

CV for Homayoon Eshraghi

Study Periods:

BS study:

Period of study:

From 1987 to 1992

Place of study:

Sharif University of Technology, Tehran, Iran

Course of study:

Physics

Regarding:

I was originally in computer engineering and then changed my course to physics.

MS study:

Period of study:

From 1992 to 1995

Place of study:

Sharif University of Technology, Tehran, Iran

Course of study:

Physics

PhD study:

Period of study:

From 1995 to Dec. of 1999

Place of Study:

Institute for Studies in Theoretical

Physics and Mathematics (IPM)

Tehran, Iran

Course of study:

Theoretical plasma physics

Regarding:

I was one of the five PhD students graduated for the first time under the direct supervision of two outstanding plasma physicists from Georgia: Professor Nodar Tsintsadze and Professor Davy D. Tskhakaya.

PhD thesis:

Hydrodynamic behavior of radiative relativistic plasmas

Working periods:

From 2000 to 2002 I was the (assistant) professor at Zanzan University, Zanzan, Iran and in addition, I was a part time researcher at IPM.

From 2002 to 2004 I worked as a full time researcher in the format of the post doctoral member at IPM.

From 2004 to November of 2019 I have worked as the assistant professor and from that time up to present as the associate professor at Physics Department of Iran University of Science and Technology (IUST), Tehran, Iran. In addition, I have worked as a resident part time researcher at the School of Physics of IPM until 19th of March 2008. Also from September 2013 to September 2014 I visited and collaborated with some researchers at School of Mathematics of IPM about some projects.

Topics of interests:

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Fundamental (Theoretical) plasma physics such as plasma waves etc, fluid and plasma dynamics especially mathematical considerations in fluid mechanics and magneto-hydrodynamics such as: simple (Riemann) waves, double Riemann waves, shock waves, vortex dynamics, relativistic fluid dynamics and magneto-hydrodynamics, geometric as well as analytical considerations of fluid motions.

Publications:

International publications

1. T. Sahihi and **H. Eshraghi**

Alternative (Oriented) singular cohomology and the modified cup product
Mathematica Aeterna Vol. 8, No. 4 (2018), pp 279-294 (Arxiv:1703.03683 v2).

2. N. Miri, **H. Eshraghi** and **T. Sahihi**

On double wave singularities in fluids and plasmas
Physics of Plasmas **23** 092305 (2016); doi:10.1063/1.4962761 (11 pp).

3. T. Sahihi and **H. Eshraghi**

Biot-Savart helicity versus physical helicity: A topological description of ideal flows
Journal of Mathematical Physics **55** (2014), 083101 (20 pp).

- 4. E. Heidari, M. Aslaninejad, H. Eshraghi and L. Rajae**
Standing electromagnetic solitons in hot ultra-relativistic electron-positron plasmas
Physics of Plasmas **21** (2014), 032305 (7pp).
- 5. A. Mahdipour-Shirayeh and H. Eshraghi**
A new proof for the Banach-Zarecki theorem: A light on integrability and continuity
Bulletin of the Iranian Mathematical Society **39** (2013), 805-819.
- 6. S. Atabakhsh and H. Eshraghi**
Self modulation and self focusing of laser in a plasma at ultra-relativistic temperatures (in Persian Language)
Pre-print.
- 7. E. Heidari, M. Aslaninejad and H. Eshraghi**
Electron trapping in the electrosound solitary wave for propagation of high intensity laser in relativistic plasma
Plasma Physics and Controlled Fusion **52** (2010), 075010 (14 pp).
- 8. T. Sahihi, H. Eshraghi, A. Mahdipour-Shirayeh and P.K. Shukla**
Multi-dimensional simple waves in fully relativistic fluids
Journal of Physics A: Mathematical and Theoretical **43** (2010), 165501 (26pp).
- 9. R. O. Popovych, M. Kunzinger and H. Eshraghi**
Admissible transformations and normalized classes of nonlinear Schrodinger equations
Acta Applicandae Mathematicae **109** (2010), 315-359.
arXiv.org link: math-ph/0611061 [[abs](#), [src](#), [ps](#), [others](#)], [cited by](#)
Code: IPM/P-2006/074
- 10. L. Rajae and H. Eshraghi**
Multi-dimensional vortex quasi-simple waves
Physica D: Nonlinear Phenomena **238** (2009), 477-489.
Code: IPM/P-2008/001
- 11. H. Eshraghi and J.D. Gibbon**
Quaternions and ideal flows
Journal of Physics A: Mathematical and Theoretical **41** (2008), 344004.
Code: IPM/P-2008/002
- 12. L. Rajae, H. Eshraghi and R.O. Popovych**
Multi-dimensional quasi simple waves in weakly dissipative flows
Physica D: Nonlinear Phenomena **237** (2008), 405-419.
Code: IPM/P-2006/009
- 13. D.D. Tskhakaya and H. Eshraghi**
On the theory of magneto-sound double simple waves
Journal of Plasma Physics **74** (2008), 455-471.
Code: IPM/P-2007/040

14. H. Eshraghi

Once more, entropy as a Liapunov function

IUST International Journal of Engineering Science **17** (2006), 5-8.

Code: [IPM/P-2003/050](#)

15. N. M. Ivanova, R. O. Popovych and H. Eshraghi

On symmetry properties of nonlinear Schrodinger equations with potentials

In: Proceedings of Summer School in Modern Mathematical Physics (20-31

August 2004, Zlatibor, Serbia and Montenegro), Sveske Fiz. Nauka **18** (A1)

(2005), p. 451-456.

Code: [IPM/P-2005/066](#)

16. H. Eshraghi, Y. Abedini and R.O. Popovych

Effect of external sources on finite time singularity

Physica Scripta **71** (2005), 52-59.

Code: [IPM/P-2004/004](#)

17. H. Eshraghi and Y. Abedini

A special class in vanishing helicity ideal flows

Journal of Mathematical Physics **46** (2005), 043102-043109.

Code: [IPM/P-2004/002](#)

18. R.O. Popovych, N.M. Ivanova and H. Eshraghi

Group classification of $(1+1)$ -dimensional Schrodinger equations with potentials and power nonlinearities

Journal of Mathematical Physics **45** (2004), 3049-3057.

Code: [IPM/P-2003/066](#)

19. R.O. Popovych, M.N. Ivanova and H. Eshraghi

Lie symmetries of $(1+1)$ -dimensional cubic Schrodinger equation with potential

In: Proceedings of the Fifth International Conference on Symmetry in Non Linear

Mathematical Physics, Proceedings of Institute of Mathematics of NAS of

Ukraine **50**, Part 1 (2004), p. 219-223.

arXive.org link: [math-ph/0310039](#) | [abs](#), [src](#), [ps](#), [others](#), [cited by](#)

Code: [IPM/P-2003/065](#)

20. H. Eshraghi and Y. Abedini

The generalized Leray transformation for finite time singular vortices in fluids

In: Proceedings of the Fifth International Conference on Symmetry in Non Linear

Mathematical Physics, Proceedings of Institute of Mathematics of NAS of

Ukraine **50**, Part 2 (2004), p. 715-721.

Code: [IPM/P-2002/076](#)

21. H. Eshraghi

On the vortex dynamics in fully relativistic plasmas

Physics of Plasmas **10** (2003), 3577-3583.

Code: [IPM/P-2003/013](#)

22. D.D. Tskhakaya and H. Eshraghi

Two-dimensional double simple waves in a pair plasma at relativistic temperatures

Physics of Plasmas **9** (2002), 2518-2525.

Code: IPM/P-2000/027

23. H. Eshraghi and **N.L. Tsintsadze**

A steady two dimensional radiative relativistic plasma flow

Physica Scripta **T84** (2000), 225-228.

Code: IPM/P-1999/079

24. H. Eshraghi and **D.D. Tskhakaya**

On the MHD simple waves in fully relativistic electron-positron plasmas with radiation

Astrophysics and Space Science **262** (1999), 441-452.

Code: IPM/P-1999/018

Local publications

I have attended some local (inside-country) conferences including Annual Physics Conference of Iran and Optics and Photonics of Iran with less than **20** publications not mentioned here.