

MUHAMMAD ALI SHAHBAZ

Personal Information

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Awards

Ben & Beatrice Edwards Physics Scholarship (*University of Nevada, Reno*), 2024
First Position in English Essay Writing Competition (*District Faisalabad, Punjab*), 2008
Second Position in English Essay Writing Competition (*Division Faisalabad, Punjab*), 2009

Certificates

QBronze136 Using Qiskit (*QWorld & Womanium*), 2024
Introduction to Philosophy (*The University of Edinburgh*), 2013
Certificate in Office Management (*TEVTA Board, Govt. of Punjab*), 2007
Diploma in Home Appliances Repair (*PBTE, Govt. of Punjab*), 2007

Professional Experience

Lecturer in Physics, Govt. of the Punjab Pakistan (Aug. 2012 to August 2021)
Teaching Physics courses at High School and Undergraduate level. Instructing and demonstrating physics experiments and managing other proctorial duties.

Graduate Assistant, University of Nevada Reno, USA (Aug. 2021 to present)
Instructing and demonstrating physics experiments in Classical Mechanics, Thermodynamics, Electricity and Magnetism at Undergraduate level. Conducting research work in the lab along with my research group.

Skills

- MATLAB, Python, Wolfram Mathematica and Igor Pro for Data analysis, numerical techniques and mathematical modeling
- Experimental setup of laser optics and AMO physics for educational and research projects
- Functional knowledge of operating systems Linux and Windows
- Office management and presentation using Microsoft Office tools
- Document editing and slides making using Latex and MS word
- Teaching with lab demonstrations and classroom management including proctorial duties

Extra-Curricular Activities

- Council Representative for College of Science, Graduate Student Association (GSA) at University of Nevada Reno, USA.
- Leading and organizing cultural events as president of the Pakistan Students Organization (PSO) at University of Nevada Reno, USA.
- Member Justice, Equity, Diversity and Inclusivity (JEDI) committee of the Department of Physics at University of Nevada Reno, USA.
- Public science communication through writings in Urdu/English, translating science articles into Urdu and promoting scientific understanding.
- Voluntary teaching Physics courses through online resources
- Book Reading, Hiking, Bike Riding, Travelling, Social Organizations.

Conferences & Seminars

- **APS March Meeting 2024:** Talk on "Disorder broadening of Hofstadter spectrum" at March Meeting jointly organized by American Physical Society at Convention Center Minneapolis, on March 3-8, 2023.
- **Principles and Applications of Symmetry in Magnetism:** Attended a five-day school jointly organized by National Science Foundation (NSF) and Colorado State University Fort Collins, on July 10-14, 2023.
- **7th School on LHC Physics:** Attended a five-day school jointly organized by National Center for Physics (NCP), Islamabad and CERN, Geneva on August 06-17, 2018.
- **International Scientific School:** Attended a five-day school jointly organized by National Center for Physics (NCP), Islamabad and International Center for Theoretical Physics (ICTP), Italy on March 17-22, 2017.
- **International Physics Lab Immersion Program:** Attended and designed experiments at a six-day program on Physics lab demonstrations organized by Department of Physics, SSE, LUMS Lahore on 17-22 Dec 2016.
- **Conference on Gravitation and Cosmology:** Attended celebration of Prof. Asghar Qadir's Birthday organized by Dept. of Mathematics, Punjab University, Lahore on 26th Nov. 2016.
- **International Conference on Relativistic Astrophysics:** Talk on "Generalized Higgs Inflation" in celebration of Einstein's 100 years of General Relativity organized by Dept of Mathematics, Punjab University, Lahore on 10-15 Feb 2015.
- **7th International Meeting on Particles and Fields,** an international conference organized by Center for High Energy Physics (CHEP), Punjab University, Lahore on 1st to 4th April 2015.
- **6th Winter Meeting on Particles and Fields,** An international conference jointly organized by NCP Islamabad and ICTP Italy on 14-18 April 2014.

Academic Qualifications

UNIVERSITY OF NEVADA, RENO

Doctor of Philosophy (Ph.D.), 08/2021 to present.

- MAJOR: Physics
 - GPA: 3.9/4.0
 - RESEARCH AREA: Experimental Atomic, Molecular and Optical (AMO) Physics, Quantum sensing using experiments with single atoms in solid matrices.
 - Research Group Website: <https://www.weinsteinlab.org/>
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UNIVERSITY OF NEVADA, RENO

Masters in Science (M. S.), 08/2021 TO 05/2024

- MAJOR: Physics
 - CGPA: 3.9/4.0
 - NON-THESIS (Coursework Only)
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QUAID-I-AZAM UNIVERSITY, ISLAMABAD

Master of Philosophy (M. Phil), 09/2011 TO 10/2013

- MAJOR: Physics
- GRADE: B
- THESIS: Generalized Higgs Inflation

In this work, we reviewed the five different theoretical models of Higgs Inflation as possibly solving these problems. We also derived and numerically calculated the power spectrum for primordial density fluctuations and tensor perturbations in the framework of slow-roll inflation, out of which many models were ruled out in later data from Planck 2015.

QUAID-I-AZAM UNIVERSITY, ISLAMABAD

Master of Science (M. Sc.), 09/2009 TO 07/2011

- MAJOR: Physics
 - GRADE: B
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THE UNIVERSITY OF PUNJAB, Lahore

Bachelor of Science (B. Sc.), 09/2007 TO 07/2009

- MAJOR: Physics, Mathematics A & B
 - GRADE: 1st Division
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Research Interests

I am currently involved in single atom quantum sensing experiments with Professor Jonathan D. Weinstein's lab at University of Nevada Reno.