

Curriculum Vitae

SHANT BAGHRAM

14 May 2020

Contact Information

Physics Department
Sharif University of Technology (SUT)
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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 Position Associate Professor

Physics Department, Sharif University of Technology (SUT), Tehran-Iran.
(September 2019 -)

Director of Central Library of Sharif University of Technology
(October 2018-)

Associate Member

Junior Associate of the International Center of Theoretical Physics (ICTP).
(January 2017 - December 2022)

Academic Employment History

8) Assistant Professor

Physics Department, Sharif University of Technology (SUT), Tehran-Iran.
(September 2014 - September 2019)

7) Part Time Researcher

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

6) Postdoctoral Researcher

School of Astronomy, Institute for Research in Fundamental Sciences (IPM),

Tehran-Iran. (September 2012 - September 2014)

5) Visiting Researcher

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

4) Associate Postdoctoral Researcher

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

3) Graduate Student Teacher Assistant and Researcher

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

2) Research Associate

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

1) Instructor

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

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.

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, tracers of DM, Missing Baryon Problem, cosmic skeleton)
F: 21cm Cosmology
G: Cosmology of Gravitational wave

For more information please visit:
<http://sharif.edu/baghram/ResearchInterest.html>

Awards and Grants

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

9) Sharif University of Technology 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 Center 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”

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

- 6) International Center of Theoretical Physics (ICTP) - Trieste, Italy. 8/2019
- 5) International Center 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 .

Student Supervision

• Doctoral Students

→Supervisor

2) Mohammad Ansari, Sharif University of Technology(SUT), (17 September 2019 (Proposal Accepted) - ?)

Tentative Thesis title: *Cosmic skeleton: Halos, Filaments, Voids.*

1) Hamed Kameli, Sharif University of Technology(SUT), 16 September 2018 (Proposal Accepted) - ?

Thesis title: *Gravitational Wave as a probe of Large Scale Structures in Universe.*

→Co. Supervisor

1) Alireza Maleki, Sharif University of Technology(SUT), Feb. 2017 - ?

Primary supervisor: Prof. Sohrab Rahvar

Thesis title: *Study of Dark Matter with classical and Quantum statistical Physics*

• Master Students

→Supervisor

19) **Amir Shariat Gonabadi**, (SUT), Sep 2019 - ?

"Gravitational lensing of Gravitational wave".

18) **Zahra Baghkani**, (SUT), Aug. 2019 - ?

"Cosmic Web and galaxy bias".

17) **Laya Ghodsi**, (SUT), Aug. 2019 - ?

"Cosmic Web and the environmental effects on formation, evolution & clustering of galaxies".

16) **Aryan Rahimieh**, (SUT), Sep. Aug. 2018 - 16 July 2019

"Gravitational Waves Astronomy: Background Radiation, Relativistic Effects and Distribution Function of Sources".

15) **Sina Taamoli**, (SUT), Sep. Aug. 2018 - 16 July 2019

"Cosmological nonlinear Structure Formation by Excursion set theory of Peaks".

14) **Amir Farzan Esmaili**, (SUT), Sep. 2017 - 19 January 2019

"Neutrino footprints in Large Scale Structure".

13) **Nima Ronaghi**, (SUT), Sep. 2017 - 19 January 2019

"Nonlinear structure formation and relativistic effects on cosmological distance measurement".

12) **Amirabbas Ghazizadeh**, (SUT), Sep. 2017 - 20 January 2019

"Missing baryon problem and scaling relations of void galaxies".

11) **Abbas Khanbeigi**, (SUT), Sep. 2016 - 20 January 2019

"Relativistic Cosmology with Gravitational Waves".

10) **Saeid Aliei**, (SUT), Sep. 2017 - 16 September 2018

"Clustering and bias in voids and relativistic effects on cosmological distance measurements".

9) **Zahra Sattari**, (SUT), Sep. 2017 - 19 August 2018

"The study of fossil galaxies by excursion set theory of nonlinear structure formation".

8) **Mohammad Ali Islami**, (SUT), Sep. 2015-13 January 2018

”Modified Gravity from theory to observation”.

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”.
 (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.)

1) **Farbod Hasani**, (SUT), Sep. 2014 - 2 Aug. 2016.
 ”CMB Lensing and Dark Matter bias as a probe of beyond Λ CDM cosmology”.
 (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)).

→**Co. Supervisor**

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 Mirzatuni**, (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**

14) **Setare Foroozan**, (SUT), Sep 2018 - ?

”Merger History of Dark Matter Halos”

13) **Arefe Abghari**, (SUT), Sep 2018 - ?

”Merger History of Dark Matter Halos”

12) **Laya Parkavosi**, (SUT), Sep 2018 - June 2019

”Statistical Methods for Cosmology”

11) **Royah Ahemeh**, (SUT), Sep 2017 - Aug. 2018

”Modified Gravity”

10) **Maryam Tajali**, (SUT), Sep 2017 - Aug. 2018

”Galaxy formation and Evolution and its environmental dependence”

Primary supervisor: Dr. Mojtabah Raouf - School of Astronomy, Institute for Research in Fundamental Science (IPM)

9) **Laya Ghodsi**, (SUT), Sep 2017 - Aug. 2018

”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 (Now): A Master student in Physics Department of Sharif University of Technology

8) **Mahdi Ghezloo**, (SUT), Sep 2016 - ?

”Matrix formalism for Excursion set theory”.

7) **Oveis Sheibani**, (SUT), Sep 2016 - July 2017

Project: *Matrix formalism for Excursion set theory.*

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

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

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, Stony Brook University, New York - US.)

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

”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

”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)

Referee for:

5) Modern Physics Letter A.

4) The European Physical Journal D (EPJ D).

3) The European Physical Journal C (EPJ C).

2) Journal of Theoretical and Applied Physics (JTAP).

1) Physics Letter B (PLB).

30) **Constraint on the mass of fuzzy dark matter from the rotation curve of the Milky Way**

Alireza Maleki, Shant Baghram, 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 Baghram
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 Baghram, 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 Baghram
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 Baghram
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 Baghram, 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 Baghram, 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 Zel-dovich and a Standard Candle**

Shant Baghram
JCAP 02(2019)015, arXiv:1703.02021

22) **The Excursion set approach: Stratonovich approximation and Cholesky decomposition**

Farnik Nikakhtar, Mohammadreza Ayromlou, Shant Baghram, 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 Baghram
JCAP 01(2018)051, arXiv:1709.05323.

20) **Peculiar velocity measurement in a clumpy universe**

Farhang Habibi, Shant Baghram, Saeed Tavasoli
Int. J. Mod. Phys. D 27, 1850019 (2018), arXiv:1412.8457.

19) **Supernovae anisotropy power spectrum**

Hoda Ghodsi, Shant Baghram 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 Baghram
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 Baghram

JCAP 09(2016)003. arXiv:1510.01720

16) Lensing as a Probe of Early Universe: from CMB to Galaxies

Farbod Hassani, Shant Baghram, 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. Baghram, H. Firouzjahi, D. Wands.

JCAP 1505 (2015) 05, 015. arXiv:1411.5312

14) Unraveling the nature of Gravity with our clumpy Universe

Shant Baghram, 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 for an essay in the Gravity Research Foundation (GRF) award - 2014.

13) Fingerprints of Anomalous Primordial Universe on the Abundance of Large Scale

Shant Baghram, 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 Baghram, Hassan Firouzjahi,

JCAP 1408 (2014) 002. arXiv:1405.7317

11) Transient Weak-Lensing by Cosmological Dark Microhalos

Sohrab Rahvar, Shant Baghram and Niayesh Afshordi,

Physical Review D **89**, 063001 (2014) arXiv: 1310.5412

10) Asymmetric Sky from the Long Mode Modulations

Ali Akbar Abolhasani, Shant Baghram, 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 Baghram, 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 Baghram, Hassan Firouzjahi

Physical Review D **88**, 083527 (2013). arXiv:1305.0813

7) Large Scale Anisotropic Bias from Primordial non-Gaussianity

Shant Baghram, 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 Baghram, 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 Baghram 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,

- **Submitted Publication / Preprints**

1) **Data-driven approach for event detection: Application to gravitational waves**
H. Alimohammadi, S. Baghran, S. Rahvar, M. R. Rahimi Tabar, and H. Arfaei
submitted to Physical Review Letters.

Teaching Experience • SUT: Sharif University of Technology.

- 27) **General Relativity I**
Ph.D. Course in Physics department of SUT, Spring 2020.
- 26) **Analytical Mechanics II**
B.Sc. Course in Physics department of SUT, Spring 2020.
- 25) **Analytical Mechanics I**
B.Sc. Course in Physics department of SUT, Fall 2019.
- 24) **General Physics Lab II**
B.Sc. Laboratory Course in Physics department of SUT, Fall 2019.
- 23) **Analytical Mechanics II**
B.Sc. Course in Physics department of SUT, Spring 2019.
- 22) **Analytical Mechanics I**
B.Sc. Course in Physics department of SUT, Fall 2018.
- 21) **Astronomy**
B.Sc. Course in Physics department of SUT, Fall 2018.
- 20) **General Relativity I**
Ph.D. Course in Physics department of SUT, Spring 2018.
- 19) **Physics I**
B.Sc. Course in Physics department of SUT, Spring 2018.
- 18) **Special Relativity I**
B.Sc. Course in Physics department of SUT, Fall 2017.
- 17) **General Relativity I**
Ph.D. Course in Physics department of SUT, Spring 2017.
- 16) **Cosmology**
B.Sc. Course in Physics department of SUT, Spring 2017.
- 15) **Special Relativity**
B.Sc. Course in Physics department of SUT, Fall 2016.
- 14) **General Relativity II**
Ph.D. Course in Physics department of SUT, Fall 2016.
- 13) **General Relativity I**
Ph.D. Course in Physics department of SUT, Spring 2016.
- 12) **Astronomy**
B.Sc. Course in Physics department of SUT, Spring 2016.
- 11) **Special Topics in Cosmology**
Ph.D. Course in Physics department of SUT, Fall 2015.
- 10) **Physics I**
B.Sc. Course in Physics department of SUT, Fall 2015.
- 9) **General Physics Lab I**
B.Sc. Laboratory Course in Physics department of SUT, Fall 2015.
- 8) **Analytical Mechanics II**

B.Sc. Course in Course in Physics department of SUT, Spring 2015.
 7) **Physics II**
 B.Sc. Course in Course in Physics department of SUT, Spring 2015.
 6) **Analytical Mechanics I**
 B.Sc. Course in Course in Physics department of SUT, Fall 2014.
 5) **Physics I**
 B.Sc. Course in Physics department of SUT, Fall 2014.
 4) **Special Topics in Cosmology**
 Ph.D. Course in Physics department of SUT, Spring 2013.
 3) **Physics I**
 B.Sc. Course in Physics department of SUT, Spring 2013.
 2) **Special Relativity**
 B.Sc. Course in Physics department of SUT, Fall 2013.
 1) **Cosmology**
 Course for Iranian National Astronomy Olympiad Team -Summer 2011.

**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>

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) 9n 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) Lecture on modified gravity: in weekly meetings of cosmology group in sharif university, fall 2005.

Conference-Meeting Organizer

- 18) Cosmology Group Seminar's Chair (February 2014 till now, Physics department Sharif University of Technology).
- 17) 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

10) Committee member of PhD entrance exam, physics department, Sharif University of Technology (Spring 2019).

9) Committee member of graduate studies, physics department, Sharif University of Technology (March 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

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 - Stock-

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 Hooyos

2) Writing short stories and poems in Armenian.

1) Writing Philosophical-historical Issues

a) Armenian Philosophy from beginning to middle age.

Academic References 1) **Prof. Sohrab Rahvar**

Sharif University of Technology, Tehran-Iran.

Email address: rahvar@sharif.edu

2) **Prof. Reza Mansouri**

Sharif University of Technology, Tehran-Iran.

Email address: mansouri@ipm.ir

3) **Dr. Niayesh Afshordi**

Perimeter Institute of Theoretical Physics, Waterloo, Canada

Department of Physics and Astronomy University of Waterloo,

Waterloo-Canada

Email Address: nafshordi@perimeterinstitute.ca

4) **Dr. Hassan Firouzjahi**

Astronomy School, Institute For Research in Fundamental Sciences (IPM), Tehran-Iran.

Email address: Firouz@ipm.ir

5) **Dr. Roya Mohayaee**

Institut d'Astrophysique de Paris, Paris-France

mohayaee@iap.fr

6) **Prof. Chris Benn**

Isaac Newton Telescope groups, La Palma, Spain,

Email Address: crb@ing.ias.es.

7) **Prof. Ravi K. Sheth**

Center for Particle Cosmology, University of Pennsylvania

Email Address: shethrk@physics.upenn.edu.

Date: 14 May 2020

Shant Baghram