

curriculum vitae



Prof. Dr. Mushtaq Ahmad

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Home Address (Present):

House 214, Street 5, Sector-H, SheikhMaltoon Town Mardan, KPK.

Academic

M. Sc. Physics, University of Peshawar, Peshawar Pakistan (1995)

M.S, Applied Physics, Quaid-e-Azam University, Islamabad (1999)

PhD Physics, Govt. College University Lahore Pakistan (2007)

Post-Doc Fellowship, School of Physics university of sydney NSW 2006 Australia (2009-2011)
with Prof. D. B. Melrose

Research Fields

Classical and quantum plasma physics, nonlinear Physics and surface Plasmonic

Research Experience

Junior Scientist: Theoretical Physics Group, PRD, PINSTECH, 44000 Nilore Islamabad, Pakistan (1999-2001)

Senior Scientist: Theoretical Plasma Physics Division, PINSTECH 44000 Nilore, Pakistan (2001-2012)

Associate Professor and Chairman Department of Physics, Abdul Wali Khan University Mardan.KPK, Pakistan (2012-Feb. 2015)

Professor and Chairman Department of Physics, Abdul Wali Khan University Mardan.KPK, Pakistan (Fe. 2015-present)

Director of Office of Research Innovation and Commercialization (ORIC), Abdul Wali Khan University Mardan.KPK, Pakistan (2013-2014).

Chief Procter at Shankar Campus Abdul Wali Khan University Mardan Pakistan (2014-till date).

Interim Dean Faculty of Physical and Numerical Sciences, Abdul Wali Khan University Mardan Pakistan (28-7-2015-till date).

Research Publications

1. S. Mahmood and **A. Mushtaq** "Dust streaming effect on dust acoustic solitary wave in magnetized dusty plasmas", Journal of Fusion Energy, **21**, 199, (2003).
2. S. Mahmood, **Mushtaq A.** and H. Saleem "Ion acoustic solitary wave in homogeneous magnetized electron-positron-ion plasmas", New Journal of Phys. **5**, 28.1-28.10. (2003).
3. **A. Mushtaq** and H. A. Shah "Effects of positron concentration, ion temperature and plasma β - value on linear and nonlinear two dimensional magnetosonic waves in electron-positron-ion plasmas", Phys. Plasmas **12**, 012301 (2005).
4. **A. Mushtaq** and H. A. Shah "Nonlinear Zakharov-Kuznetsov equation for obliquely propagating 2D ion acoustic solitary waves in a relativistic, rotating magnetized electron-positron-ion plasma", Phys. Plasmas **12**, 072306 (2005).
5. **A. Mushtaq** and H. A. Shah "Study of non-Maxwellian trapped electrons by using generalized (r, q) distribution function and their effects on the dynamics of ion acoustic solitary wave", Phys. Plasmas **13**, 012303 (2006).
6. **A. Mushtaq**, H. A. Shah, N. Rubab, and G. Murtaza "Study of an obliquely propagating dust acoustic solitary wave in magnetized tropical mesospheric plasmas with effect of dust charge variations and rotation of the plasma", Phys. Plasmas **13**, 62903(2006).
7. N. Rubab, G. Murtaza and **A. Mushtaq** "Effect of non-Maxwellian particle trapping and dust grain charging on dust acoustic solitary waves", Phys. Plasmas **13**, 112104 (2006).
8. **A. Mushtaq**, S. A. Khan "Ion acoustic solitary wave with weakly transverse perturbations in quantum electron-positron-ion plasma", Phys. Plasmas **14**, 052 307 (2007).
9. S. A. Khan, **A. Mushtaq** "Linear and nonlinear dust ion acoustic waves in ultra cold quantum dusty plasmas", Phys. Plasmas **14**, 083703 (2007).
10. **A. Mushtaq** "Cylindrical dust acoustic solitary waves with transverse perturbations in quantum dusty plasmas", Phys. Plasmas **14**, 113701 (2007).
11. W. Masood, **A. Mushtaq**, and R. Khan, "Linear and nonlinear dust ion acoustic waves using the two-fluid quantum hydrodynamic model", Phys. Plasmas **14**, 123702 (2007).
12. W. Masood and **A. Mushtaq**, "Electron acoustic soliton in a quantum magnetoplasma", Phys. Plasmas **15**, 022306 (2008).
13. S. A. Khan, **A. Mushtaq** and W. Masood "Dust ion-acoustic waves in magnetized quantum dusty plasmas with polarity effect", Phys. Plasmas **15**, 013701 (2008).
14. S. Mahmood and **A. Mushtaq** "Quantum ion acoustic solitary waves in electron-ion plasmas: A Sagdeev potential approach", Phys. Lett. A **372**, 3467 (2008).
15. W. Masood, **A. Mushtaq**, "Obliquely propagating magnetosonic waves in multi-component quantum magnetoplasma", Phys. Lett. A **372**, 4283 (2008).
16. **A. Mushtaq**, and R. Khan "Linear and nonlinear studies of two-stream instabilities in electron-positron-ion plasmas with quantum corrections" Phys. Scr. **78**, 015501 (2008).
17. **A. Mushtaq** "Spatially limited ion acoustic drift soliton in electron-positron-ion magneto plasma" Phys. Plasmas **15**, 082313 (2008).

18. Q. Haque, S. Mahmood and **A. Mushtaq** "Nonlinear electrostatic drift waves in dense electron-positron-ion plasmas" Phys. Plasmas **15**, 082315 (2008).
19. **A. Mushtaq** and A. Qamar "Parametric studies of nonlinear magnetosonic waves in two-dimensional quantum magneto-plasmas" Phys. Plasmas **16**, 022301 (2009).
20. R. Saeed and **A. Mushtaq** "Ion acoustic waves in pair-ion plasma: Linear and nonlinear analyses" Phys. Plasmas **16**, 032307 (2009).
21. W. Masood, H. A. Shah, **A. Mushtaq** "Linear and Non-Linear Properties of an Obliquely Propagating Dust Magnetosonic Wave" Journal of Plasma Phys. **75**, 217 (2009).
22. **A. Mushtaq**, R. Saeed and, Q. Haque "Ion acoustic solitary waves in magnetized pair-ion electron plasmas" Phys. Plasmas **16**, 084501 (2009).
23. **A. Mushtaq** and D. B. Melrose "Quantum effects on the dispersion of ion acoustic waves" Phys. Plasmas **16**, 102110 (2009).
24. D. B. Melrose and **A. Mushtaq** "Quantum recoil and Bohm diffusion" Phys. Plasmas **16**, 94505 (2009).
25. M. Nadeem and **A. Mushtaq** "Thermal induced reversibility/ irreversibility in the ac electrical properties of $La_{0.50} Ca_{0.50} MnO_{3+\delta}$ by impedance spectroscopy" J. App. Phys. **106** 737013 (2009).
26. **A. Mushtaq**, A. Qamar and Zulfiqar Ahmed, "Vortical structures in a non-uniform pair-ion dust magnetoplasma with sheared flows" Phys. Plasmas **17**, 014502 (2010).
27. W. F. El-Taibany, **A. Mushtaq**, W. M. Moslem and Miki Wadati, "A model for dust acoustic solitary waves in a non-thermal rotating magnetized dusty plasma with arbitrary dust polarity" Phys. Plasmas **17**, 034501 (2010).
28. **A. Mushtaq** "Ion acoustic solitary waves in magneto-rotating plasmas" J. Phys. A: Math. Theor. **43**, 315501 (2010).
29. D. B. Melrose and **A. Mushtaq** "Dispersion in a thermal plasma including arbitrary degeneracy and quantum recoil" Phys. Rev. E **82**, 56402 (2010).
30. **A. Mushtaq** and S. V. Vladimirov "Fast and slow magnetosonic waves in two dimensional spin-1/2 quantum plasmas" Phys. Plasmas **17**, 102310 (2010).
31. W. Masood, S. Hussain, H. Rizvi, **A. Mushtaq** and M. Ayub "Electromagnetic solitary structures in dense electron-positron-ion magneto-plasmas" Phys. Scr. **82**, 065508 (2010).
32. D. B. Melrose and **A. Mushtaq** "Plasma dispersion function for a Fermi-Dirac distribution" Phys. Plasmas, **17**, 122103 (2010).
33. D. B. Melrose and A. Mushtaq "Classical relativistic model for spin dependence in a magnetized electron gas" Phys. Rev. E **83**, 056404 (2011).
34. **A. Mushtaq**, R. Saeed and, Q. Haque "Coupled electrostatic drift and ion acoustic waves in pair ion-electron plasma" Phys. Plasmas, **18**, 42305 (2011).
35. A. J. Keane, **A. Mushtaq** and M. S. Wheatland "Alfvén solitons in a Fermionic quantum plasma" Phys. Rev. E **83**, 066407 (2011).
36. S. Ali Shan and **A. Mushtaq** "Role of Jeans instability in multi-component quantum plasmas in the presence of Fermi pressure" Chin. Phys. Lett. **28**, 075204 (2011).
37. **A. Mushtaq** and S. V. Vladimirov "Arbitrary magnetosonic solitary waves in spin 1/2 degenerate quantum plasma" Euro. Phys. J. D., **64**, 419 (2011).
38. **A. Mushtaq**, M. Nasir Khattak, Zulfiqar Ahmad and, A. Qamar "Dust ion acoustic soliton in pair-ion plasmas with non-isothermal electrons" Phys. Plasmas, **19**, 42304 (2012).
39. **A. Mushtaq**, R. Maroof, Zulfiqar Ahmad and, A. Qamar "Magnetohydrodynamic spin waves in degenerate electron-positron-ion plasmas" Phys. Plasmas, **19**, 52101 (2012).
40. S. Ali Shan and **A. Mushtaq** "Arbitrary dust ion acoustic soliton with streaming ions and superthermal electrons" Phys. Scr. **86**, 035503 (2012).

41. A. **Mushtaq** and S. V. Vladimirov "Nonlinear magnetosonic waves in spin 1/2 quantum plasma" AIP Conf. Proc. **1445**, 115 (2012); doi: 10.1063/1.3701892, (2012).
42. S. Hussain, A. **Mushtaq** and S. Mahmood "An arbitrary amplitude fast magnetosonic soliton in quantum electron–positron–ion plasmas" Phys. Scr. **87**, 025502 (2013).
43. Ata-ur-Rahman, A. **Mushtaq**, S. Ali, and A. Qamar "Nonplanar electrostatic solitary waves in a relativistic degenerate dense plasma" Commun. Theor. Phys. **59**, 479 (2013).
44. S. Ali Shan and A. **Mushtaq** "Dust acoustic soliton and double layers with streaming dust and superthermal particles" Astrophys Space Sci. **346**, 171 (2013).
45. S. Hussain, S. Mahmood and A. **Mushtaq** "Magnetoacoustic solitons in dense astrophysical electron-positron-ion plasmas" Astrophys Space Sci. **346**, 359(2013).
46. Ata-ur-Rahman, S. Ali, A. **Mushtaq**, and A. Qamar "Nonlinear ion acoustic excitations in relativistic degenerate astrophysical electron–positron–ion plasmas" J. Plasma Physics **79**, 817 (2013).
47. Ata-ur-Rahman, S. Ali, W. M. Muslim and A. **Mushtaq** "Two-dimensional cylindrical ion-acoustic solitary and rogue waves in ultrarelativistic plasmas" Phys. Plasmas, **20**, 72103 (2013).
48. Zulfiqar Ahmad, A. **Mushtaq**, and A. A. Mamun "Effects of plasma particle trapping on dust-acoustic solitary waves in an opposite polarity dust-plasma medium" Phys. Plasmas, **20**, 32302 (2013).
49. S. Ali Shan, A. **Mushtaq** and N. Akhtar "Ion acoustic double layers in the presence of positrons beam and q -nonextensive velocity distributed electrons" Astrophys. Space Sci. **348**, 501 (2013).
50. A. **Mushtaq** and Attaullah Shah "Sheared flow-driven vortices and solitary waves in a non-uniform plasma with negative ions and non-thermal distributed electrons" J. Plasma Physics, **79**, 479 (2013).
51. A. **Mushtaq**, M. Ikram and R. E. H. Clark "Electrostatic Solitary Waves in Pair-ion Plasmas with Trapped Electrons" Braz. J. Phys. **44**, 614 (2014).
52. S. Ali Shan, N. Akhtar and A. **Mushtaq** "Kadomtsev–Petviashvili solitons in a warm electronegative plasma with q -nonextensive electrons" Phys. Scr. **90**, 15602 (2015).

Conferences/Schools/Collages Attended

1. 30th International Nathiagali Summer College on Physics and Contemporary Needs was attended from 27th June – 13th July 2005 held at Nathiagali, Pakistan.
2. Autumn College on Plasma Physics, 5-30 September 2005, As-ICTP, Trieste, Italy.
3. International Workshop on Frontier of Plasma Sciences, 22nd August –1st September 2006, As-ICTP, Trieste, Italy.
4. 2007 Summer College on Plasma Physics, 30th July -24th August 2007, As-ICTP, Trieste, Italy.
5. 19th Australian Institute of Physics Congress, December (5-9) 2010 at Melbourne Convention and Exhibition center, Victoria Australia.
6. Attended twelve international level conferences at country level.

Miscellaneous

Languages: English, Urdu, Pashto (native)

- **Referee of international journals:** Physical Review Letter, Physical Review E, Physics of Plasmas, Phys. Lett. A, Chinese phys. Lett. and Europ. Physical Journal D
- **Google scholar with total citation** of about 1000
- Paper total impact factor 100
- **Won the best research productivity awards (from PCST) at A-level 3 times**

Teaching Interest

Teaching of physics courses at graduate level to post-graduate level. Prime interests are in Quantum Mechanics, Electromagnetism, Nonlinear Physics, Plasma Physics, Mathematical Physics and Statistical Physics.

Professional References

Prof. Don MELROSE

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