Hamed Kameli, Shant Baghrum
Monthly Notices of the Royal Astronomical Society, Volume 505, Issue 2, August 2021, Pages 17871793, arxiv:2101.07812
- 30) **Constraint on the mass of fuzzy dark matter from the rotation curve of the Milky Way**
Alireza Maleki, Shant Baghrum, Sohrab Rahvar
Phys. Rev. D 101, 103504 (2020), arXiv:2001.04454
- 29) **Modified initial power spectrum and too big to fail problem**
Hamed Kameli and Shant Baghrum
Monthly Notices of the Royal Astronomical Society, 494, I. 4, 4907 (2020), <https://arxiv.org/abs/1912.12278>
- 28) **Investigation of two colliding solitonic cores in Fuzzy Dark Matter models**
Alireza Maleki, Shant Baghrum, Sohrab Rahvar
Phys. Rev. D 101, 023508 (2020), arXiv:1911.00486
- 27) **21 cm power spectrum and ionization bias as a probe of long mode modulated non Gaussian sky**
Shahram Khosravi, Amirabbas Ghazizadeh, Shant Baghrum
Monthly Notices of the Royal Astronomical Society, 488, 59415951 (2019), arXiv:1812.11150
- 26) **Cosmological Filaments in the light of Excursion Set of Saddle Points**
Mohammad Ansari Fard, Sina Taamoli, Shant Baghrum
Monthly Notices of the Royal Astronomical Society, 489, 900909 (2019), arXiv:1811.12398
- 25) **Exact enumeration approach to first-passage time distribution of non-Markov random walks**
Shant Baghrum, Farnik Nikakhtar, M. Reza Rahimi Tabar, Sohrab Rahvar, Ravi K. Sheth, Klaus Lehnertz, and Muhammad Sahimi
Physical Review E 99, 062101 (2019), arXiv:1906.02081.
- 24) **H_0 tension as a hint for a transition in gravitational theory**
Nima Khosravi, Shant Baghrum, Niayesh Afshordi, Natacha Altamirano
Phys. Rev. D 99, 103526 (2019), arXiv:1710.09366,
- 23) **Measuring the baryon fraction in cluster of galaxies with Kinematic Sunyaev Zeldovich and a Standard Candle**
Shant Baghrum
JCAP 02(2019)015, arXiv:1703.02021
- 22) **The Excursion set approach: Stratonovich approximation and Cholesky decomposition**
Farnik Nikakhtar, Mohammadreza Ayromlou, Shant Baghrum, Sohrab Rahvar, M. Reza Rahimi Tabar, Ravi K. Sheth
Monthly Notices of the Royal Astronomical Society, Volume 478, Issue 4, 21 August 2018, arXiv:1802.04207.
- 21) **Late time sky as a probe of steps and oscillations in primordial Universe**
Mohammad Ansari Fard and Shant Baghrum
JCAP 01(2018)051 , arXiv:1709.05323.

- 20) **Peculiar velocity measurement in a clumpy universe**
Farhang Habibi, Shant Baghrum, Saeed Tavasoli
Int. J. Mod. Phys. D 27, 1850019 (2018), arXiv:1412.8457.
- 19) **Supernovae anisotropy power spectrum**
Hoda Ghodsi, Shant Baghrum and Farhang Habibi
JCAP 10(2017)017. arXiv:1609.08012
- 18) **Matrix Formalism of Excursion Set Theory: A new approach to statistics of dark matter halo counting**
Farnik Nikakhtar, Shant Baghrum
Phys. Rev. D 96, 043524 (2017). arXiv:1606.06666.
- 17) **ISW-Galaxy Cross Correlation: A probe of Dark Energy clustering and distribution of Dark Matter tracers**
Shahram Khosravi, Amir Mollazadeh, Shant Baghrum
JCAP 09(2016)003. arXiv:1510.01720
- 16) **Lensing as a Probe of Early Universe: from CMB to Galaxies**
Farbod Hassani, Shant Baghrum, Hassan Firouzjahi
JCAP 05 (2016) 044. arXiv:1511.05534
- 15) **Expected dipole asymmetry in CMB polarization**
M. H. Namjoo, A. A. Abolhasani, H. Assadullahi, S. Baghrum, H. Firouzjahi, D. Wands.
JCAP 1505 (2015) 05, 015. arXiv:1411.5312
- 14) **Unraveling the nature of Gravity with our clumpy Universe**
Shant Baghrum, Saeed Tavasoli, Farhang Habibi, Roya Mohayaee and Joseph Silk,
International Journal of Modern Physics D Vol. 23, No. 12, 1442025 (2014).
arXiv:1411.7010
Received an honorable mention in the Gravity Research Foundation (GRF) award - 2014.
- 13) **Fingerprints of Anomalous Primordial Universe on the Abundance of Large Scale**
Shant Baghrum, Ali Akbar Abolhasani, Hassan Firouzjahi, Mohammad Hossein Namjoo
JCAP 12 (2014) 036. arXiv:1406.7277
- 12) **CMB Hemispherical Asymmetry: Long Mode Modulation and non-Gaussianity**
Mohammad Hossein Namjoo, Ali Akbar Abolhasani, Shant Baghrum, Hassan Firouzjahi,
JCAP 1408 (2014) 002. arXiv:1405.7317
- 11) **Transient Weak-Lensing by Cosmological Dark Microhalos**
Sohrab Rahvar, Shant Baghrum and Niayesh Afshordi,
Physical Review D **89**, 063001 (2014) arXiv: 1310.5412
- 10) **Asymmetric Sky from the Long Mode Modulations**
Ali Akbar Abolhasani, Shant Baghrum, Hassan Firouzjahi, Mohammad Hossein Namjoo,
Physical Review D **89**, 063511 (2014). arXiv:1306.6932
- 9) **Simultaneous effect of Modified Gravity and Primordial Non-Gaussianity in Large Scale Structure Observations**
Nareg Mirzatuny, Shahram Khosravi, Shant Baghrum, Hossein Moshafi
Journal of Cosmology and Astroparticle Physics **01**(2014) 019. arXiv: 1308.2874.
- 8) **Hemispherical Asymmetry and Local non-Gaussianity: a Consistency Condition**
Mohammad Hossein Namjoo, Shant Baghrum, Hassan Firouzjahi
Physical Review D **88**, 083527 (2013). arXiv:1305.0813
- 7) **Large Scale Anisotropic Bias from Primordial non-Gaussianity**
Shant Baghrum, Mohammad Hossein Namjoo, Hassan Firouzjahi,
Journal of Cosmology and Astroparticle Physics **08**(2013) 048. arXiv:1305.0813.
- 6) **Prospects for detecting Dark Matter Halo substructure with Pulsar Timing.**
Shant Baghrum, Niayesh Afshordi, Kathryn Zurik.,
Physical Review D. **84** 043511, (2011). arXiv:1101.5487
- 5) **Structure formation in $f(R)$ gravity: A distinguishing probe between the dark energy and modified gravity.**
Shant Baghrum and Sohrab Rahvar ,JCAP 12, 008 (2010). arXiv:1004.3360
- 4) **Inverse problem: Reconstruction of modified gravity action in Palatini formalism by**

Supernova Type Ia data.

Shant Baghram and Sohrab Rahvar, Physical Review D 80, 124049 (2009). arXiv:0912.2410

3) Observational tests of a two parameter power-law class modified gravity in Palatini formalism.

Shant Baghram , M.Sadegh Movahed,Sohrab Rahvar,
Physical Review D 80,064003(2009). arXiv:0904.4390

2) Consistency of $f(R) = \sqrt{R^2 - R_0^2}$ Gravity with the Cosmological Observations in Palatini Formalism

M.Sadegh Movahed,Shant Baghram,Sohrab Rahvar,
Physical Review D 76,044008(2007). arXiv:0705.0889

1) Modified Gravity with $f(R) = \sqrt{R^2 - R_0^2}$

Shant Baghram,Marzieh Farhang and Sohrab Rahvar,
Physical Review D 75,044024(2007). arXiv:astro-ph/0701013

• **Submitted Publication / Preprints**

1) Schwarzschild Spacetime and the Local Limit of Nonlocal Gravity

Yahya Mohammadi, Javad Tabatabaei, Shant Baghram, Bahram Mashhoon
Submitted to The European Physical Journal C, arXiv:2505.20089.

Teaching Experience • Course taught in **Sharif University of Technology (SUT)**. "S" for spring and "F" for fall

• **B.Sc. Courses**

- 1) Physics I: S2013, F2014, F2015, S2018, F2020, F2023
- 2) Physics II: S2015, S2025
- 3) Physics III: S2025
- 4) General Physics Lab I: F2015, S2023, F2024
- 5) General Physics Lab II: F2019, S2022
- 6) Analytical Mechanics I: F2014, F2018, F2019
- 7) Analytical Mechanics II: S2015, S2019, S2020
- 8) Electromagnetism I: F2021, F2022, F2023
- 9) Electromagnetism II: S2022, S2023, S2024
- 10) Astronomy: S2016, F2018
- 11) Cosmology: S2017, S2023
- 12) Special Relativity: F2013, F2016, F2017, F2020, F2022, F2025

• **B.Sc./M.Sc. Courses**

- 1) Fundamental concepts and cultural history of physics: S2024, F2025

• **M.Sc. Courses**

- 1) Electrodynamics: F2024

• **Ph.D. Courses**

- 1) General Relativity I: S2016, S2017, S2018, S2020, S2021
- 2) General Relativity II: F2016

- 3) Advanced Cosmology I: F2021
- 4) Special Topics in Cosmology: S2013, F2015

Observation Experiments

- 2) Observation with 4.2m William Herschel Telescope of Isaac Newton Group of Telescope (ING) in La Palma, Spain.
- 1) Observation with 2.54m Isaac Newton Telescope of ING in La Palma, Spain.

Selected Presentations - Talks

** You can find the full list of my talks in <http://sharif.edu/baghram/talks.html>

- 64) Structure formation in the Cosmos: A viewpoint for exploring the Universe -Department of Physics SUT - **Colloquium** - 12 October 2025.
- 63) Large Scale Structure of the Universe: Beyond the Standard Model of Cosmology -26th Meeting on Research in Astronomy, IASBS-Zanjan - **Invited Speaker** - 8 May 2024.
- 62) Large Scale Structure of the Universe: Beyond the Standard Model of Cosmology - **ICTP 2022 prize lecture** -21 June 2023.
- 61) Large Scale Structure of the Universe: Beyond the Standard Model of Cosmology -25th Meeting on Research in Astronomy, IASBS-Zanjan - **Invited Speaker** - 14 June 2023.
- 60) Large Scale Structure of the Universe: Beyond the Standard Model of Cosmology - National Conference of Gravity and Cosmology, Sharif University of Technology - **Invited Speaker** - 2 February 2023.
- 59) Investigating the cosmic web with one point and crossing statistics -24th Meeting on Research in Astronomy, IASBS-Zanjan - **Invited Speaker** - 15 June 2022.
- 58) Cosmology's Century: Large Scale Structure of dark Universe - Iranian Conference of High Energy Physics (IRCHEP1400) IPM - **Invited Speaker** - 9 Nov. 2021.
- 57) Cosmology's Century: Large Scale Structure of dark Universe - Physics Department - Sharif University of Technology - **Colloquium** - 16 May 2021.
- 56) Large scale structures from early to late time universe, first online international conference of early universe and modified gravity, Tabriz University, December 15, 2020 **Invited speaker**.
- 55) Cosmology: fore-frontier of Science, Academy of Science of Iran, November 18, 2020 **Invited speaker**.
- 54) Cosmological Observations and Dark Matter - 5th IPM Workshop on Particle Physics Phenomenology (IWPPP5) Institute for Research in Fundamental Sciences(IPM) November 4, 2020 **Invited speaker**.
- 53) Structure formation and challenges of LCDM from Galactic to Cosmological scales - HECAP, International Centre for Theoretical Physics (ICTP) seminar series - 7 July 2020.
- 52) The Universe of James Peebles From Sound of the Big Bang to the Galaxies - Physics Department - University of Tehran - Colloquium - 9 November 2019. **Invited speaker**.
- 51) Non Linear Structure Formation as a probe of beyond standard model of cosmology - HECAP, International Centre for Theoretical Physics (ICTP) seminar series - 16 August 2019.
- 50) Large Scale Structure probes of Cosmology: 21-cm signal, cosmic filaments and supermassive black holes- 22nd Meeting on Research in Astronomy at Institute for Advanced Studies (IASBS) Zanjan - 24 January 2019. **Invited speaker**.
- 49) From Light to the darkness- Iranian National Conference in Cosmology and Gravity - Institute for Research in Fundamental Sciences - 24 January 2019. **Invited speaker**.
- 48) Large Scale Structures: Clustering and bias of galaxies - Cosmology From Theory to Observation One day Symposium - School of Astronomy , IPM- 28 Feb 2018 **Invited speaker**.
- 47) The story of H_0 , Cosmology with standard candles, rulers and sirens Sharif University of Technology, Physics Department **Colloquium** , 5 November 2017.
- 46) Cosmology with non linear Structure formation - IPM Spring Conference 2017 - Institute for Research in fundamental Sciences - 24 May 2017. - **Invited speaker**.
- 45) Why the Universe needs Dark Matter? - IPM Workshop on Particle Physics Phenomenology (IWPPP) - 15 Feb 2017, **Invited speaker**.

- 44) Excursion Set Theory and Large Scale Structure - Astronomy Symposium Physics Department of Zahedan University, **Invited Speaker** - 26 January 2017.
- 43) Large Scale Structures and Structure Formation I and II - Two lectures in Winter School of Astronomy in Physics Department of Zahedan University **Invited Lecturer** , 24 - 25 January 2017.
- 42) Dark Universe and Cosmological Large Scale Structure, **Colloquium** in Physics Department of Shahid Beheshti University- 15 November 2016.
- 41) Bringing Light to the Dark Universe by cosmological Large Scale Structure Sharif University of Technology, Physics Department **Colloquium** , 2 October 2016.
- 40) Secondary Anisotropies of CMB as a Probe of Cosmological Models, 19th annual meeting on research in Astronomy, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, 13 May 2016 - **Invited speaker**.
- 39) The Illusion of Separateness: The story of CMB photons after last scattering, Astronomy Weekly seminars, School of Astronomy, Institute For Research in Fundamental Sciences- 23 December 2015.
- 38) CMB Lensing as a probe of Early Universe, The first Astronomical workshop of Iran and Armenia, Byurakan Observatory Armenia - 15 October 2015.
- 37) The Large Scale Structure as a probe to go beyond The Standard Model of Cosmology, The 2nd Topical Workshop on Theoretical Physics, Institute for Research in Fundamental Sciences(IPM)- 7 October 2015 -**Invited speaker**.
- 36) A review on Theoretical Developments/Observational Cosmology, ICTP-ECAR - First Joint METU-IPM Conference on LHC Physics, Izmir Institute of Technology, Izmir - Turkey. 2 October 2015-**Invited speaker**.
- 35) Beyond the standard model of Cosmology, National conference of Astronomy and Astrophysics, Amir Kabir University, 4 February 2015-**Invited speaker**.
- 34) In search of Cosmological dark matter micro-halos, International conference of Galaxies, inside and out, School of Astronomy, Institute For Research in Fundamental Sciences- 25-28 January 2015.
- 33) Large Scale Structure in the Universe, 2 lectures given in School of Cosmology and Gravity organized by Physical Society of Iran (PSI), Shahid Beheshti University - 19 and 20 November 2014 - **Invited Lecturer**.
- 32) So Close, so far: Is there a relation between galactic scale challenges of LCDM and Early Universe Physics? Astronomy Weekly seminars, School of Astronomy, Institute For Research in Fundamental Sciences- 29 October 2014.
- 31) The Triumphs and Challenges of Modern Cosmology. Colloquium in Physics Department of Tehran University -18 October 2014 -**Invited speaker**
- 30) Unraveling the nature of gravity with our clumpy Universe Spring conference - Institute of Research in Fundamental Sciences (IPM) - 22 May 2014 - **Invited speaker**
- 29) Introduction to the Modern Cosmology: The sound of Big Bang A talk given in a "One day Cosmology School" in Physics Department of Isfahan University of Technology - 7 May 2014
- 28) Cosmology after BICEP2 One day topical meeting: Early Universe: From Theory to Observations- Institute For Research in Fundamental Sciences - 23 April 2014
- 27) Cosmology after BICEP2 Particles and Accelerators School Seminar Series, Institute For Research in Fundamental Sciences- 16 April 2014
- 26) Dark Matter in Cosmology An introductory talk for "School of Physics" (A program for B.Sc. students all over country), Institute for Advanced Studies in Basic Sciences, IASBS, Zanjan - 25 Feb 2014 - **Invited Speaker**
- 25) Dark Matter in Cosmology A one day meeting on recent developments of Dark matter detection, Institute For Research in Fundamental Science - 12 Feb 2014 - **Invited Speaker**
- 24) The Triumphs and challenges of Modern Cosmology. Sharif University of Technology, Physics Department **Colloquium** , 22 December 2013.
- 23) Large Scale Structure as a probe of Early Universe Particles and Accelerators School Seminar Series, Institute For Research in Fundamental Sciences- 20 November 2013

22) Structure Formation: In search of a cosmology beyond standard model Astronomy Weekly seminars, School of Astronomy, Institute For Research in Fundamental Sciences- 9 October 2013

21) Large Scale Anisotropic Bias Conference-workshop of Anisotropy in University of Amsterdam - 27 September 2013

20) Structure Formation: A la Recherche de parameter perdu Cosmology seminar in Institute de Astrophysique de Paris - 13 September 2013

IAP Colloquium

19) Structure Formation: A survey on Cosmological unknowns: 17th Meeting on Research in Astronomy- Institute of Advanced Studies in Basic Science (IASBS): -16.05.2013

Invited Speaker- Planetary talk

18) New Astrophysical Probes of Dark Matter Substructures- Pulsar Timing and Weak Transient Lensing: IPM international school and workshop on Particle Physics (IPP13): Flavor physics and dark matter-4.05.2013 **Invited Speaker**

17) Structure Formation in the Universe: En route to Cosmology beyond 6 parameters (II): School of Physics, Institute for Research in Fundamental Sciences (IPM) - 22.04.2013

16) Structure Formation in the Universe: En route to Cosmology beyond 6 parameters (I): School of Physics, Institute for Research in Fundamental Sciences (IPM) - 15.04.2013

15) Dark Universe: A public talk in Science day- IPM - 16.11.2012

14) Structure Formation and Fundamental questions in Cosmology- SUT Cosmology seminar- 7.10.2012

13) What can stellar kinematics tell us about dark matter in dwarf galaxies Perimeter Institute of theoretical Physics - 10.04.2012

12) Astrophysical probes of Dark Matter structures. Physics and Astronomy Department- University of Waterloo- 06.11.2011

11) Dwarf Galaxies: Toward Astrophysical tests of Modified Gravity . Astronomy School weekly seminars- IPM - 06.07.2011.

10) A report on Training program of observational Cosmology and Support Astronomer- Astronomy School weekly Journal Club-IPM-9.05.2011.

9) Accelerating Universe: Dark Energy vs Modified Gravity , Isaac Newton Group and Nordic Telescope Group Astronomy seminar series, La Palma -Spain - 21.01.2011

8) Distinguishing Modified gravity theories from Smooth Dark Energy models by gravitational slip parameter. Cosmology weekly seminars- Sharif University of Technology. 19.01.10.

7) Inverse Problem: Reconstruction of Modified gravity action in Palatini Formalism by SNIa data- National Gravity and Cosmology annual meeting 2009 - Shahid Beheshti University . 7.01.10.

6) Answered and unanswered questions in $f(R)$ gravity models-Cosmology weekly seminars- Sharif university of technology. 24.02.2008.

5) Introduction to Cosmology-Talk given in Astronomy workshop held in Sharif university of technology -12.12.2007.

4) Dark energy-Dark Matter and alternative theories - Annual conference of Center of Excellence of physics (CEP) of SUT - Sharif university of technology - 25.10.2007.

3) lecture Modified gravity and observational tests- International Cosmology workshop -IPM -Tehran - 2 to 9 June 2007.

2) Dark energy and modified gravity: National assembly of cosmology of Iran, Sharif university 2007.

1) Modified Gravity - in weekly meetings of cosmology group in sharif university, fall 2005.

Conference-Meeting Organizer 23) **SUT - Cosmology Group Seminar's Chair** (February 2014 till now, Physics Department Sharif University of Technology).
22) Executive Committee member of "National Conference of Gravity and Cosmology" in Physics Department Sharif University of Technology - Winter 2023.

- 21) Scientific Committee member of "National Conference of Gravity and Cosmology" in Physics Department Bu Ali University - Winter 2022.
- 20) Scientific Committee member of "International conference: Tehran Meeting on Cosmology at the Crossroads" in Physics Department Shahid Beheshti - 22nd-25th February 2021.
- 19) Scientific Committee member of "National Conference of Gravity and Cosmology" in Physics Department Shahid Beheshti - Winter 2021.
- 18) Scientific Committee member of "Annual Physics Conference of Iran" in Imam Khomeini International University, Qazvin, 27-30 August 2018.
- 17) Local Organizer Committee member of "6th workshop on collaborative scientific software development and ..." in Physics Department of Sharif University of Technology - 28 April - 9 May 2018. (In collaboration of ICTP)
- 16) Scientific Committee member of "National Conference of Gravity and Cosmology" in Physics Department of Isfahan University of Technology - 24 and 25 January 2018.
- 15) One day Research Seminar Series - Physics Department Sharif University of Technology - 17 December 2017.
- 14) One day Research Seminar Series for Ph.D. students - Physics Department Sharif University of Technology - 15 February 2017.
- 13) **Scientific Committee Chair** of "National Conference of Gravity and Cosmology" in Institute for Advanced Studies in Basic Sciences, 8-9 February 2017.
- 12) Scientific Committee member of "National Conference Astronomy and Astrophysics" in Science Department of University of Sistan and Baluchestan, 26-27 January 2017.
- 11) Scientific Committee member of "National Conference of Gravity and Cosmology" in Physics Department of Shahid Beheshti University - 13 and 14 January 2016.
- 10) One day Research Seminar Series for Ph.D. students - Physics Department Sharif University of Technology - 16 December 2015.
- 9) Scientific Committee member of "National Conference of Gravity and Cosmology" in Physics Department of Sharif University of Technology - 21 and 22 January 2015.
- 8) One day Research Seminar Series for Ph.D. students - Physics Department Sharif University of Technology - 17 December 2014.
- 7) Scientific Committee member of "Early Universe: From Theory to Observation" conference in Institute of Research in Fundamental Sciences (IPM)- 23 April 2014.
- 6) Scientific Committee member of "One day with Euclid mission" seminar day in Institute of Research in Fundamental Sciences (IPM)- 8 January 2014.
- 5) Scientific Committee member of Spring Physics Conference in Institute of Research in Fundamental Sciences (IPM)-May 2013.
- 4) Scientific Committee member of 17th Meeting on Research in Astronomy at Institute of Advanced Studies in Basic Sciences IASBS (Zanjan) May 2013
- 3) Main organizer of One-day debate on Dark Matter and Alternative theories of Gravity School of Astronomy- Institute of Research in Fundamental Science (IPM) 16 January 2013
- 2) Science day - one day seminar: Cosmology : School of Astronomy- Institute of Research in Fundamental Science (IPM) 16 November 2012
- 1) Physics and Philosophy- Perimeter Institute of Theoretical Physics May 2012.

Service

- 18) Vice chair of education Physics Department of Sharif University of Technology (22 December 2022 -)
- 17) Committee member of Students affair, Physics Department, Sharif University of Technology (22 December 2022-).
- 16) Committee member of graduate studies, Physics Department, Sharif University of Technology (22 December 2022-).
- 15) Committee member of Education, physics Department, Sharif University of Technology (26 October 2021 -).
- 14) Director of Central Library of Sharif University of Technology (October 2018 - December 2022)

- 13) Committee member of graduate studies, Physics Department, Sharif University of Technology (March 2019 - 26 October 2021).
- 12) Committee member of PhD entrance exam, Physics Department, Sharif University of Technology (Spring 2022).
- 11) Committee member of PhD entrance exam, Physics Department, Sharif University of Technology (Spring 2021).
- 10) Committee member of PhD entrance exam, Physics Department, Sharif University of Technology (Fall 2020).
- 9) Committee member of PhD entrance exam, Physics Department, Sharif University of Technology (Spring 2019).
- 8) One of the organizers of one day Research Seminar Series for Physics Department Sharif University of Technology (Fall 2017).
- 7) The scientific committee member of Gravitation and Cosmology subsection of Physical Society of Iran(Since Feb. 2017).
- 6) Representatives of Physics Department in foreign affair committee of Sharif University of Technology. (Feb. 2016 - Feb 2018).
- 5) One of the representatives of Physics Department of Sharif University with the Alumnus of the Department. (Since Jan. 2016).
- 4) Committee member of Physics Department for 50th anniversary of Sharif University of Technology (Fall 2015 - Spring 2016).
- 3) One of the organizers of one day Research Seminar Series for Ph.D. students for Physics Department Sharif University of Technology (Winter 2017).
- 2) One of the organizers of one day Research Seminar Series for Ph.D. students for Physics Department Sharif University of Technology (Fall 2015).
- 1) One of the organizers of one day Research Seminar Series for Ph.D. students for Physics Department Sharif University of Technology (Fall 2014).

International or National conferences

- 35) Iranian National Conference of Astronomy and Astrophysics” Physics Department Shiraz University - Winter 2024, February 2025.
- 34) Iranian National Conference of Gravity and Cosmology” Physics Department Sharif University of technology - Winter 2023, February 2023.
- 33) ”Recent developments in theoretical Large-Scale Structure” in Institute for Fundamental Physics of the Universe (IFPU), Trieste - Italy -July 25 -29, 2022.
- 32) Iranian National Conference of Gravity and Cosmology” Physics Department Bu Ali University, Hamadan - Winter 2022, February 2022.
- 31) ”International conference: Tehran Meeting on Cosmology at the Crossroads” in Physics Department Shahid Beheshti - 22nd-25th February 2021.
- 30) Iranian National Conference of Gravity and Cosmology” Physics Department Shahid Beheshti - Winter 2021, February 2021.
- 29) Iranian National Conference of Gravity and Cosmology” Physics Department Tehran University - Winter 2020, February 2020.
- 28) Iranian National Conference of Gravity and Cosmology” Institute for research in fundamental sciences - IPM, February 2019.
- 27) Iranian National Conference of Gravity and Cosmology” University of Isfahan, February 2018.
- 26) Theoretical Cosmology in light of Data - Nordic Institute for Theoretical Physics - Stockholm Sweden - 17-28 July 2017.
- 25) Iranian National Conference of Gravity and Cosmology” in Institute for Advanced Studies in Basic Sciences, 8-9 February 2017.
- 24) Iranian National Conference Astronomy and Astrophysics in Science Department of Uni-

- versity of Sistan and Baluchestan, 26-27 January 2017.
- 23) Iranian National Meeting on research in Astronomy, Institute for Research in Basics Sciences - Zanjan 12-13 May 2016.
 - 22) Iranian National Gravity and Cosmology annual meeting January 2016 - Shahid Beheshti University.
 - 21) The first Astronomical workshop of Iran and Armenia, Byurakan Observatory Armenia - 13-15 October 2015.
 - 20) The second Topical Workshop in Theoretical Physics (TWTP) - Institute of Research in Fundamental Sciences (IPM) - 7-8 October 2014.
 - 19) ICTP-ECAR -First Joint METU-IPM Conference on LHC Physics Izmir Institute of Technology- Izmir - Turkey, 29 September - 3 October 2015.
 - 18) Advance School in Cosmology - ICTP - Trieste. 18- 29 May 2015.
 - 17) Iranian National Astronomy and Astrophysics annual meeting February 2015 - Amir Kabir University.
 - 16) International conference of Galaxies, inside and out, School of Astronomy, Institute For Research in Fundamental Sciences- 25-28 January 2015.
 - 15) Iranian National Gravity and Cosmology annual meeting January 2015 - Sharif University of Technology.
 - 14) The first Topical Workshop in Theoretical Physics (TWTP) - Institute of Research in Fundamental Sciences (IPM) - 9 October 2014.
 - 13) 11 Spring Physics Conference in Institute of Research in Fundamental Sciences (IPM)-May 2014.
 - 12) Iranian National Gravity and Cosmology annual meeting January 2014 - Tehran University.
 - 11) Anisotropic Universe-Amsterdam University (25-27) Sep. 2013.
 - 10) Spring Physics Conference in Institute of Research in Fundamental Sciences (IPM)-May 2013.
 - 9) 17th Meeting on Research in Astronomy at Institute of Advanced Studies in Basic Sciences IASBS (Zanjan) May 2013
 - 8) Cosmological and Philosophy Conference, Perimeter Institute, May, 2012
 - 7) Cosmological frontiers of Physics, Perimeter Institute, Waterloo, June 2010.
 - 6) Iranian National Gravity and Cosmology annual meeting December 2009 - Shahid Beheshti University.
 - 5) Iranian National Gravity and Cosmology annual meeting December 2008 - Sharif University of technology.
 - 4) Cosmology Summer school in ICTP-Trieste- Italy -July 2008.
 - 3) Iranian National Gravity and Cosmology meeting December 2007 - Tehran University.
 - 2) International "Cosmology" Conference in IPM- Tehran - July 2007.
 - 1) Iranian National Gravity and Cosmology annual meeting December 2006 - Sharif University of Technology.

Languages	Farsi (Native language) Armenian (Native Language) English (fluent) French (a little).
Computer skills	C++ , Mathematica
Science Outreach	F) The Physical Society of Iran Web-page's Science news editor since January 2014 - February 2024. E) Member of Science outreach committee of The Physical Society of Iran since Fall 2019. D) Writing science outreach article 1) On 100 anniversary of General Relativity - Aseman Shab - No. 37 - Fall 2015 C) One-day with Cosmologist

A program held in School of Astronomy Institute for Research in Fundamental Sciences (IPM) with cooperation of Iran association of popularization of science in Science week 2012-2013.

B) One day Cosmology School

Seminar series for B.Sc. students of physics to introduce them with the latest discoveries and frontiers of Cosmology.

2) Isfahan University of Technology - (IUT) - Isfahan - 7 April 2014

1) Institute for Advanced Studies in Basic Science - (IASBS) - Zanjan - 25 Feb. 2014

A) Giving Public talks on Physics and Cosmology.

2) Cosmology From Theory to Observation - 23th High School Students Physics Gathering - University of Tehran - 18 August 2015.

1) Dark Universe a talk given in "One day with Cosmologist Program" IPM - 16 Nov. 2012

Social, Personal

5) An active member of Armenian sport and cultural Ararat organization in Tehran-Iran(1992-2011).

4) A member of Cultural-Educational section since 1992 and the Head-Manager of the section with 370 youngsters in Tehran from 2009-2010.

3) Writing Articles on Contemporary World Literature for an Armenian-Farsi biweekly Hooys

2) Writing short stories and poems in Armenian.

1) Writing Philosophical-historical Issues

a) Armenian Philosophy from beginning to middle age.

Date: 14 February 2026

Shant Baghran