

CV

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RESEARCH INTERESTS

hydrodynamic and magnetohydrodynamic shear turbulence, accretion disks, Magnetorotational Instability (MRI), dynamo theory, astrophysical fluids and plasmas, nonlinear dynamics and chaos, computational fluid dynamics.

EDUCATION

Ph. D. Physics Oct. 2015
University of Rochester
Advisor: Eric Blackman.
Thesis: *Turbulence in Rotating and Non-Rotating Magnetohydrodynamic Shear Flows.*

M. Phil. Physics 2009
Quaid-i-Azam University, Islamabad, Pakistan.
Thesis: *Modified gravity as an explanation for cosmic acceleration.*

M. Sc. Physics 2007
Quaid-i-Azam University, Islamabad, Pakistan.

B. Sc. Physics and Mathematics 2005
University of the Punjab, Lahore, Pakistan.

EXPERIENCE

Origins Fellow Sep. 15th 2018 -
Chalmers University of Technology, Gothenburg (Sweden)

PostDoctoral Researcher Sep. 15th 2015 - Sep. 14th 2018
Niels Bohr International Academy, Niels Bohr Institute

Research Assistant June 2010 - August 2015
Department of Physics and Astronomy, University of Rochester

Teaching Assistant Fall 2009 - Spring 2010
Physics and Astronomy, University of Rochester.
Grader of PHY 113 (Fall 2009), led workshops for PHY 121 (Spring 2010).

Research Scientist Feb-Aug 2009
National Centre for Physics, Islamabad, Pakistan.
Worked in the high energy phenomenology group.

HONORS and AWARDS

Horton fellowship from Laboratory for Laser Energetics. 2010-2015

Susumu Okubo Prize for the highest performance on the graduate physics written comprehensive exam and excellence in coursework. 2011

TALKS

"Magnetic field evolution in accretion disks"

ZARM, University of Bremen, Germany. Oct. 18th, 2017

"Large scale magnetic fields and magnetic helicity"

NTALK (Colloquium), **Niels Bohr International Academy**, Oct. 6th, 2017

"Influence of rotation and domain size in MHD shear turbulence"

European Turbulence Conference 16, Stockholm, Sweden. Aug. 21st-24th, 2017

"Influence of rotation in unforced MHD shearing box turbulence"

NCAR Workshop on Turbulence and Waves in Flows Dominated by Rotation. Aug. 15th-19th, 2016

"Turbulence in shear MHD flows: Implications for accretion disks"

Theory seminar at **Princeton Plasma Physics Lab**, Aug. 4th, 2016

"Turbulence in Rotating and Non-Rotating Magnetohydrodynamics Shear Turbulence"

CPH-Lund meeting, **Lund University**, Nov. 18th, 2015

"Non-rotating MHD Plane Couette Flow"

Turbulence Workshop, **University of Rochester**, August 5th, 2015

PUBLICATION LIST ([Updated list: www.nbi.dk/~nauman/publications.html](http://www.nbi.dk/~nauman/publications.html))

1. ****Farrukh Nauman**, Martin E. Pessah. 2018. *Transport properties of Keplerian flows in extended domains with no imposed field*. MNRAS, 480, 204.
2. ****Farrukh Nauman**, Oliver Gressel, Martin E. Pessah. 2018. *Large-scale dynamo and field advection in accretion discs threaded by a weak net-vertical magnetic flux*. (submitted to MNRAS)
3. Michael Kuffmeier, **Farrukh Nauman**. 2017. *The effects of large scale magnetic fields around young protostars and their disks*. (submitted to MNRAS; arxiv.org/abs/1710.11195)
4. **Farrukh Nauman**, Eric G. Blackman. 2017. *Shearing box simulations in the Rayleigh unstable regime*. MNRAS, 467, 1652, (arxiv.org/abs/1507.04711)
5. **Farrukh Nauman**, Eric G. Blackman. 2017. *Sustained turbulence and magnetic energy in non-rotating shear flows*. Phys. Rev. E, 95, 033202, (<https://arxiv.org/abs/1701.03531>)
6. ****Farrukh Nauman**, Martin E. Pessah. 2016. *Sustained turbulence in differentially rotating magnetized fluids at low magnetic Prandtl number*. ApJ 833, 187, (arxiv.org/abs/1609.08543)
7. Eric G. Blackman, **Farrukh Nauman**. 2015. *Some challenges and directions for next generation accretion disc theory*. JPP, 81, 395810505, (arxiv.org/abs/1501.00291)
8. **Farrukh Nauman**, Eric G. Blackman. 2015. *Sensitivity of the Magnetorotational Instability to the shear parameter in stratified simulations*. MNRAS, 446, 2102 (arxiv.org/abs/1409.2442)
9. **Farrukh Nauman**, Eric G. Blackman. 2014. *On characterizing nonlocality and anisotropy for the magnetorotational instability*. MNRAS, 441, 1855 (arxiv.org/abs/1403.4288)
10. Eric G. Blackman, **Farrukh Nauman**, Richard G. Edgar. 2010. *Quantifying the imprecision of accretion theory and implications for multi-epoch observations of protoplanetary discs*. (arxiv.org/abs/1010.1478)

** = Key publications

COMPUTER SKILLS

Programming languages: IDL, Python, C, MATLAB.

Computational Fluid Dynamics:

Grid based codes: ATHENA, PENCIL, NIRVANA.

Spectral codes: SNOOPY, DEDALUS.

PROFESSIONAL REFEREEING SERVICE

Monthly Notices of Royal Astronomical Society, Journal of Cosmology and Astrophysics, European Physical Journal Plus.