



# Nosratollah Jafari Sonbolabadi

## *Curriculum Vitae*

### Personal Details

Gender	Male
Date of birth	March 27, 1974
Place of birth	Sonbolabad, Abhar, Iran
Citizenship	Iranian
Affiliation	Department of Physics, Nazarbayev University, Astana, Kazakhstan.
Email	<a href="mailto:nosrat.jafari@gmail.com">nosrat.jafari@gmail.com</a>

### Education

- 1993-1997 **BSc in Physics**, Sharif University of Technology (SUT), Tehran, Iran.
- 1997-1999 **MSc in Physics**, Isfahan University of Technology (IUT), Isfahan, Iran. Theoretical High Energy Physics.
- Thesis Quarkonium Spectroscopy with Inverse Scattering Method, Supervisor: Dr. Mansour Haghighat.
- 2000-2005 **Ph.D. in Physics**, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran.
- Thesis Varying Speed of Light Theories, Supervisor: Dr. A. Shariati.

### Research

**Gravity (GR) and Quantum Gravity** My research interests are mainly **Doubly Special Relativity (DSR)** theories and **phenomenology of Quantum Gravity**, also **beyond the Standard Model** Physics and their consequences in cosmology. Recently, I am studying the newly proposed relative locality theory. Relative locality theory is an extension of special relativity in the phase space which have been based on a general compositions of momenta by assigning curvatures and torsions to these compositions. Besides to the DSR theories, I am interested in **general relativity** and **modifications of gravity models** and their cosmological consequences.

## Publications

- 1 N. Jafari and A. Shariati, "Operational indistinguishability of varying speed of light theories", *Int. J. Mod. Phys. D* **13**, p. 709, (2004).
- 2 N. Jafari and A. Shariati, "A tight Constraint on some varying speed of light theories", arXiv: gr-qc/0502071.
- 3 N. Jafari and A. Shariati, "Comments on the Quantum Vacuum and the Light Acceleration", arXiv: gr-qc/0409113.
- 4 N. Jafari and A. Shariati, "Doubly Special Relativity: A new Relativity or not?", *AIP Conf. Proc.*, **Vol.** 841, p. 462, (2006).
- 5 A. Shariati and N. Jafari, "MOND, dark matter, and conservation of Energy", arXiv:0710.1411.
- 6 N. Jafari, and M. PourNemati, "Comparison of the nonrelativistic limit of Amelino-Camelia and MS Doubly Special Relativity, arXiv: 1104.3322
- 7 N. Jafari and A. Shariati, " A Projective Interpretation of Some Doubly Special Relativity Theories" , *Phys. Rev. D* **84**, 065038 (2011).
- 8 A. Shariati and N. Jafari, " Is there a map between Galilean relativity and special relativity?", arXiv: 1401.6948
- 9 N. Jafari "Images of the lines under the MS transformations and the Concept of Velocity in the DSR theories", arXiv: 1501.07776
- 10 N. Jafari, and Michael R. R. Good, "Dispersion relations in finite-boost DSR", *Phys. Let. B* **809** (2020) 135735.
- 11 A. Shariati and N. Jafari, "Modified Inertia as Non-conservative Newtonian Dynamics", *Phys. Rev. D* **104** (2021) 8, 084070.
- 12 N. Jafari, "Rigidity and Parallelism in the spacetime", arxiv: 2204.00109.
- 13 N. Jafari, "Precession of perihelia in the Fisher metric", arxiv: 2204.03568.
- 14 P. Tee, and N. Jafari, " Fundamental length scale and the bending of light in a gravitational field", *Eur. Phys. J. C* **82**, 571 (2022).
- 15 E. Mychelkin, M. Makukov, G. Suliyeva, N. Jafari, "On the weak and strong field effects in antisalar background", *General Relativity and Gravitation* (accepted), (2023).
- 16 N. Jafari, "Curvature of Kappa-Poincare and Doubly Special Relativity" submitted to *Eur. Phys. J. Plus.* (2023).
- 17 N. Jafari, "Evolution of the concept of the curvature in the momentum space", submitted to *Classical and Quantum Gravity*, (2023).
- 18 N. Jafari, and P. Tee, "Some interesting solutions in DSR", (in preparation).

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## Talks

- 1 "Ultra High Energy Cosmic Rays and GZK Anomaly", IASBS, Jan. 2004, Iran.
- 2 "Pioneer Anomaly, Sharif University", Oct. 2004, Iran.
- 3 "Varying Speed of Light Theories and Cosmology", IPM School on Cosmology, Jan. 2005, Qeshm Island, Iran.
- 4 "Doubly Special Relativity: A new Relativity or not?", XXVIIIth Spanish Relativity Meeting, Sept. 2005, Oviedo, Spain. Published by AIP.
- 5 "Doubly Special Relativity", in ICTP visiting, Sept. 2005, Italy.
- 6 "Theories of Varying Light Speed and GZK Anomaly", IPM School and Conference on Lepton and Hadron Physics, May 2006, Tehran, Iran.
- 7 "What is Doubly Special Relativity", The IV international Conference Astrophysics. Gravity and Cosmology, Oct. 2019, Astana, Kazakhstan.

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## International Schools, Conferences

- 1 International School and Workshop on Astronomy, 13-27 Jul. 1997, Zanjan, Iran.
- 2 The Second National Conference on Cosmology, 4 Dec. 2001, Tehran, Iran.
- 3 International IPM String School, 20 April - 02 May 2002, Shiraz, Iran.
- 4 International Workshop on Quantum Particles, Fields and Strings, 11-15 Sept. 2002, Baku, Azerbaijan.
- 5 String Cosmology School and Workshop, 21-23 April 2004, Khoranagh- Yazd, Iran.
- 6 11th Regional Conference on Mathematical Physics and IPM String Conference, 3-6 May 2002, Tehran, Iran.
- 7 Conference on Fundamental Symmetries and Fundamental Constants, 15-18 Sept. 2004, Miramare, Trieste, Italy.
- 8 IPM School on Cosmology, 16-24 Jan. 2005, Qeshm Island, Iran.
- 9 XXVIIIth Spanish Relativity Meeting: A century of Relativity Physics (ERE05), 6-10 Sept. 2005, Oviedo, Spain.
- 10 Visiting ICTP, 11-19 Sept. 2005, Miramare, Trieste, Italy.
- 12 The IV international Conference; Astrophysics, Gravity and Cosmology (AGC-IV), 29-30 Oct. 2019, Astana, Kazakhstan.

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## Teaching Experience

- 1999-2001 General Physics, Payameh Nour University (Abhar branch).
- 2000-2001 General Physics, Abhar Azad University.
- 2003-2004 Basic Electronics, Optics, General Physics, Takestan Azad Univ.
- 2004-2005 Advanced Quantum Mechanics, General Physics, Zanjan Univ.
- 2008-2012 General Physics, Analytical Mechanics, Modern Physics, Electrodynamics, Special relativity, General relativity. Semnan University.
- 2014-2016 General Physics, Khazar University, Baku, Azerbaijan.

2019-Present Research Assistant, Nazarbayev University, Nur-Sultan, Kazakhstan.

## Non-Educational Working Experience

- 1999-2000 Laboratory Manager, Takestan Azad University. There, I taught General Physics and some Electronic and Optic experiments. Also, I designed complex and advanced experiments by simple instruments and learned how to repair and maintain laboratory instruments.
- 2000-2001 Research and Development advisor, in Abhar Wire and Cable Company. I worked there as Research and Development advisor in a project for developing High Voltage Cables from 20 kV to 230 kV. Also, I was in charge of instructing the Engineers how to do research and increase their international collaborations.
- 1985-Present Agriculture, I have full experience in this field for many years. My family has a farm and we do semi-mechanized agriculture there.

## Computer Skills

- 1 Programming Languages Visual Basic, Pascal, Fortran.
- 2 Mathematical and Engineering Softwares: Mathematica, Maple, and Numerical Methods for scientific calculations.
- 3 Operating Systems: Windows, Linux (to some extent).
- 4 LaTeX, Farsitex, Microsoft Office.

## Language Skills

- 1 Farsi : speaking: good; writing: good; reading: good (Education Language).
- 2 English : speaking: good; writing: good; reading: good.
- 3 Azerbaijani Turkish: speaking: good; writing: reasonable; reading: good (Mother tongue ).
- 4 Turkish : speaking: reasonable; writing: reasonable; reading: good.

## Interests

Poetry and literature, Novels, Philosophy, Social Studies, Mountain- Climbing, Wrestling.

## Qualifications

- 1 Team Working
- 2 Natural curiosity and passion for new subjects and research areas.
- 3 Ability to assess and investigate concepts and effects, derived from theoretical and experimental discoveries in physics for their potential applications .
- 4 Amateur Astronomer, I observed and sketched orbit of a comet (Temple III) by using of a small and handy telescope.

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## References

- 2 Ahmad Shariati, Department of Physics, Alzahra University, Tehran 19938-91167, Iran. email: shariati@mailaps.org
- 2 Mohammad khorrani, Department of Physics, Alzahra University, Tehran 19938-91167, Iran. email: mamwad@mailaps.org.