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**PROFESSIONAL OBJECTIVE**

Research in High Energy Physics and teaching in physics and Mathematics

**EDUCATION**

**1986                      Ph.D., Physics**

University of Oregon, Eugene, Or. U.S.A.  
Emphasis: High Energy and Nuclear Physics  
(Major advisor: Prof. Micheal J. Moravcsik)

**M.S. , Physics**

University of Oregon, Eugene, Or. U.S.A.

**M.S. , Mathematics**

University of Oregon, Eugene, Or. U.S.A.

**1977                      B.S. , Physics**

Pars College, Tehran, Iran

**EXPERIENCES**

**Professor of Physics**

**2004- Present** Tafresh University, Tafresh, Iran

**Associate Professor of Physics**

**1999-2004** AmirKabir University, Tafresh Campus, Iran

**Associate Professor of Physics**

**1992-1999** AmirKabir University, Tehran, Iran

**Assistant Professor of Physics**

**1989-1991** Department of Physics, Temple University  
Philadelphia, Pennsylvania, U.S.A.

**1987-1988** Department of Physics, Willamette University  
Salem, Oregon, U.S.A.

**RESEARCH FACULTY**

**1992-2003** Center for Theoretical Physics and Mathematics  
Atomic Energy Organization of Iran

**1993-1999** International Center for Theoretical Physics, **I.C.T.P.**

Trieste, Italy (associate member)

**Visiting Scientist**

**Summer of 1996** Fellowship from the Third World Academy of Science to *Instituto de Fisica Teorica, San Paulo, Brazil*

Also a frequent visitor to *Centre de physique Theorique- CNRS, Marseille, France.*

**Research Associate**

**1991-1992**

Institute of Theoretical Science, University of Oregon, Eugene, Oregon, U.S.A.

**1986-1989**

Institute of Theoretical Science, University of Oregon, Eugene, Oregon, U.S.A.

**Research Assistant**

**1983-1986**

Institute of Theoretical Science, University of Oregon, Eugene, Oregon, U.S.A.

**Lecturer**

**1984-1985**

Umpque Community College, Roseburg, Oregon, U.S.A.

**1984-1986**

Learning Resources Center, University of Oregon, U.S.A.

**Graduate Teaching Fellow**

**1985-1986**

Department of Physics, University of Oregon, U.S.A.

REFERENCES

**PERSONAL DATA**

Date of Birth: March 23, 1953

Place of Birth: Iran

Marital Status: Married

## PUBLICATIONS

1. **Arash, F., Moravcsik, M.J. , and Goldstein, G.R.**, *The Structure of Elastic p-p Scattering at Low and High Energies*, **Phys. Rev. D** 31 (1985) **667**. (Rap. Comm.)
2. **Goldstein G.R., Arash, F., and Moravcsik, M.J.**, *Polarization Test of Direct Chnnel Resonances: The Dibaryon*, **J. Phys. G.** 11 (1985) **891**.
3. **Moravcsik, M.J., Arash, F., and Goldstein, G.R.**, *A Striking Pattern of Strong Interaction Reaction*, **Phys. Rev. D** 31 (1985) **2360**.
4. **Arash, F., Moravcsik, M.J. , and Goldstein, G.R.**, *An Amplitude Analysis of Proton-Proton Elastic Scattering at 800 MeV*, **Phys. Rev. D** 31 (1985) **1577**.
5. **Arash, F., Moravcsik, M.J. , and Goldstein, G.R.**, *Amplitudes of two Nucleons interaction at 579 MeV*, **Phys. Rev. D** 32 (1985) **74**.
6. **Moravcsik, M.J., and Arash, F.**, *Polarization Phenomenon in Collinear Reaction*, **Phys. Rev. D** 31 (1985) **2986**.
7. **Arash, F., Moravcsik, M.J. , and Goldstein, G.R.**, *Testing Particle exchange in p-p Scattering*, **Phys. Lett.** 152B (1985) **256**.
8. **Arash, F., Moravcsik, M.J. , and Goldstein, G.R.**, *Null-experiment for Testing Time-Reversal Invariance*, **Phys. Rev. Lett.** 54 (1985) **2649**.
9. **Arash, F., Moravcsik, M.J. , and Goldstein, G.R.**, *Spin Analysis of  $0+1 \rightarrow 0+1$  and Application to  $\pi+d \rightarrow \pi+d$  data*, **Phys. Rev. D** 32 (1985) **2322**.
10. **Arash, F., Moravcsik, M.J. , and Goldstein, G.R.**, *Simple Reaction Structure in a Complicated Kinematic Range*, **INT. J. Mod. Phys.** A2 (1987) **739**.
11. **Moravcsik, M.J., Goldstein, G.R., and Arash, F.**, *The Evidence for Planar-Transverse Phase Pattern in Strong Interactions*, Contribution paper to the 8<sup>th</sup> International Conference in High Energy Spin Physics, Minneapolis, **1988**.
12. **Arash, F., Moravcsik, M.J. , and Goldstein, G.R.**, *A New Feature of Strong Interactions*, **Mod. Phys. Lett.** A4 (1989) **529**.
13. **Arash, F., and Moravcsik, M.J.**, *A Complete Formalism for Charge Symmetry Test in n-p Elastic Scattering*, **Phys. Rev. D** 39 (1989) **1297**.
14. **Arash, F., Moravcsik, M.J. , and Goldstein, G.R., and Bugg, D.V.**, *Planar-Transverse Amplitude-Phase Pattern in Non-Elastic Reactions*, **Phys. Rev. Lett.** 62 (1990) **517**.
15. **Arash, F., Garcilazo, H., Moravcsik, M.J. , and Goldstein, G.R.**, *The Planar-Transverse Phase Pattern in Pion-Deuteron Scattering*, **Mod. Phys. Lett.** A5 (1990) **83**.
16. **Arash, F., Goldstein, G.R., and Moravcsik, M.J. ,** *Exploring Photoproduction Dynamics Through Polarization Experiments*, **Journal De Physique** 51 (1991) **83**.
17. **Goldstein, G.R. , and Arash, F.**, *Uncovering The Features of Spin Dynamics in Hadronic Physics*, **Few Body Systems** 9 (1991) **57**.
18. **Arash, F., and Habibi, M.F.**, *The Polarization Analysis of Vector Meson Production in Pion-Nucleon Interactions*, **Phys. Rev. D** 48 (1993) **73**.
19. **Goldstein G.R., Arash, F., and Moravcsik, M.J.**, *Amplitude Phase Pattern: A New Look at Strong Interaction*, **Nucl. Phys.** A578 (1994) **441**.

20. **Arash, F.**, *The Spin of Proton in Valon Model*, **Phys. Rev. D** 50 (1994) 1946.
21. **Arash, F.**, *Gottfried Sum Rule and the ratio  $F_2^n / F_2^p$* , **Phys. Rev. D** 52 (1995) 68.
22. **Arash, F., and Tomoi, L.**, *Probing SU(2) Symmetry Breaking in the Nucleon Sea*, **Phys. Lett.** B401 (1997) 207.
23. **Khorramian, A. N., and Arash, F.**, *Nucleon Structure Functions From Constituent Quark*, **Nucl. Phys. B (proc. Suppl.)** 79 (1999) 247.
24. **Arash, F., and Khorramian, A. N.**, *Sub-structures in Hadrons and Proton Structure Functions*, **Nucl. Phys. B (proc. Suppl.)** 99 (2001) 164.
25. **Arash, F.**, *Polarization Phenomena in Hadronic Interaction*, **Czech J. Phys.** 52 **supp. C**, (2002) C119.
26. **Arash, F., and Khorramian, A. N.**, *Next-to-Leading Order Constituent Quark Structure and Hadronic Structure Functions*, **Phys. Rev. C** 67, 045201 (2003).
27. **Arash, F.**, *Pion Structure Function  $F_2^\pi$  in the Valon Model*, **Phys. Lett. B** 577 (2003) 38.
28. **Arash, F., Atashbar-Tehrani, Sh., and Khorramian, A.N.**, *Polarized hadronic structure From Polarized Constituent Quark Structure Functions*, **Czech J. Phys.** 33 **Suppl. B**, (2003)B 71.
29. **Arash, F.**, *Meson Structure Functions in Valon Model*, **Phys. Rev. D** 69, 054024 (2004).
30. **Arash, F.**, *Hadronic Structure From Perturbative Dressing*, **Nucl. Phys. B** 146 (proc. Suppl.), 200 (2005).
31. **Arash, F.**, *Polarized and Unpolarized Structure Functions in the Valon Model*, **Nucl. Phys. B** 152 (proc. Suppl.), 92 (2006).
32. **Arash, F. and Taghavi-Shahri, Fateme**, *Polarized Structure of Nucleon in the Valon Representation*, **JHEP** 07 (2007) 071.
33. **Arash, F. and Taghavi-Shahri, Fateme**, *Valence quark Polarization In the Nucleon And the Deuteron data*, **Phys. Lett.** B668, 193 (2008).
34. **Taghavi-Shahri, Fateme. and Arash, F.**, *Non-Singlet Spin Structure Function In The valon Model And Low x Scaling behavior of  $g_1^{NS}$  and  $g_1^p$* , **Phys. Rev. C** 82, 035205 (2010).
35. **Sahveh, A. , Taghavi-Shahri, F. Arash, F.** *Gluon Polarization in Nucleon* , **Phys. Lett.** B691 (2010) 32.
36. **F. Arash, F. Taghavi-Shahri, and A. Shahveh**, *Gluon spin Contribution to the Nucleon Spin*, **Nucl. Phys. B (Proc. Suppl.)** 207-208 (2010)57.
37. **F. Arash, F. Taghavi-Shahri, and A. Shahveh**, *Gluon contribution to the Nucleon Spin* AIP Conference proceedings, **1350**, 309, (2011).
38. **A. Tahamtan, , F. Taghavi-Shahri, and F. Arash**, *A Simple Method to Calculate Transverse spin structure function  $g_2(x, Q^2)$* , **Phys.Rev. C** 92 (2015) 015213, [arXiv:1203.0824](https://arxiv.org/abs/1203.0824) [hep-ph].

39. Z. Alizadwh Yazdi, F. Taghavi-Shahri, F. Arash, M.E. Zomorrodian, *Transversity Distribution Functions in the Valon Model*, Phys.Rev. C89 (2014) no.5, 055201, [arXiv:1401.1295](https://arxiv.org/abs/1401.1295).
40. F. Arash, F. Taghavi-Shahri, and A. Shahveh. *Orbital Angular momentum in Nucleon*, (in prepration).
41. Maryam Momeni-Feili, Firooz Arash, Fatemeh-Taghavi-Shahri, Abolfazl Shahveh, *Contribution of Orbital Angular momentum to the nucleon spin*, Int.J.Mod.Phys. A32 (2017) no.06n07, 1750036.
42. Firooz Arash, *Polarization Test of Higgs spin and Parity*, AIP Conf. Proc. 1654 (2015) no.1, 090004.

### CONFERENCE PROCEEDINGS

There are a number of papers presented in various international conferences in the areas of Spin Physics, Deep Inelastic Scattering, QCD and Symmetries. A partial list includes:

1. Arash, F., Moravcsik, M.J., and Goldstein, *The Status of the Planar-Transverse Amplitude Phase Pattern*, In **proceedings of Adriatico Research Conferences, Spin and Polarization Dynamics in Nuclear and particle Physics**, ed. A.O. Barute, Y. Onel, and A. Penzo., World Scientific, 1990.
2. Arash, F., *Nucleon Spin Structure*, presented in it **XIII International Conference in Particles and Nuclei-PANIC, Perugia, Italy. 1993.**
3. Tomio, L. and Arash, F., *Flavor Symmetry Breaking From Low  $p_T$  Physics*, In **proceedings of XV International Conference on Few-Body Systems, Coningen, The Netherlands, 1997.**
4. Arash, F., *Probing  $SU(2)$  Symmetry Breaking in the Nucleon Sea*, in **proceedings of the XXXII<sup>nd</sup> Recontres De Moriond 1997 QCD and High Energy Hadron Interactions**, Les Arcs, France, ed. J. Tran Thanh Van, Edition Frontieres 1997.
5. Arash, F., *Symmetry Breaking in Nucleon Sea*, in **proceedings of 7<sup>th</sup> International Symposium on Nucleon-Nucleon Physics and the structure of the Nucleon**, Vancouver, Canada. Published in *II N Newsletter*, No. 13, 1997.
6. Arash, F., and Khorramian, A. N., *Constituent and Hardonic Structure in the NLO*, in **proceedings of 30<sup>th</sup> International Conference on High Energy Physics, ICHEP 2000**, Osaka, Japan, ed. C.S. Lim, and Taku Yamanaka, world Scientific, 2001.
7. Khorramian, A. N., and Arash, F., *Meson Structure in the Next-to-Leading Order*, in **proceedings of International Workshop XXIX on Gross Properties on Nuclei and Nuclear Excitations**, Hirschegg, Austria 2001, ed. H. Feldmeier, et al. (2001).
8. Arash, F., *Constituent and Hardonic Structure in the Next-to-Leading Order*, in **proceedings of the XXXVII<sup>nd</sup> Recontres De Moriond 2003 QCD and High Energy Hadron Interactions**, Les Arcs, France, ed. J. Tran Thanh Van, Edition Frontieres 2003.
9. Arash, F., *Hadronic Structure From Perturbative Dressing*, in **proceedings of Diferaction 2004, Cala Gonone, Italy, 18-23 September 2004.**

10. **Arash, F. and Taghavi, F.** *Hadronic Structure From Perturbative Dressing in QCD: The Valon Model*, in Proceedings of **11<sup>th</sup> International Conference on Elastic and Diffractive Scattering, EDS 05, Blois, France**, May 2005.
  11. **Arash, F. and Taghavi, F.** *From Constituent Quark Structure to hadron Structure Function*, Contribution to international Europhysics Conference on High Energy physics ( HEP- EPS 2005) Lisbon, Portugal; Published in **Pos HEP 2005: 107, 2006**.
  12. **Arash, F. and Taghavi, F.** *Polarized Structure Function of Nucleon and Orbital Angular Momentum*, contribution to **International symposium in Spin Physics, Spin 2006, Kyoto, Japan**, October 2006, **AIP Conf. Proc. 915: 470 , 2007**
  13. **Arash, F. and Taghavi, F.**, *Polarized Parton distribution, Orbital Angular Momentum, And the Violation of  $a_8$*  , **AIP Conf. Proc. 1105:181, 2009**.
  14. **Arash, F., Taghavi, F., and Shahveh, A.** *Gluon spin Contribution to the Nucleon Polarization*, Diffraction 2010, Lecce, Italy, **Nucl. Phys. Proc.Suppl. 207-208 (2010) 57-60**.
  15. **Firooz Arash, Fatemeh Taghavi-Shahri , Abolfazl Shahveh** , Partonic Orbital Angular Momentum, **AIP Conf.Proc. 1523 (2013) no.1, 166-169**,
  16. **Firooz Arash**, *Polarization Test of Higgs Spin and Parity*, **AIP Conf.Proc. 1654 (2015) no.1, 090004. [arXiv:1402.5117](https://arxiv.org/abs/1402.5117)**.
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#### STUDENTS:

I have supervised over 20 students on their Master of science programme. I cannot name them all.

I have been also the sole adviser for three Ph.D. students:

1. Ali Nagi Khorramian, now a professor at Semnan University, Semnan, Iran.
2. Shahin Atashbar-Tehrani, now in USA.
3. Fatemeh Taghavi-Shahri, now at Fredowsi University, Mashhad, Iran