

## 1. Personal Details

**Name:** Mahmoud Ismail Jaghoub.

**Date of Birth:** 2/4/68

**Nationality:** Jordanian.

**Marital Status:** Married.

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[Published Research - All items \(ju.edu.jo\)](#)

## 2. Languages

Language	Speaking	Writing	Conversation
Arabic (My native Language)	Excellent	Excellent	Excellent
English (All my post-secondary education was done in England.)	Excellent	Excellent	Excellent

### 3. Academic Qualifications

Year	Degree	Specialization	Institution
1992-95	PhD	<p><b>Theoretical Nuclear Physics</b> Title of thesis: “Final state interaction effects in near-threshold <math>\omega</math> production”.</p> <p><b>Scholarship given jointly by:</b> the Overseas Research Council (ORS), British Council and the University of London.</p>	<p><b>University of London</b> (University College) (United Kingdom)</p>
1989-92	B.Sc.	<p><b>Physics</b> Graduated with <b>First Class Honors.</b></p>	<p><b>University of London</b> (University College) (United Kingdom)</p>
1987-89	A-Levels	<p><b>Mathematics (Grade A), Chemistry (Grade A) and Biology (Grade B).</b></p>	<p><b>Filton Technical College</b> (Bristol, United Kingdom)</p>
1986-87	A-Levels	<p><b>Physics (Grade B).</b> This course was done over one year instead of the usual two years period. <b>Plus</b> “English as a Foreign Language” Course.</p>	<p><b>Central London College</b> (United Kingdom)</p>

#### 4. Academic Experience

Rank	University	Duration	Country
Professor	University of Jordan	Since 23/7/2012	Jordan
Associate Professor	University of Jordan	27 / 9 /2009 – 22/7/2012	Jordan
Associate Professor	Hashemite University	1/9/08 – 5/9/2009	Jordan
Associate Professor	Sohar College for Applied Sciences.	29/8/04 - 31/8/08	Oman
Associate Professor	Hashemite University	1/9/2003 – 28/8/04	Jordan
Assistant professor	Hashemite University	7/9/1996 – 31/8/2003	Jordan
Teaching assistant	University of London (University College)	1992 -1995	England

#### 5. Work Experience

Position	University	Duration	Country
Vice Dean of Scientific Research	University of Jordan	23/9/2019 – 14/9/2021	Jordan
Vice Dean: Faculty of Science	University of Jordan	8/9/2013 – 7/9/2014	Jordan
Chairman of the Department of Physics	University of Jordan	6/12/2009 – 7/9/2013	Jordan

## 6. Supervising PhD Students

### A. Single Supervisor

1. Amer Al-Bellah, “Comparing the effects of nonlocal sources for neutron elastic scattering off light, intermediate and heavy nuclei”, June 2020 – June 2022.
2. Sajedah Al-Amir, “Velocity – dependent potentials for breakup reactions”, Feb/2020 – 29/5/2022.
3. Mohammed Utoom, “Deuteron elastic scattering using the nonlocal Perey-Buck potential ”, Feb/2020 – June/2022.
4. Ahmad Sawalha, “Investigation of the asymmetry term for neutron-nucleus elastic scattering using a nonlocal optical potential”, Defended his thesis on 17/May/2021.
5. Tqwa Aqel, “Nonlocal optical potential for light nuclei”, Defended his thesis in July 2019.
6. Shayma Masadeh, “Effect of a semi-microscopic optical potential on the variations of the optical potential parameters with incident energy”, Defended his thesis in July 2019.
7. Sokainah Al-Rawashdeh “Deforming the spherical optical potential to fit the neutron scattering angular distributions from the statically deformed actinides nuclei”.  
Defended his thesis in May / 2018.
8. Waleed Al-Rayashi  
Project Title “Effect of coupled channels on the energy dependence of the optical potential parameters”.  
Defended his thesis in December / 2015.
9. Loay Megdady  
Project Title: “Proton - nucleus scattering using more realistic coulomb potentials”.  
Defended his thesis in December / 2015.
10. Mohamed Amro,  
Project Title: “Neutron scattering from light nuclei in the frame work of a velocity - dependent potential”.  
Defended his thesis in July / 2016.
11. Ibrahim Ghabar  
Project Title: “Investigation of nonlocalities in the nucleon-nucleus elastic scattering process”.  
Defended his thesis in July / 2014.

12. Rami Zureikat  
Project Title: “Nonlocalities in the proton – nucleus elastic scattering process”.  
Defended his thesis in May / 2013.
13. Mohamed Fathi  
Project title: “Neutron – nucleus scattering using a velocity-dependent optical potential”.  
Defended his thesis in April / 2012.
14. Mohamed Al-sayyed.  
Project Title: “Perturbation theory for proton-neutron scattering: Perturbing the energy”.  
Defended his thesis in March / 2011.

## **B. Associate Supervisor**

1. Mohammed Shuker  
Project title: “Solving multi-group neutron diffusion equation in different geometries using the homotopy perturbation method”.  
Graduated: July / 2013.
2. Mohammed Bkooor  
Project title: “Technical nuclear safety study of subcritical assembly at Jordan University of Science and Technology using Montecarlo techniques and probabilistic risk analysis”.  
Graduated: July / 2013.

## **Supervising M.Sc. Students (Single Supervisor)**

1. Dana Abdullah, “Effect of the knock-on exchange term on fitting neutron-nucleus scattering data using a channel-coupled semi-microscopic optical potential”, Will defend her thesis on 18/May/2021.
2. Sara Ali, “Importance of deforming the imaginary part of the optical potential in fitting the nucleon – nucleus elastic angular distributions within the framework of the coupled channels formalism”.  
Graduated: May / 2018.
3. Sondos Hijawi, “Effect of open reaction channels on the energy variation of the optical potential parameters for nucleon – nucleus and deuteron - nucleus scattering processes”.  
Graduated: December / 2017.
4. Alaa Al-Tamimi, “Studying the importance of channel coupling and compound nucleus reactions in the elastic scattering process by fitting low energy neutron – nucleus elastic angular distributions”.  
Graduated: December / 2017.
5. Areej Al-Absi  
Project Title: “Effect of spin – orbit term on the stability of the optical potential parameters ”.

Graduated: September / 2016.

6. Waffa Abu Al-Nadi.  
Project Title: “Scattering state perturbation theory using realistic velocity-dependent potentials”.  
Graduated: December / 2010.
  
7. Lina Halholi  
Project Title: “Bound state perturbation theory using realistic velocity-dependent potentials”.  
Graduated: December / 2010.
  
8. Amal Al-Wahesh  
Project Title: “Perturbation theory in the framework of the probability density equation”.  
Graduated: May / 2003.

### **Supervising Postdoctoral Programs**

Dr. Rami Zureikat: Postdoctoral program. He worked on “Effect of the dynamic polarization potential on the optical potential parameters” under my supervision. September/2015 – August/2016.

### **7. Published Papers (\* indicates a PhD student)**

1. S. B. Masadeh\*, D. A. Abdallah, and **M. I. Jaghoub**, “Analysis of nucleon-nucleus scattering data using a density-dependent semi-microscopic optical model with channel coupling”, *Physical Review C* 107, 024616 (2023).
2. M. Utoom\*, **M.I. Jaghoub**, and T. Aqel, “Nonlocal optical model for deuteron elastic scattering”, *Canadian Journal of Physics* **100**, 309 (2022).
3. A.Albelleh, **M. I. Jaghoub**, W.S.Al-Rayashi, “Comparing the effects of nonlocal sources on the neutron-nucleus elastic scattering process”, *Nuclear Physics A* 1024 122461 (2022).
4. S. Alameer\*, **M. I. Jaghoub**, I. Ghabar, “Nucleon-nucleus velocity-dependent optical model-revisited”, *Journal of Physics G: Nuclear and Particle Physics* **49**, 015106 (2022).
5. A. Sawalha\*, **M. I. Jaghoub**, “Determination of the asymmetry term strength in the  $n - A$  elastic scattering process using a nonlocal optical model”, *Canadian Journal of Physics* **99**, 556 (2021).
6. T. Aqel, **M. I. Jaghoub**, “A nonlocal optical potential with a Gaussian nonlocality for proton elastic scattering off light  $1 p$ -shell nuclei”, *The European Physical Journal A* **56**, 8, 1-11, (2020).
7. S. B. Masadeh\* and **M. I. Jaghoub**, “Semimicroscopic optical model with coupled-channel analysis for neutron scattering off nuclei with mass numbers  $12 \leq A \leq 208$ ”, *Physical Review C* **100**, 014603, (2019)

8. T.Aqel\*, **M. I. Jaghoub**, “A nonlocal optical model for neutron scattering from light 1p-shell nuclei”, **Nuclear Physics A** **989**, 145-167 (2019).
9. **M. I. Jaghoub**, A. E. Lovell and F. M. Nunes, “Exploration of the energy dependence of proton non-local optical potentials” **Physical Review C** **98**, 024609 (2018).
10. S.M. Al-Rawashdeh\* and **M.I. Jaghoub** “An optical potential for the statically deformed actinide nuclei derived from a global spherical potential”, **European Physical Journal A** **54**: 62 (2018).
11. W. S. Al-Rayashi\* and **M. I. Jaghoub**, “Effect of coupled channels on the energy dependence of phenomenological optical potential parameters”, **Physical Review C** **93**, 064311, (2016).
12. I. N. Ghabar\* and **M. I. Jaghoub**, “Velocity-dependent optical potential for neutron elastic scattering from 1 *p* - shell nuclei”, **Physical Review C** **91**, 064308, (2015).
13. R. A. Zureikat\*, **M. I. Jaghoub**, “Surface and volume term nonlocalities in the proton - nucleus elastic scattering process”, **Nuclear Physics A** **916**, 183, (2013).
14. **M. I. Jaghoub**, “Surface term optical model nonlocality in the NA elastic scattering process”, **Physical Review C** **85**, 024606 (2012).
15. **M. I. Jaghoub**, G. R. Rawitscher, “Evidence of nonlocality due to a gradient term in the optical model”. **Nuclear Physics A** **877**, 59 (2012).
16. **M. I. Jaghoub**, M. F. Hassan\* and G. R. Rawitscher, “Novel source of nonlocality in the optical potential”, **Physical Review C** **84**, 034618, (2011).
17. M. Al-Sayyed\*, **M. I. Jaghoub**, “Perturbation theory for proton-neutron scattering: Perturbing the energy”. **The International Journal of Theoretical Physics**, **50**: 3357-3367, (2011).
18. **M. I. Jaghoub**, "Perturbation theory for isotropic velocity-dependent potentials: Scattering case". **Physical Review A** **74**, 032702, (2006).
19. **M. I. Jaghoub**, " Effect of ordering ambiguity in constructing the Schrodinger equation on perturbation theory", **European Physical Journal A** **28**, 253-257, (2006).
20. **M. I. Jaghoub**, "Perturbation theory for isotropic velocity-dependent potentials: Bound states case", the **European Physical Journal A** **27**, 99-103, (2006).

21. A. H. Nayfeh, W. Faidi, **M. I. Jaghoub**, “The role of anisotropy in the thermoelectric detection of cylindrical holes in metals”. **European Physical Journal – Applied Physics** 22, 103-109, (2003).
22. **M. I. Jaghoub**, “Perturbation theory for velocity-dependent potentials”. **European Physical Journal A** 15, 443-448, (2002).
23. A. B. Hallak, W. Salah, J. Al-Jundi and **M. I. Jaghoub**. “L-subshell ionization of Lutetium by  ${}^4\text{He}^{2+}$  ion”. **X-ray Spectroscopy** 31, 391-394, (2002).
24. A. H. Nayfeh and **M. I. Jaghoub** “Thermoelectrically induced magnetic fields in laminated composite materials”. **European Physical Journal – Applied Physics** 18, 79-87, (2002).
25. **M. I. Jaghoub**, “Bound and scattering wave functions for a velocity-dependent Kisslinger potential for  $l > 0$ ”. **European Physical Journal A** 13, 349-354, (2002).
26. **M. Al Jaghoub**, “s-wave bound and scattering state wave functions for a velocity-dependent Kisslinger potential”. **European Physical Journal A** 11, 175-183, (2001).
27. R. Wurzinger, R. Siebert, J. Bisplinghoff, M.-A. Duval, J. Ernst, R. Frascaria, F. Hinterberger, **M. Al Jaghoub**, R. Jahn, R. Joosten, A. Kozela, C. Lippert, T. von Oepen, F. Plouin, F. Roudot, W. Spang, E. Warde and C. Wilkin. “Near-Threshold production of  $\omega$  mesons in the  $pd \rightarrow {}^3\text{He} \omega$  reaction”, **Physical Review C** 51, 443-446, (1995).

## 8. Awards

I got a full scholarship to do my PhD in nuclear physics which was awarded jointly by:

1. The Overseas Research Council (ORS).
2. The University of London.
3. The British Council.

## 9. Taught Courses

### A. PhD Level

1. Nuclear physics
2. Quantum Physics

### B. Master Level:

1. Quantum mechanics.
2. Nuclear Physics



3. Advanced Classical Mechanics

### **C. B.Sc. Level:**

1. Nuclear physics,
2. Alternative energy resources,
3. Quantum mechanics 1 & 2,
4. Classical mechanics,
5. Mathematical physics 1 & 2,
6. Electricity and magnetism,
7. Optics,
8. General physics 1 & 2,
9. General physics for medical and dentistry students
10. Experimental physics 1.
11. Experimental Physics 2.
12. Experimental Physics for Dentistry students.
13. Experimental Physics for Biological Sciences Students.

### **10. Committees and Contributions to the community**

- 1) Member of the “Board of Accreditation and Quality Assurance Commission for Higher Education Institutions” 10/July/2023 – present.
- 2) Consultant for teaching physics at Queen Rania Training Academy (QRTA). I designed a course to train **schoolteachers** (Training the Trainers) on modern and effective ways in teaching physics to final and pre-final secondary grade students. The course consisted of two main parts: the first is a face-to-face followed by a second online part. Every year QRTA runs the course for tens of teachers throughout the country. I used Flash MX to design the animations of physical systems. The actively involves the participating teachers in suggesting and improving the teaching methodologies. This was achieved by involving the teachers in face-to-face and online discussion groups.
- 3) **Head of the scientific committee** at the **Higher Center of Curricula in Jordan** for authoring the following physics school textbooks:
  - (a) **Grade 12** (Tawjihi) Physics Book for the national curriculum in Jordan.
  - (b) **Grade 11** Physics Book for the national curriculum in Jordan.
  - (c) **Grade 10** Physics Book for the national curriculum in Jordan.
  - (d) **Grade 9** Physics Book for the national curriculum in Jordan.
- 4) Member of the Basic Sciences Committee / Science Research Fund /Ministry of Higher Education, Jordan
- 5) Member of the foreign certificates approval committee / Ministry of Higher Education, Jordan.
- 6) Head of the following committees at the Faculty of Science / University of Jordan: Scientific research committee, Higher studies committee, Promotion and appointment committee, Study plans committee.
- 7) Head of the following committees at the Physics Department / University of Jordan: Higher studies committee, scientific research committee, the examinations, and timetables committee.

- 8) Member of the faculty of Science council as Head of Physics Department, University of Jordan.
- 9) The head of the committee for updating the physics study plans at the B.Sc., M.Sc. and PhD levels / University of Jordan.
- 10) Academic advisor for PhD, M.Sc. and B.Sc. levels.
- 11) The scientific research committee at the faculty of science level / Hashemite University.
- 12) Representative of the physics department in the Faculty of Science Council / Hashemite University.
- 13) The committee responsible for equipping the physics teaching laboratories / Hashemite University.
- 14) I represented the faculty of science for five years in the “Center for Training and Developing the Skills of Teaching Staff.”, Hashemite University.
- 15) I headed the faculty of science committee for the teaching evaluation of members of staff for 5 years, Hashemite University.
- 16) I headed the social committee for several years.
- 17) The committee responsible for the Physics Department web page on the internet.

## **11. Computer Skills**

I am quite familiar with the following software and programs:

- 1) Running nuclear computation software on Linux systems. Such programs include: FRESKO, EMPIRE, TALYS; NLAT etc.
- 2) Unix Operating System. I attended courses on (i) Introduction to Unix and (ii) Unix Administration.
- 3) I am quite familiar with Ubuntu and openSUSE linux-based operating systems.
- 4) Webpage design using: FrontPage, Macromedia Flash Mx. For scientific animations and writing HTML code. I have designed online e-learning courses for B.Sc. students which I run under the BlackBoard management system.
- 5) Windows, Microsoft Word, Excel, PowerPoint, Latex, etc.
- 6) Mathematica, Fortran.
- 7) WebCT and BlackBoard for managing online scientific courses.
- 8) I have taught online courses using Microsoft teams.

### **13. Conferences and Meetings**

1. Visiting Professor at the theoretical physics group / National Superconducting Cyclotron Laboratory (NSCL) at Michigan State University, summer 2017.
2. Nuclear Security Workshop for Scientists, Technicians and Engineers, Marrakesh, 22-24/ January/2018.
3. IAEA meeting on International Nuclear Management Academy in Trieste – Italy 28 – 31 July 2015.
4. Partnership for Nuclear Security (PNS), Curriculum Development Workshop: Sharing and Applying Best Practices, December 15-19, 2013, Abu Dhabi, UAE.
5. Civil-Nuclear Sector Human Capacity Development in the Middle East, May 15-16, 2012, Abu Dhabi, United Arab Emirates.
6. Oral talk at the APS (American Physical Society) April meeting 31 March – 3 April, 2012, Atlanta, Georgia, USA.
7. Middle East and North Africa (MENA) Nuclear Security Education Curriculum Development Workshop, Rabat, Morocco 27 February – 2 March, 2012.
8. Division of Nuclear Physics Meeting, Michigan State University, October 2011. (The talk was given on my behalf by Prof. G. H. Rawitscher)
9. Oral talk at the APS (American Physical Society) 13 – 17 Feb. 2010, Washington DC, United States.
10. Symposium on the Technology of Peaceful Nuclear Energy, Yarmok University, 2008, Jordan.
11. Workshop on “Building Internet-Based Multimedia Applications For Training and Education” arranged jointly by the UNESCO and the European Community, 2004, Hashemite University.
12. The “Synchrotron use and applications” conference held at the Applied Sciences University, 2003, Jordan.

### **14. Memberships, Refereeing, and Talks**

1. Several TV interviews on national and regional channels on Nuclear power nuclear reactors in Jordan.
2. Member of the American Physical Society.
3. Refereeing physics papers for international journals.
4. External / internal examiner for many M.Sc. and PhD students.
5. Member of the Jordan Environmental Society.
6. Head of the scientific committee associated with the Jordan Environmental Society.
7. Public Talk on: "Peaceful applications of nuclear physics – generation of electricity using nuclear reactors".
8. Public Talk on: "Is nuclear fusion a clean source of energy?"
9. Public Talk on: "Applications of physics in our daily life".