

## **CURRICULUM VITAE**

**Name:** Bushra Haider

**Date of Birth:** November 24, 1978

**Nationality:** Pakistani

**Address**  
**Institution:** Department of Physics  
University of the Punjab, Lahore, Pakistan

**Telephone:** Dept: +92(0)42-9231243, +92(0)42-9230428

**E-mail:** [bushrahaider@hotmail.com](mailto:bushrahaider@hotmail.com),  
[bushrahaider.physics@pu.edu.pk](mailto:bushrahaider.physics@pu.edu.pk)

### **Education:**

- Ph.D (Physics), Department of Physics, University of the Punjab, Lahore, Pakistan, (2010).
- MPhil, Department of Physics, University of the Punjab, Lahore, Pakistan, 2006 (82%).
- M.Sc. in Physics, Department of Physics, University of the Punjab, Lahore, Pakistan, 2001 (74%).
- B.Sc. in Physics and Mathematics, Kinnaird College for Women Lahore, University of the Punjab, Lahore, Pakistan, 1998 (69%).
- Matriculation, Divisional Public School, Model Town, Lahore, Lahore board, 1994 (84%).

### **Scholarships:**

- HEC scholarship for Ph.D.
- Merit scholarship for MPhil.
- Merit scholarship for M.Sc.
- Mathematics scholarship for F.Sc.

## Publications:

1. B. Haider and M. Hassan, On algebraic structures in supersymmetric principal chiral model, *Eur.Phys.J.C53* (2008) 627-633.
2. B. Haider and M. Hassan, The  $U(N)$  chiral model and exact multi-solitons, *J. Phys. A Math. Theor* 41 (2008) 255202.
3. B. Haider and M. Hassan, Quasideterminant solutions of an integrable chiral model in two dimensions, *J. Phys. A: Math. Theor.* 42 (2009) 355211.
4. B. Haider and M. Hassan, Quasideterminant multisoliton solutions of a supersymmetric chiral field model in two dimensions, *J. Phys. A: Math. Theor.* 43 (2010) 035204.
5. B. Haider, M. Hassan and U. Saleem, Binary Darboux transformation and quasideterminant solutions of the chiral field, *JNMP* 18 (2011) 299.
6. B. Haider and M. Hassan, Binary Darboux transformation for the supersymmetric principal chiral field model, *JNMP* 18 (2011) 557.
7. B. Haider and M. Hassan, Grammian quasi-determinant solutions of the generalized coupled dispersionless integrable system, *Symmetry, Integrability and Geometry: Methods and Applications* 8 (2012) 084
8. A. Mirza and B. Haider, The Rational Solution of supersymmetric KdV equation, *AIP conference proceeding* Vol. 1862 pg. 030008
9. Z. Amjad and B. Haider, *Darboux transformations of supersymmetric Heisenberg magnet model*, *J. Phys. Commun.* 2 (2018).
10. Z. Amjad and B. Haider, *Binary Darboux transformations of supersymmetric Heisenberg magnet model*, *Theor. and Math. Phys.* 199 (3): 784–797 (2019).
11. Z. Amjad and B. Haider, *Quasi-Grammian solutions of generalized Heisenberg magnet model*, *condn. Jour. Phys.* 93(3): 303-311 (2020).
12. Z. Amjad and B. Haider, *Binary Darboux transformation of time-discrete lattice Heisenberg magnet model*, *Chaos, Solitons & Fractals*, 130 (2020).
13. Z. Amjad and B. Haider, *Multisolitons of  $U(N)$  generalized Heisenberg magnet model and Yang Baxter relation* *Theor. and Math. Phys.* 205 1426-1438 (2020).
14. Z. Amjad and B. Haider, *Solitons and quasi-Grammians of generalized lattice Heisenberg magnet model*, *Communication. Theor. Phys.* 75 085004 (2023).
15. Z. Amjad and B. Haider, *Integrable discretization and multi-soliton solutions of negative order AKNS equation*, accepted for publication in *Qualitative Theory of Dynamical Systems* (2024) (email attached)

## Other written work

### MPhil dissertation:

Title: R-matrix formalism of integrable field theories.

### PhD dissertation:

Title: Aspects of algebraic methods in integrable field theories.

### Research Supervision:

M. Phil/ MS Theses Supervised:

Total Number: **Seventeen**

Sr. No.	Student's Name	Thesis Title	Year
1.	Rashida Parveen	R-matrix formalism of Generalized Heisenberg magnet model	2010
2.	Arifa Mirza	Hirota bilinear formalism and integrability	2011
3.	Aqeela Nazir	Application of Hirota bilinear method to nonlinear schrodinger equation	2011
4.	Hira Sarfraz	Darboux transformation for nonlinear sigma model	2012
5.	Bushra Parveen	Nonlinear sigmamodel and integrability	2012
6.	Shabana Iqbal	Multi-soliton solutions of integrable equations using Darboux transformation	2013
7.	Sumeeta Saeed	Integrability of Short Pulse equations	2014
8.	Iqra Sadiq	Quasideterminant solution of nonlinear Schrödinger equations	2014
9.	Fatima Rasheed	Generalized Heisenberg Magnet Model	2019
10	Ayesha	Coupled Dispersionless System	2019
11	Hassan Saleem	Review of Seiberg-Witten Duality	2019
12	Midhat Hareem	Discrete Hisenberg Magnet Model	2020
13	Muhammad Irshad	Spontaneous Symmetry Breaking	2020
14	Muhammad Fazal	Standard Model Lagrangian	2020
15	Midhat Hareem	Pair annihilation crossection	2022
16	Aqsa Shafique	W-Bosons pair annihilation	2022
17	Mehreen Kausar	Quaternion algebra and fields	2022
18	Mubeen Kausar	Currently working	2024
19	Rabia Khalid	Currently working	2024
20	Rabia Shabeer	Currently working	2024

**PhD: Zeeshan Amjad: PhD successfully completed 2022**

**Humaira Ashraf: Currently working**

## **Employment:**

- Assistant Professor (Adhoc), Department of Physics, University of the Punjab, Lahore (Oct 2021-to date).
- Assistant Professor (TTS), Department of Physics, University of the Punjab, Lahore (2010-2021).
- Lecturer, Department of Physics, University of the Punjab, Lahore (2008-2010).
- Teacher & Career Advisor, Beaconhouse School System, Lahore, 2001 – 2004.
- Taught Mathematical Methods of Physics, Msc.I, Department of Physics, University of the Punjab, Lahore, Pakistan (2004).
- Taught Quantum field theory, MPhil, Department of Physics, University of the Punjab, Lahore, Pakistan (2007).

## **Other Duties Performed:**

1. Member UMC, PU 2010-2016
2. Member BOS Physics 2008-2021
3. Member Board of Faculty of Science 2008-2012
4. Member QEC committee (departmental)

## **Focal Person for**

1. Departmental Scholarship Committee 2010-2022
2. Departmental Equivalence Committee 2010-to date
3. Departmental Coordinator Seminar/ 2018-to date (organized 40 seminars including VFFP)
4. Alumni Physics 2018-2022
5. Departmental External Linkages 2018-2022
6. Departmental Admission Committee 2018- to date
7. Departmental Cocurricular Committee 2018-2022
8. Departmental Coordinator Examination 2022-to date
9. Member Board of Faculty of Science 2024 to date