

CURRICULUM VITAE

Dr. Bashar S. Aljawrneh

Assistant Professor of Physics

Physics department/ Faculty of Science and Information

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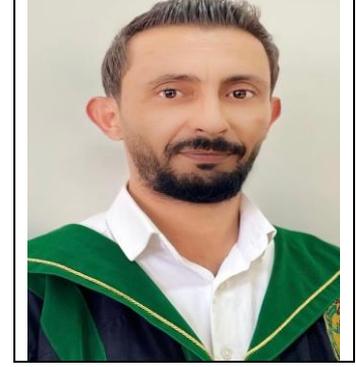
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<https://scholar.google.com/citations?user=6G0vCXQAAAAJ&hl=en>

1. Personal Data

Date of Birth: 17/04/1983

Nationality: Jordanian

2. Education

○ **Ph.D. in Nuclear Physics:**

An Interdisciplinary Ph.D. Program in Computational Science & Engineering

Specialty: Nuclear Physics (Computational and Experimental)

January 2014 - October 2018, North Carolina Agricultural & Technical State University, North Carolina State, USA.

○ **M.Sc. in Applied Physics:**

Project Topic: Synchrotron Radiation, advantage and disadvantage

September 2005 - May 2008, Jordan University of Science & Technology, Irbid, Jordan.

○ **B.Sc. in Applied Physics:**

September 2001 - May 2005 Jordan University of Science & Technology, Irbid, Jordan.



3. Ph.D. Dissertation

Thesis Title: “Precision Measurement of the Elastic Electron-Proton Cross Section at High Q^2 ”, North Carolina Agricultural & Technical State University, North Carolina State, USA.

4. Employment

Academic Positions

- o Assistant Professor, Physics Department, Al-Zaytoonah University of Jordan, Amman, Jordan, September 2021 – now.
- o Assistant Professor/Part time, Physics Department, Jordan University of Science & Technology, Irbid, Jordan, September 2019 – August 2021.
- o Assistant Professor/Part time, Department of Basic Sciences, Princess Sumaya University for Technology, Amman, Jordan, September 2019 – June 2020.
- o Visiting Assistant Professor, Department of Physics, North Carolina Agricultural & Technical State University, North Carolina State, USA, January 2019 - June 2019.
- o Research Assistant, Nuclear Non-Proliferation Group/ Department of Physics, North Carolina Agricultural & Technical State University, North Carolina State, USA, October 2018 - January 2019.
- o Research & Teaching Assistant, Department of Physics, North Carolina Agricultural & Technical State University, North Carolina State, USA, January 2014 - October 2018.
- o Research Assistant, Thomas Jefferson National Accelerator Facility, (JLab), Virginia State, USA, April 2016 - October 2018.
- o Part time lecturer, Department of Basic Sciences, Al-Huson University College, Irbid, Jordan, September 2010 - May 2011.
- o Part time lecturer Department of Physics, Yarmouk University, Irbid, Jordan, September 2008 - August 2009.
- o Physics and Mathematics Teacher, Ministry of Education, Irbid, Jordan, September 2005 - August 2010.



Administrative Positions

5. Research Interests

- **Experimental nuclear and particle physics to study the internal structure of the nucleon includes:**
 - Particle physics detectors.
 - Monte Carlo simulation for elastic electron-proton scattering.
 - Investigations of detector response to different kinds of radiation, data acquisition, data processing in order to optimize the experimental results.
 - Electric and magnetic form factors calculations.
- **Condensed Matter & Materials Physics:**
 - Properties of materials (Optical, Thermal, Magnetic).
 - Photo-catalytic (Synthesis and characterization of nanomaterial for photocatalytic degradation).
 - Energy Storage (Synthesis and characterization of nanomaterial for symmetric and a symmetric supercapacitor applications)
 - Density Functional Theory.

Computer and Computational Skills:

- **Programming Languages:** C++, FORTRAN and Python.
- **Software and Platforms:** root toolkit, MatLab, and Mathematica.
- **Operating Systems:** Windows XP, Windows 7, and Linux.
- **Simulations:** Monte Carlo Simulations *SIMC* and *SAMC*, and good knowledge *GEANT4* during my research at JLab.
- **Data Analysis:** Data Analysis using root toolkit, C++ and Mathematica.

6. Membership in Scientific Societies and Associations

Member; American Physics Society.
Member; The Jordanian Physical Society.

7. Honors and Awards

- Tuition Remission O/S GRD Award for Outstanding Performance as a Graduate Student for the Academic Year 2014 - 2016, North Carolina Agricultural and Technical State University.



8. Fellowships and Scholarships

- ERC Project (Engineering Research Center) for the Academic Year 2014 - 2018, North Carolina Agricultural and Technical State University, College of Engineering, Department of Computational Science & Engineering.
- Intermediate Energy Spin for the Academic Year 2014 - 2018, North Carolina Agricultural and Technical State University, College of Arts and Sciences, Department of Physics.

9. Teaching Experience

- *Graduate Courses*

List names of course

- *Undergraduate Courses*

- **Al-Zaytoonah University of Jordan:**

- General Physics – PHY-135 (physics for pharmacy major)

- **Jordan University of Science & Technology:**

- Introduction to Mathematical physics – PHY-200
- Thermodynamics – PHY-261
- Quantum Mechanics – PHY-351
- Nuclear Physics – PHY-449
- Physics for Biology and Pre-Medical Students – PHY-101A
- General Physics – PHY-101 (Mechanics)
- Medical Physics – PHY-104

- **Princess Sumaya University for Technology:**

- General Physics – PHY-102 (Electricity and Magnetism for IT major)
- General Physics – PHY-102 (Electricity and Magnetism for engineering major)
- General Physics – PHY-101 (Mechanics)

- **North Carolina Agricultural & Technical State University:**

- Introduction to Computation in Physics – PHY-345
- General Physics (Calculus-based physics) – PHY-241
- College Physics – PHY-225 (Mechanics)
- Physics Labs – PHY-235 & PHY-236 (Mechanics, Electricity and Magnetism)
- College Physics I (Mechanics) & II (Electricity and Magnetism)
- Physics – Lab 105 (Mechanics) & 106 (Electricity and Magnetism)



10. Supervision of Graduate Research

Master Thesis:

- **Advisor:**
- **Co- Advisor:**
 - 1- Mohamad Mahasneh; (On-going)
 - 2- Heba Haddad; (On-going)
 - 3- Batool Malkawi; (On-going)
- **External Examiner:**
 - 1- Lina Al-Odat; Jordan University of Science and Technology, 2021.
 - 2- Ibrahim Al-Khaldi; Jordan University of Science and Technology, 2022.

11. Grants

- Energy Storage Application Based on Nano-Composite Thin Film, JUST University, 2022 up to now.
- Physicochemical Properties of the As-Prepared Digitonin-Graphene-Iron Oxide Composite with Potential Antioxidant Activity, JUST University, 2022 up to now.
- Synthesis Nanostructures materials for x-ray dosimeter using extended gate field-effect transistor (EGFET) method, Al-Zaytoonah University of Jordan, 2021 up to now.
- Photocatalytic Degradation Activity of Methylene Blue, JUST University, 2021-2022

12. Patents

13. Membership of Committees

14. Professional and Scientific Meetings

Participation in Scientific meetings

- The Tenth Conference on Scientific Research in Jordan, **2021**, Amman University, Amman, Jordan. (Attendance)
- APS April Meeting, **2021**, Washington D.C, USA, 'Enhancing Introductory Physics Courses Using The SCALE-UP Active Learning Model'.
- APS April Meeting, **2018**, Columbus, Ohio, USA, 'High Resolution Spectrometer (HRS) Detector Efficiency in GMP Experiment (E12-07-108) at **JLab**'.
- APS April Meeting, **2018**, Columbus, Ohio, USA, 'Precision Measurement of the Proton Elastic Cross-Section at High Q_2 at **JLab**'.



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- APS April Meeting, **2016**, Salt Lake City, Utah, USA, ‘Gas Ring Cherenkov Detector for High Luminosity and High Background Rates Experiments at Hall-A Jefferson Lab.
- APS April Meeting, **2016**, Salt Lake City, Utah, USA, ‘Quartz Hodoscop for SuperHMS Spectrometer Trigger System at Hall-C Jefferson Lab’.

Workshops and Training:

- Applications in E-Learning System, **2020**, Al-Zaytoonah University of Jordan, Amman, Jordan.
- Fourier Transform Infrared Spectroscopy Training (FTIR), *The Regional Centre for Space Science and Technology Education for Western Asia/ United Nations*, **2020**, Amman, Jordan.
- Hall-A & C Summer Collaboration Meeting Workshop, *Thomas Jefferson National Accelerator Facility*, **2017**, Newport News, Virginia, USA.
- Data Analysis using root toolkit and C++ Workshop, *North Carolina Agricultural and Technical State University*, **2016**, Greensboro, NC, USA.
- GEANT4 Workshop, *North Carolina Agricultural and Technical State University*, **2016**, Greensboro, NC, USA.
- Radiation Worker I, *Thomas Jefferson National Accelerator Facility (JLab)*, **2016**, Newport News, Virginia, USA.
- Radiation Worker II, *Thomas Jefferson National Accelerator Facility (JLab)*, **2015**, Newport News, Virginia, USA.
- 30st Annual Hampton University Graduate Summer Program Workshop, *Thomas Jefferson National Accelerator Facility (JLab)*, **2015**, Newport News, Virginia, USA.

15. Participation in or organization of curricular and/or extra-curricular activities

16. Publications

- **B. Aljawrneh**, *et al.* "Cellulose acetate membranes treated with titanium dioxide and cerium dioxide nanoparticles and their nanocomposites for enhanced photocatalytic degradation activity of methylene blue". *Journal of Materials Science: Materials in Electronics*, **33**,–11433 (2022).
- D. Abrams, H. Albataineh,....., **B. Aljawrneh**, *et al.* "Measurement of the Nucleon F_2^n / F_2^p Structure Function Ratio by the Jefferson Lab MARATHON Tritium/Helium-3 Deep Inelastic Scattering Experiment". *Phys. Rev. Lett.* **128**, 132003 – Published 31 March 2022.
- M. E. Christy, T. Gautam, Lihua Ou,..... **B. Aljawrneh**, *et al.* "Form Factors and Two-Photon Exchange in High-Energy Elastic Electron-Proton Scattering". *Phys. Rev. Lett.* **128**, 102002 – Published 11 March 2022.



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- D. Bhetuwal, J. Matter, H. Szumila-Vance,, **B. Aljawrneh**, *et al.* "Ruling out color transparency in quasi-elastic $^{12}\text{C}(e,e'p)$ up to Q_2 of 14.2 (GeV/c) 2 ". *Phys. Rev. Lett.* **126**, 082301 –23 February 2021.
- L. Gu, D. Abrams, A. M. Ankowski,, **B. Aljawrneh**, *et al.* "Measurement of the $Ar(e, e p)$ and $Ti(e, e p)$ cross sections in Jefferson Lab Hall A". *Phys. Rev. C* **103**, 034604 – 3 March 2021.
- Carlos Yero, D Abrams,, **B. Aljawrneh**, *et al.* "Probing the Deuteron at Very Large Internal Momenta". *Physical Review Letters.* **125**, 29 December 2020.
- M. Murphy, H. Dai, L. Gu,, **B. Aljawrneh**, *et al.* "Measurement of the cross sections for inclusive electron scattering in the E12-14-012 experiment at Jefferson Lab". *Physical Review C* **100** (2019) no.5, 054606.
- W. Xiong , A. Gasparian , H. Gao ,, **B. Aljawrneh**, *et al.* "A small proton charge radius from electron-proton scattering experiment". *Nature* **2019**, 75(7781):147-150.
- H. Dai, M. Murphy, V. Pandey,, **B. Aljawrneh**, *et al.* "First Measurement of the $Ar(e,e)X$ Cross Section at Jefferson Lab". *Physical Review C* **2019**, 99, 054608.
- H. Dai, M. Murphy, V. Pandey,, **B. Aljawrneh**, *et al.* "First Measurement of the $Ti(e,e)X$ Cross Section at Jefferson Lab". *Physical Review C* **2018**, 98, 014617.
- **B. Aljawrneh**, *et al.* "High Resolution Spectrometer (HRS) Detector Efficiency in GMP Experiment (E12-07-108) at **JLab**", *APS April Meeting, 2018*, Columbus, Ohio, USA. [BAPS.2018.APR.T01.5](#).
- T. Gautam, *et al.* "Precision Measurement of the Proton Elastic Cross-Section at High Q_2 at **JLab**", *APS April Meeting 2018*, Columbus, Ohio, USA. [APS..APRB12005G](#).
- **B. Aljawrneh**, *et al.* "Gas Ring Cherenkov Detector for High Luminosity and High Background Rates Experiments at Hall-A Jefferson Lab", *APS April Meeting, 2016*, Salt Lake City, Utah, USA. [BAPS.2016.APR.K10.4](#).
- N. Alharbi, *et al.* "Quartz Hodoscop for SuperHMS Spectrometer Trigger System at Hall- C Jefferson Lab", *APS April Meeting, 2016*, Salt Lake City, Utah, USA. [BAPS.2016.APR.K10.3](#).

Submitted:

- Measurement of the Nucleon F_2n/F_2p Structure Function Ratio by the Jefferson Lab.
- Form factors and two-photon exchange in high-energy elastic electron-proton scattering
- Deep exclusive electroproduction of π_0 at high Q_2 in the quark valence regime.

Under preparation:

- Photocatalytic Degradation of Methylene Blue/Red Using Membranes of Cerium Oxide nanoparticles, Titanium Oxide nanoparticles, and their nanocomposites.



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- Two-Photon Exchange in Electron-Proton Elastic Scattering at Large Momentum Transfer.
- Novel Techniques for High-Resolution Spectrometer Detector Package Efficiencies.
- Precision Measurement of the Elastic Electron-Proton Cross Section at High Q^2 .