Hussein F. Al-Taani, Ph.D.

Associate Professor of Physics

Email: hussein.taani@gju.edu.jo

ADDRESS

Basic Sciences
School of Basic Sciences and Humanities
German Jordanian University
P.O. Box 35247, Amman 11180, Jordan

EDUCATION

- **2010: Ph.D.** in Physics, New Mexico State University (NMSU), Las Cruces, NM, USA.
- **2005: MSc.** in Physics, Jordan University of Science and Technology (JUST), Irbid, Jordan.
- **2002: BSc.** in Applied Physics, Jordan University of Science and Technology (JUST), Irbid, Jordan.

EMPLOYMENT AND EXPERIENCE HISTORY:

April 2018 – Present Associate Professor, German Jordanian University.

July 2019 – July 2020: Vice Dean, School of Basic Sciences and Humanities, German Jordanian University.

February, 2011 – April 2018: Assistant Professor, German Jordanian University.

October, 2013 – February, 2015: Dean Assistant, German Jordanian University, School of Natural Resources Engineering and Management.

July, 2015 – August, 2015: Visitor Researcher, Leibniz-Institut für Analytische Wissenschaften (ISAS), Dortmund, Germany.

May, 2009 – December, 2010: Graduate Research Assistant funded by NMSU at Brookhaven National Lab (BNL), NY, USA.

April, 2008 – April, 2009: Graduate Research Assistant funded by NMSU at Los Alamos National Laboratory, NM, USA.

Jan. 2006 – April 2008: Graduate Teaching Assistant, Physics department, New Mexico State University.
Jan. 2005 – Jan. 2006: Laboratory Instructor, Physics Department, Jordan University of Science and Technology.

Jan. 2003 – Dec. 2004: Graduate Teaching and Research Assistant, Physics Department, Jordan University of Science and Technology.

ONGOING RESEARCH AND FUNDED PROJECTS:

My research interest mainly focusing on physics related to renewable energy, environment, material science, and education. Below is the current ongoing research and projects:

- Project Title "**Electrical Characterization of Photovoltaic Materials**" funded through German Jordanian University. Role: PI
  Objectives:
  - Determination and characterizing the electrical and optical properties of material used in PV cells.

- Project Title "**Excellence in Nanoscience Education for the MENA Region (XNEM)**" funded by EU-TEMPUS. Role: Co-researcher.
  Objectives:
  - Development of a regional Master of Science (M.Sc) in Nanoscale Science and Engineering for Arabic postgraduate students.

- Project Title **"Biogas Production in Local Communities in Jordan"** Funded by EU. Role: Co-researcher.
  Objectives:
  - To promote the production of biogas energy from organic waste in Jordan.
  - To develop a hybrid biogas plant design (industrial scale) for agricultural and food waste in local communities.

- Ongoing research project "**Efficiency and design of PV Systems in the Jordan Valley**"
  Objectives:
  - development and evaluation of methods to increase the efficiency of PV arrays
  - definition of an optimized sizing procedure for PV arrays in the Jordan valley
  - Predict the effects of environmental and local weather conditions on the performance of the PV system

- **Other research activities:**
  - Developing experimental techniques to improve the student understanding of some physical concepts in magnetism and renewable energy.
  - Application of boron doped diamond (BDD) in waste water treatment.
  - ab-initio calculation in high pressure phase transition.

COURSES TAUGHT

- Introduction to Radiation Physics (for undergraduate water and environment engineering).
- Applied Mathematics for Engineering.
- General Physics I (Mechanics).
- General Physics II (Electricity and Magnetism).
- Physics for Architects (Basic of mechanics, electrostatics and electricity, light, geometric optics, sound; heat transfer; climatology; gases and vapor).
- General Physics Laboratory I (Mechanics, Electricity and Magnetism).
- Radioactive Waste Management and Radiation Control (for undergraduate water and environment engineering).

PUBLICATIONS AND CONFERENCE PAPERS:

- R Ramirez-Vazquez, S Arabasi, **H Al-Taani**, S Sbeih, J Gonzalez-Rubio, et al. "Georeferencing of Personal Exposure to Radiofrequency Electromagnetic Fields from Wi-Fi in a University Area" International Journal of Environmental Research and Public Health 17 (6), 1898, 2020.

- **H. Al-Taani**, "A CONCEPTUAL EXERCISE TO ENHANCE STUDENT UNDERSTANDING IN PHYSICS: A CASE STUDY IN INTRODUCTORY PHYSICS", *EDULEARN19 Proceedings*, pp. 9993-9996. 2019.

- **H. Al-Taani**, "USING ALGODOO© SOFTWARE IN PHYSICS EDUCATION: STATIC FRICTION AS AN EXAMPLE" *INTED2019 Proceedings*, pp. 6569-6574. 2019.

- Y Al-Khatatbeh, K Tarawneh, **H Al-Taani**, KKM Lee. "Theoretical and Experimental Evidence for a Post-Cotunnite Phase Transition in Hafnia at High Pressures" Journal of Superhard Materials 40 (6), 374-383, 2019.

- **Al-Taani, Hussein**, and Sameer Arabasi. "Solar Irradiance Measurements Using Smart Devices: A Cost-Effective Technique for Estimation of Solar Irradiance for Sustainable Energy Systems." *Sustainability* 10, no. 2 (2018): 508.

- **Al-Taani, H. F.**, I. Y. Jum'h, M. S. El-Sadek, and V. V. Dremov. "Super sharp-metal tips for combined scanning tunneling and force microscopy based on piezoelectric quartz tuning fork force sensors." *Digest Journal of Nanomaterials & Biostructures (DJNB)* 12, no. 1 (2017).

- **Al-Taani, Hussein**, Mohammad Al-Addous, Zakariya Dalalah, Aiman Albatayneh, and Nabil Ayoub. "A Simplified Model for the Estimation of Solar Cell Efficiency Based on the Air Mass Effect." *Proceeding of IEREK's International Conference Alternative and Renewable Energy Quest (AREQ)*, 27 - 29 November 2017 Thessaloniki, Greece.

- **H. Al-Taani**, K. Tarawneh, Y. Al-Khatatbeh, B. Hamad." The high-pressure stability of Ni_2In-type structure of ZrO_2 with respect to OII and Fe_2P-type phases: A first-principles study." *IOP Conf. Ser.: Mater. Sci. Eng.* 305, 012016, 2018
(For the *The 2nd International Conference on Advanced Materials (ICAM-2017)*, 10 – 13 July 2017, Irbid Jordan).

- Al-Addous, Mohammad, Zakariya Dalala, Christina B. Class, Firas Alawneh, and **Hussein Al-Taani**. "Performance analysis of off-grid PV systems in the Jordan Valley." *Renewable Energy* 113 (2017): 930-941.

- Mohammad Al-Addous, **Hussein Al-Taani**, Zakariya Dalalah, Firas Alawneh, Aiman Albatayneh. "Wind Resources Assessment for a Proposed Wind Farm" Proceeding of IEREK's International Conference Alternative and Renewable Energy Quest (AREQ), 27 - 29 November 2017 Thessaloniki, Greece.

- Mohammad Al-Addous, Firas Alawneh, Zakariya Dalalah, Christina B Class, **Hussein Al-Taani**. "Design and Implementation of Water Desalination System (RO) Using Renewable Energy Source" Proceeding of IEREK's International Conference Alternative and Renewable Energy Quest (AREQ), 27 - 29 November 2017 Thessaloniki, Greece.

- Arabasi, Sameer, and **Hussein Al-Taani**. "Measuring the Earth's magnetic field dip angle using a smartphone-aided setup: a simple experiment for introductory physics laboratories." *European Journal of Physics* 38, no. 2 (2017): 025201.

- Jum'h, I., MS Abd El-Sadek, **H. Al-Taani**, I. S. Yahia, and G. Karczewski. "Influence of Illumination on the Electrical Properties of p-(ZnMgTe/ZnTe: N)/CdTe/n-(CdTe: I)/GaAs Heterojunction Grown by Molecular Beam Epitaxy (MBE)." *Journal of Electronic Materials* 46, no. 2 (2017): 1061-1066.

- Jum'h, Inshad, Arwa Abdelhay, **Hussein Al-Taani**, Ahmad Telfah, Mohammad Alnaief, and Stefan Rosiwal. "Fabrication and application of boron doped diamond BDD electrode in olive mill wastewater treatment in Jordan." *Journal of Water Reuse and Desalination* 7, no. 4 (2017): 502-510.

- JUM'Ha, I., M. Al-Addous, **H. Al-Taani**, M. S. A. B. D. El-SADEK, and N. Ayoub. "Effect of boron concentration on nano-crystalline diamond deposited on niobium substrates." *Digest Journal of Nanomaterials and Biostructures* 12, no. 2 (2017): 589-593.

- Jum'h, I., A. Telfah, J. Lambert, M. Gogiashvili, **H. Al-Taani**, and R. Hergenröder. "^{13}C and ^{1}H NMR measurements to investigate the kinetics and the mechanism of acetic acid (CH3CO2H) ionization as a model for organic acid dissociation dynamics for polymeric membrane water filtration." *Journal of Molecular Liquids* 227 (2017): 106-113.

- DeAntonio, Michael, Luis Martin Sandoval, James Dewald, **Hussein Faleh Al-Ta'Ani**, and Jamal Talla. "Work in progress-The use of team-based learning in an experimental physics lab." In *Frontiers In Education Conference-Global Engineering: Knowledge Without*

Borders, Opportunities Without Passports, 2007. FIE'07. 37th Annual, pp. S1A-13. IEEE, 2007.

- Alsaad, A., A. Ahmad, **H. Alta'ani**, and R. Alshyab. "A first-principles-derived method for computing the piezoelectric coefficients of complex semiconductor Sc1− xGaxN alloys." *Physica B: Condensed Matter* 403, no. 23-24 (2008): 4174-4181.

COMMUNITY SERVICE:

- Member of students' disciplinary council from Sept. 2021 to Now.
- Member of Research council from Sept. 2021 to Sept. 2022.
- Member of Organization Committee of International conference. "1st International Conference on Current Nanotechnology and its Applications (**ICCNA-2018**)" April 10-12/2018, Irbid, Jordan.
- Contributed to consultation for **FAO** organization through German Jordanian University-Biogas Lab (10/02/2017 – 20/04/2017).
- Participated in the World's Leading Trade Fair for Water, Sewage, Waste and Raw Materials Management (**IFAT 2015**) through Biogas project-GJU, Munich, Germany.
- Reviewer Member for the conference proceeding of "The 2nd International Conference on Advanced Materials (**ICAM-2017**)", July 10-13/2017, Irbid, Jordan.
- Organizer member of international workshop. "Winter Workshop 2015 on Heavy Metal Removal and Water Treatment within the collaboration project between German Jordanian University (GJU) and Leibniz Institute for Analytical Sciences (ISAS-Dortmund, Germany) on Sunday 18th of October, 2015."

ACHIEVEMENTS AND AWARDS

- **Erasmus+** visit to University of Leipzig (Leipzig, Germany) in summer 2022.
- **Excellence in Teaching Award 2019,** German Jordanian University, 2019
- **GJU Train-the-Trainer Program 2015,** The Hochschule Magdeburg-Stendal and the German Academic Exchange Service (DAAD), 2015.
- **Excellence in Teaching Award 2014,** German Jordanian University, 2014
- **Outstanding Graduate Student Award,** New Mexico State University, 2010.
- **Graduate student scholarship,** New Mexico State University, 2006.

PROFESSIONAL ASSOCIATIONS MEMBERSHIP:

- **Jordan Society for Renewable energy.**
- **The Jordanian Physics Society**