Dr. Amani Kraishan

Department of Physics, College of Science

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Professional Summary

Experienced and recently promoted **Associate Professor** with over a decade of teaching and research in nuclear and radiation physics. Known for combining strong academic rigor with a passion for student mentorship and scientific exploration. I've contributed to high-impact research, published extensively, and received recognition from leading institutions including Temple University, Battelle Memorial Institute, and Stony Brook University. My work bridges experimental design, data analysis, and innovative detector technologies, always with a focus on advancing knowledge and empowering future scientists.

Academic Qualifications

- **Ph.D. in Physics**
  Temple University, College of Science and Technology, Philadelphia, PA, USA – 2018
  Dissertation: *Measurement of Longitudinal Single-Spin Asymmetry for W± Boson Production in Polarized Proton-Proton Collisions at STAR at Forward Rapidity*
- **M.Sc. in Physics**
  University of Delaware, College of Arts and Sciences, Newark, DE, USA – 2012
  Thesis: *The Role of Cooper Pairing in Atomic Nuclei*
- **B.Sc. in Physics**
  Al-Hussein Bin Talal University, College of Science, Ma'an, Jordan – 2006

Specialty

- **General Area:** Physics
- **Focused Expertise:** Nuclear and Radiation Physics

Career History

Associate Professor

Department of Physics, College of Science, Al-Hussein Bin Talal University, Ma'an, Jordan
April 2025 – Present
Promoted in recognition of continued excellence in research, teaching, and service. I lead advanced research projects in nuclear and radiation physics, teach upper-level undergraduate courses, mentor student researchers, and contribute to strategic planning and curriculum development within the department.

Assistant Professor

Department of Physics, College of Science, Al-Hussein Bin Talal University, Ma'an, Jordan
September 2018 – April 2025
Led a variety of courses and student research initiatives, while actively publishing in peer-reviewed journals. My work focused on radiation effects, detector development, and interdisciplinary applications of nuclear physics. I also built collaborative ties with both national and international research institutions.

Research Assistant

Department of Physics, Temple University, Philadelphia, PA
June 2015 – June 2018
Contributed to cutting-edge nuclear physics research, particularly within the STAR collaboration. I played a central role in developing experimental techniques and publishing results in high-impact journals.

Teaching Assistant

Department of Physics, Temple University, Philadelphia, PA
August 2013 – May 2015
Supported both undergraduate and graduate-level instruction in physics. This role included leading lab sessions, assisting with course delivery, and guiding students in problem-solving and critical thinking.

Research and Teaching Assistant

Department of Physics, College of Science, Al-Hussein Bin Talal University, Ma'an, Jordan
June 2006 – June 2009
My early academic role involved managing lab sessions, tutoring students, and grading coursework. It was here that I discovered my deep interest in physics education and mentoring.

Online Teaching Experience

Since the onset of the COVID-19 pandemic in 2020, I have successfully adapted my teaching to online environments using tools such as Microsoft Teams, Zoom, and the university's learning platform (e*learning.ahu.edu.jo*). Even after the return to in-person learning, I continue to teach at least one course online each semester to maintain flexibility and accessibility for students.

Highlights of my online teaching approach include:

- Delivering interactive virtual lectures and live Q&A sessions via Microsoft Teams and Zoom
- Using Microsoft OneNote and SharePoint to encourage collaboration and streamline course content sharing
- Designing and grading assessments through Microsoft Forms and the university's platform for quizzes, assignments, and exams
- Integrating Microsoft 365 tools to enhance digital instruction and uphold academic integrity
- Offering training and support to students and colleagues to boost digital literacy and comfort with online tools
- Continuously updating and refining course materials to optimize the online learning experience

This ongoing experience has deepened my ability to provide engaging, high-quality education in both remote and hybrid settings, while staying current with evolving technologies and student needs.

Honors, Scholarships, Awards, and Grants

- **2018** – Recognition Award, *Battelle Memorial Institute and Stony Brook University*, USA
Awarded for outstanding research contributions and collaboration during Ph.D. studies.

- **2016** – Outstanding Teaching Assistant Award in Physics, *Temple University*, USA
Recognized for excellence in undergraduate instruction and student support.

- **2009–2014** – Graduate Fellowship for M.Sc. and Ph.D. Research, *Al-Hussein Bin Talal University*, Jordan
Competitive funding to support graduate studies and research abroad.

- **2006** – Highest Honor B.Sc. Student Award, *Al-Hussein Bin Talal University*, Jordan
Graduated top of class with highest academic distinction.

- **2003–2006** – Undergraduate Fellowship, *Al-Hussein Bin Talal University*, Jordan
Full academic scholarship awarded based on academic excellence.

Research Interests

- **Nuclear Physics** – Exploring the structure and interactions of atomic nuclei to better understand fundamental forces and matter behavior.

- **Radiation Physics** – Investigating the effects of radiation on various materials and biological systems, with applications in medicine, industry, and safety.

- **Hadron Structure** – Studying the internal dynamics of hadrons, including quark-gluon interactions and confinement phenomena.

- **Detector Development** – Designing and optimizing detectors for high-energy physics experiments, focusing on precision, efficiency, and innovation in measurement technologies.

Publications

I have contributed to over **80 peer-reviewed publications** with **more than 9,000 citations**, primarily through my work with the **STAR Collaboration** and my own research in nuclear and radiation physics. Below is a selection of recent and representative publications:

- **Kraishan, Amani**, Ahmad M. Refaat, Jenan A. Almhaini, Alaa Saeed Bazuhair, Saeed M. Al-Qahtani, Marwan A. Althomali, Hatem Al-Ameryeen, Ali H. Alomari, and Abdul-Wali Ajlouni. "Resilient STR loci under gamma radiation: A preliminary study on DNA stability in buccal swabs." Applied Radiation and Isotopes (2025): 111762.
- Agyare, Benjamin, Joseph Asare, **Amani Kraishan**, Isaac Nkrumah, and Daniel Kwasi Adjekum. "A Cross-National Assessment of Artificial Intelligence (AI) Chatbot User Perceptions in Collegiate Physics Education." Computers and Education: Artificial Intelligence (2025): 100365.
- Saleh, Batool A. Abu, **Amani Kraishan**, Ziad M. Elimat, Islam Abu Karaki, Ruba I. Alzubi, and Hassan K. Juwhari. "Effect of gamma radiation on the optical properties of PMMA composites with varying Al concentrations." Radiation Physics and Chemistry 226 (2025): 112342.
- Ajlouni, Abdul-Wali, Ahmad M. Refaat, Jenan A. Almhaini, Alaa Saeed Bazuhair, Saeed M. Al-Qahtani, Marwan A. Althomali, **Amani Kraishan**, Hatem Al ameryeen, and Ali H. Alomari. "Impact of gamma rays on DNA quality and genetic traits in human blood samples." Radiation Effects and Defects in Solids (2024): 1-11.
- Baloch, Muzahir Ali, Hannan Younis, Mohammad Abu Shayeb, Khan Alam, Hina Younis, Khadeeja Azmat, and **Amani Kraishan**. "Concentration level of radionuclides in road dust in the urban atmosphere of two cities of Pakistan." Annals of Nuclear Energy 206 (2024): 110654.

- **Kraishan, Amani**, Mohammad Abu Shayeb, Hafedh Belmabrouk, Ahmad Ali Husein Qwasmeh, and Muzahir Ali Baloch. "Assessment of natural radioactivity in soil and olive mill pomace utilizing nal (TI) gamma-ray spectrometry and low background alpha/beta counting system." Nuclear Engineering and Technology 56, no. 5 (2024): 1925-1931.
- **Kraishan, A. F**., Mohammad Abu Shayeb, Hafedh Belmabrouk, and Bahaa Hamad. "Transfer factors for natural radioactivity into olive mill pomace." Applied Radiation and Isotopes 204 (2024): 111136.
- Al-Badawi, Ahmad, and **Amani Kraishan**. "Dirac perturbations of Hayward black hole with quintessence: Quasinormal modes and greybody factor." Chinese Journal of Physics 87 (2024): 59-69.
- Al-Badawi, Ahmad, and **Amani Kraishan**. "Fermionic greybody factors and quasinormal modes of black holes in Kalb–Ramond gravity." Annals of Physics 458 (2023): 169467.
- Adam, Jaroslav, Leszek Adamczyk, J. R. Adams, J. K. Adkins, Geydar Agakishiev, M. M. Aggarwal, Zubayer Ahammed et al. "Measurement of the longitudinal spin asymmetries for weak boson production in proton-proton collisions at s= 510 GeV." Physical review D 99, no. 5 (2019): 051102. **(STAR Collaboration)**

Conferences And Proceedings

- "Measurement of Longitudinal Single-Spin Asymmetry for W Boson Production in Polarized Proton-Proton Collisions at STAR," Poster, RHIC/AGS Users Meeting, Brookhaven National Lab, NY, June 2018.
- "Measurement of the Longitudinal Single-Spin Asymmetry for W Boson Production in Polarized Proton-Proton Collisions at STAR," APS Division of Nuclear Physics Fall Meeting, Pittsburgh, PA, October 2017.
- "Probing Helicity and Unpolarized Quark/Anti-quark Distribution Function Using W Boson Production at RHIC," RHIC/AGS Users Meeting, Brookhaven National Lab, NY, June 2017.
- "Measurement of Longitudinal Single-Spin Asymmetry for W Boson Production at Forward Pseudocapacitive in Polarized Proton-Proton Collisions at STAR," Poster, RHIC/AGS Users Meeting, Brookhaven National Lab, NY, June 2017.
- "Measurement of Longitudinal Single-Spin Asymmetry for W Boson Production at STAR at Forward Rapidity," APS April Meeting, Washington, DC, January 2017.
- "The Forward GEM Tracker (FGT) of STAR at RHIC," Poster, RHIC/AGS Users Meeting, Brookhaven National Lab, NY, June 2016.
- "Test of Commercially Manufactured Large Single Mask GEM Foils," APS Division of Nuclear Physics Fall Meeting, Santa Fe, NM, October 2015.

Licenses & Certifications

- **Communicating with Confidence** – *LinkedIn Learning, August 2024*
  Skill: Self-confidence
- **Building Resilience** – *LinkedIn Learning, July 2024*
  Skill: Resiliency
- **Communicating with Emotional Intelligence** – *LinkedIn Learning, July 2024*
  Skills: Emotional Intelligence, Interpersonal Communication
- **Communication Foundations** – *LinkedIn Learning, July 2024*
  Skill: Communication
- **Effective Listening** – *LinkedIn Learning, July 2024*
  Skill: Active Listening
- **How to Use LinkedIn Learning** – *LinkedIn Learning, July 2024*
  Skill: Learning Management
- **Learning Microsoft 365 Copilot** – *LinkedIn Learning, July 2024*
  Skills: AI for Business, Microsoft 365, Copilot Tools
- **Prioritizing Your Tasks** – *LinkedIn Learning, July 2024*
  Skills: Task Management, Productivity
- **Productive Leadership** – *LinkedIn Learning, July 2024*
  Skill: Leadership Development
- **Speaking Confidently and Effectively** – *LinkedIn Learning, July 2024*
  Skills: Public Speaking, Presentation Skills
- **Writing Articles** – *LinkedIn Learning, July 2024*
  Skill: Academic and Professional Writing
- **RCR for Physical Sciences** – *CITI Program, September 2023*
  Credential ID: 58648413 – Valid through September 2025
- **Social and Behavioral Research – Basic/Refresher** – *CITI Program, September 2023*
  Credential ID: 58648791 – Valid through September 2026

Professional Service

- **Peer Reviewer** *(2023 – Present)*
  Serve as a peer reviewer for several international scientific journals in the fields of nuclear and radiation physics. My responsibilities include evaluating manuscripts, offering detailed and constructive feedback, and helping uphold the quality and integrity of academic publishing.
- **Outreach and Public Engagement**
  Actively involved in promoting physics education beyond the university setting. I've delivered guest lectures at local schools to inspire interest in science among younger students and have helped organize public physics events and hands-on demonstrations to engage the wider community and spark curiosity about the physical world.

Professional Memberships

- American Physical Society (APS), Member

Teaching Experience

I have taught a wide range of undergraduate physics courses and labs, combining theoretical foundations with hands-on experimentation. My teaching emphasizes clarity, engagement, and real-world application, tailored to students across different learning levels.

Al-Hussein Bin Talal University

- General Physics I & II
- General Physics Lab I & II
- Mathematical Physics I & II
- Classical Physics I & II
- Vibration and Waves
- Thermodynamics
- Optics I & II
- Intermediate Laboratory
- Introduction to Astrophysics
- Elementary Particle Physics

Temple University

- Introduction to General Physics I Lab
- Introduction to General Physics II Lab
- Elementary Classical Physics II Lab

Skills

Languages

- Arabic: Native
- English: Excellent

Technical Skills

- Programming: C/C++, Bash Scripts
- Scientific Software: ROOT, Mathematica
- Operating Systems: Linux
- Document Preparation: LaTeX
- Computer Literacy: ICDL Certification

Soft Skills

- Communication: Excellent written and verbal communication skills
- Teamwork: Proven ability to work effectively in collaborative environments
- Problem-Solving: Strong analytical and problem-solving abilities
- Time Management: Skilled in managing multiple projects and meeting deadlines
- Attention to Detail: Meticulous in research and data analysis

Relevant Competencies

- **Clean Room Experience**
  Conducted high-sensitivity experiments in controlled clean room environments, maintaining strict adherence to safety and contamination protocols to ensure accurate and reliable results.
- **Precision Measurement**
  Skilled in measuring current leakage in GEM foils and experienced in using specialized instrumentation for detailed and accurate data collection in experimental physics settings.