Curriculum Vitae

Prof. Mohammad Al-Owaidat

(فيزياء الحالة الصلبه)



Name: Mohammad Qasem Al-Owaidat

Qualification: Ph. D in Physics (2010)

Title: Professor

Field of study: Theoretical –Solid State Physics (condensed matter physics).

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Date of birth: 1 Feb. 1965

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EDUCATION BACKGROUND

• **Ph.D** in Physics, Jordan University, **Jordan** (2006- 2010) ***(Average: Excellent***).

• **M. Sc.** in Physics, Central University of Hyderabad, **India** (1994-1996) ***(Average: Very Good***).

• **B. Sc.** in Physics and Mathematics, Al-Yarmouk University, **Jordan** (1983-1987) ***(Average: Good***).

EXPERIENCE

2022-2024: Committee in Scientific Research and Innovation Support Fund at the Ministry of Higher Education and Scientific Research

2019- Present: Full Prof. (with seniority) at Department of Physics, Al-Hussein Bin Talal University, Jordan.

2017-2018: Sabbatical, Taibah University, Kingdom of Saudi Arabia.

2015- 2019: Associate Prof. (with seniority) at Department of Physics, Al-Hussein Bin Talal University, Jordan.

2012-2015: Assistant Prof. at Department of Physics, Al-Hussein Bin Talal University, Jordan

2013-2014: Head of Department of Physics, Al-Hussein Bin Talal University, Jordan.

2011-2012: Full time lecturer at Department of Physics, Al -Hussein Bin Talal University, Jordan.

TEACHING EXPERIENCE

I taught the courses :

- General Physics I.
- General Physics II.
- General Physics Lab. I
- General Physics Lab. II
- Mathematical Physics I.
- Mathematical Physics II.
- Statistical Mechanics.
- Modern Physics.
- Physics of Vibrations and Waves.
- Intermediate Lab.
- Solid State Physics.
- Quantum Mechanics I.
- Quantum Mechanics II.
- Electromagnetic Theory I.
- Electromagnetic Theory II.

 Heat and Waves.

Mathematical Physics (M.Sc).

 Statistical Physics (M.Sc.).

 Solid state physics (M.Sc.).

COMPUTER SKILLS

- ICDL
- Mathematica
- Origin
- Latex

LANGUAGES

- Arabic Mother language
- English

PUBLICTIONS IN REFEREED JOURNALS

1. M. Owaidat“ Lattice of cubic crystal AB using a harmonic spring approximation", Indian Journal of Physics. (2025).

2. Ahmad Al-Badawi and **M. Q. Owaidat”** Particle dynamics and shadow of a regular non-minimal magnetic black hole**”** ,General Relativity and Gravitation (2023).

3. O. Al-Banawi, **M. Q. Owaidat,** and N. Chair,” Lattice vibrations of the face – centered square and edge-centered square lattices”, International Journal of Modern Physics B (2023).

4. M. Q. Owaidat, “The two-site resistance of the two-dimensional ruby lattice structure” , **Eur. Phys. J. Plus**. (2021).

5. M. Q. Owaidat, “Determination of the vibrational frequencies of the decorated triangular and centered triangular lattices” , **Eur. Phys. J. Plus**.(2020).

6. M. Q. Owaidat, J. H. Asad “Resistance determination of the decorated triangular and honeycomb lattices “ **Indian Journal of Physics.** (2020).

7. **M. Q. Owaidat,** J. H. Asad "Resistance calculation of pentagonal lattice structure of resistors "**Communications in Theoretical Physics.** (2019)

8. **M. Q. Owaidat,** "The vibrational frequencies of the diced and decorated honeycomb lattices" , **International Journal of Modern Physics B**.(2019)

9 . **M. Q. Owaidat,** R. S, Asad, Zhi-Zhong Tan " Resistance computation of generalized decorated square and simple cubic network lattices" **Results In Physics.** (2019)

10. Zhen Tan , Z.-Z. Tan , J. H. Asad, and **M.Q. Owaidat, "**Electrical characteristics of the 2×n and □×n circuit network", **Phyisca Scripta.** (2019)

11. **M. Q. Owaidat**, A. Al-Badawi, M. Abu-Samak, "The two-point resistance on the diamond cubic lattice", **Eur. Phys. J. Plus**. **133**:199**(2018)**.

12. **M. Q. Owaidat**, A. A. Al-Badawi, J. H. Asad, Mohammed Al-Twiessi, "Two-Point Resistance on the Centered-Triangular Lattice", **CHIN.PHYS. LETT**. **35**,2, 020502(**2018**).

13. **M. Q. Owaidat**, Monther Alsboul, Ahmed. A. Qwasmeh, Almaasfeh Sultan Abdelmajid , "Two-point resistance on hypercubic lattices with second nearest neighbor resistors", **Advances in Physics Theories and Applications**,74(**2018**).

14. Mohammed Al-Tweissi, Mou'ad A. Tarawneh**,** **M. Q. Owaidat**, Monther Alsboul, "Optical Characterization of Thin Films Poly (Ethylene Oxide) Doped with Cesium Iodide", J. NANO-ELECTRON.PHYS, **10**, 05016(**2018**).

15. A. Al-Badawi and **M. Q. Owaidat,** The Dirac equation in Schwarzschild black hole coupled to a stationary electromagnetic field, **Gen. Relativ. Gravit.** 49:110(**2017**)

16. Z.-Z. Tan, J.H. Asad, and **M.Q. Owaidat, "**Resistance formulae of a multipurpose n- step network and its application in LC network", Int. J. Circ. Theor. Appl. (2017

17. A. Al-Badawi, **M. Q. Owaidat** and S. Tarawneh, "The geodesics structure of Schwarzschild black hole immersed in an electromagnetic universe**". International Journal of Modern Physics D**, **26** 1750169(**2017**).

18. **M. Q. Owaidat,** R. S, Asad and Zhi-Zhong Tan "On the perturbation of a uniform tiling with resistors" **, International Journal of Modern Physics B,30**,1650166 **(2016**).

19 . **M. Q. Owaidat** and R. S, Asad " Resistance calculation of three-dimensional triangular and hexagonal prism lattices" , Eur. Phys. J. Plus., 131 (2016).

20. **M. Q. Owaidat**, "Determining the Resistance of a Full -Infinite Ladder Network Using Lattice Green's Function", **Advanced Studies in Theoretical Physics**, **Vol. 9,** no. 2, 77 - 83 (**2015**).

21. **M. Q. Owaidat,** Ahmed H. Qwasmeh and Ayed Al e'damat, "Spanning trees on decorated centered cubic lattices", **Applied Mathematical Sciences**, **Vol. 9**, no. 25, 1235 – 1244(**2015**)

22. **M.Q. Owaidat**, Hijjawi. R. S., & Khalifeh, J. M.: Perturbation theory of uniform tiling of space with resistors**. Eur. Phys. J. Plus**., **129**, 29(**2014**)

23. **M.Q. Owaidat**, Hijjawi, R. S, Asad, J. H & Khalifeh, J. H.: The two-point capacitance of infinite triangular and honeycomb networks. **Eur. Phys. J. Appl. Phys**. **68**: 10102(**2014**)

24. Jihad, H. A., Diab, A. A., **Owaidat, M. Q**, Khalifeh, J. M Perturbed Infinite 3D Simple Cubic Network of Identical Capacitors. **APhysPolA**.**126**,777-781 (**2014**).

25. Jihad, H. A., Diab, A. A., **Owaidat, M. Q**, Hijjawi. R. S., Khalifeh, J. M.: Infinite Body Centered Cubic Network of Identical Resistors. **APhysPolA**.**125**,60-64(**2014**)

26. **M. Q. Owaidat**, J. H. Asad & J. M. Khalifeh**,** "Resistance calculation of the decorated centered cubic networks: Applications of the Green's function", **Modern Physics Letters B**, Vol. **28**, No. 32 (**2014**) 1450252 (12 pages).

27. **M.Q. Owaidat,** " Regular Resistor Lattice Networks in Two Dimensions (Archimedean Lattices)**". Applied Physics Research**; **6** (5), 100-108(**2014**).

28. **M.Q. Owaidat**. :Resistance calculation of the face-centered cubic lattice: Theory and Experiment. **Am. J. Phys**., **81**, 918(**2013**).

29. **M.Q. Owaidat**, Hijjawi. R. S, Asad, J. H, & Khalifeh. J. M. : Electrical networks with interstitial single capacitor. **Mod. Phys. Lett. B**, **27**, 1350123(**2013**)

30. **M.Q. Owaidat**, Hijjawi, R. S, & Khalifeh. J. M. : Network with Two Extra Interstitial Resistors. **Int. J. Theor. Phys**., **51**, 3152 (**2012**).

31. **M.Q. Owaidat** :Networks of Identical Capacitors with a Substitutional Capacitor**.** **JJ**P, **5**(3), 113-118(**2012**)

32. **M. Q**. **Owaidat,** Hijjawi, R.S., Khalifeh, J.M.: Substitutional single resistor in an infinite square lattice application to lattice Green's function. **Mod. Phys. Lett. B 19**, 2057–2068 (**2010**)

33. **M. Q**. **Owaidat**, Hijjawi, R.S., Khalifeh, J.M.: Interstitial single resistor in a network of resistors application of lattice Green's function**. J. Phys. A, Math. Theor. 43**,375204 (**2010**)

SUPERVISION OF GRADUATE RESEARCH

1. **PHD thesis:** The classical lattice dynamics of kagome, square- kagome, square-octagon, Lieb and checkerboard lattices, University of Jordan, 2022.

2. **M.Sc. thesis**: Resistance calculation of the triangular kagomé, square kagomé and checkerboard lattices, Al-Hussein Bin Talal University, 2023.

3. M.Sc. thesis: Two-point resistance and spanning trees on infinite cubic perovskite lattices, Al-Hussein Bin Talal University, 2024.

THESIS COMMITTEE DISCUSSION

1. M.Sc. thesis in condensed matter physics, Al-Hussein Bin Talal University, 2023.

2. M.Sc. thesis in general relativity, Al-Hussein Bin Talal University, 2023.

3. M.Sc. thesis in condensed matter physics, University of Jordan, 2024.

INTERNATIONAL REVIEWER

1. International Reviewer for **International Journal Circuit Theory and Applications (**John **Wiley & Sons Ltd).**
2. International Reviewer for **Frontiers of Information Technology & Electronic Engineering-Springer.**
3. International Reviewer for **Results in Physics(Science Direct)**
4. International Reviewer for **Indian Journal of Physics- Springer.**
5. International Reviewer for **Open Physics.**
6. International Reviewer for **International Journal of Numerical Modelling: Electronic Networks, Devices (John Wiley & Sons Ltd).**

7. International Reviewer for **Physica Scripta.**

ACADEMIC PROMOTION REFREE

1. Department of Physics, Palestine Technical University, Kadoorie, Tulkarm, Palestine (Rank of full professor)

CONFERENCES:

- International Conferences on Sciences, Al al –Bayt University Nov.20-22, 2012.

THE PRESENT RESEARCH INTERESTS

Condensed matter and materials physics; General and interdisciplinary physics; Nonlinear dynamics and complex systems.

- Calculating the resistance and capacitance of lattices using lattice Green's function.
- Studying classical dynamics of lattices (lattice vibration) in harmonic approximation.

REFERENCES

References available upon request.