

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Curriculum Vitae

- I. **Name:** Mohammed Salameh Salem Abu-Jafar
- II. **Rank:** Associate Professor of Physics (2001 – Present).
Theoretical Physics (Analytical & Computational
Condensed Matter Physics).
- III. **Address:**
Department of Physics
An-Najah N. University, P.O. Box 7.
Nablus – West Bank
Palestine.
- IV. **Personal:**
- A. Date of Birth: July 9, 1960
 - B. Place of Birth: Jineen-West Bank
 - C. Marital Status: Married
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- V. **Current Position:** Dean of Faculty of Graduate Studies,
P.O. Box 7, Nablus – West Bank, Palestine.
- VI. **Degrees and Education:**

<u>University</u>	<u>Degree</u>	<u>Date Conferred</u>
An-Najah University-Palestine	B.Sc.	April 1982
Jordan University-Jordan	M.Sc.	Jan. 1985
Southern Illinois Univ.-U.S.A	Ph.D.	Dec. 1991

VII. Scholarships:

1. Jordan university Scholarship, Jordan, 1982 - 1984.
2. S.I.U Teaching Assistant Scholarship, U.S.A, 1987 - 1991.
3. DAAD Sponsored visit, Bochum University, Germany – Summer 1998.

VIII. Professional Experiences:

Aug. 2008- Present:	Dean of Faculty of Graduate Studies
Sep.2004-Sep.2007:	Chairman, Graduate Studies Department for Natural Science, An- Najah N. University.
Sep.2001- Sep. 2003:	Chairman, Physics Department, An- Najah N. University
Oct.2001- Present:	Associate Professor of Physics, An- Najah N. University, Nablus, Palestine.
Jan. 1992-Oct.2001:	Assistant Professor of Physics, An-Najah N. University, Nablus, Palestine.
Jan. 1987-Dec. 1991:	Teaching Assistant, Southern Illinois University – Carbondale, (U.S.A.)
Jan. 1985-Aug. 1986:	Lecturer, An-Najah N. University-Nablus Palestine.
Aug.1982-Jan.1985:	Teaching Assistant, Jordan University- Amman, Jordan.

IX. Administration Experience:

- 1- Chairman, Department of Physics, An-Najah N. University (2001 - 2003).
- 2- Chairman, Department of Graduate Studies for Natural Sciences, An-Najah N. University (2004 - 2007).
- 3- Acting Dean of Faculty of Graduate Studies, An-Najah N. University (Spring semester, 2006/2007).
- 4- Dean of Faculty of Graduate Studies, An-Najah N. University (2008 – present).

X. Teaching Experience:

1- Undergraduate Theoretical Courses:

Quantum Mechanics (I & II), Classical Mechanics (I & II), Mathematical Physics (I & II), Solid State Physics, Modern Physics (I & II), Thermodynamics, Electromagnetic Theory, Atomic & Molecular Physics, Statistical Physics, Special Topics, Scientific Research, Computer in Physics, Optics and General Physics (I, II & III).

2- Graduate Courses:

Quantum Mechanics (I & II), Classical Physics, Atomic & Molecular Physics, Mathematical Physics, Nuclear Physics and Special Topics.

XI. Master Thesis Supervision:

1. Sana'a A. Ghanem, "FP-LAPW Calculations of the Structural Phase Transformations of ZnSe & ZnS under High Pressure", 2003.
2. Saja Ibrahim Abdal-Hadi, "The Melting Dynamics of Nanoscale Pd Clusters", 2003, (Co-Supervision with Dr. Najeh Jisrawi).
3. Omer Mahmood Isleem, "XO(X=Be, Zn) Compounds under High Pressure", 2008.
4. Farah Ali Saleh, " $\text{Ga}_{1-x}\text{Mn}_x\text{N}$ Magnetic Semiconductors: First-principles Study", 2008.
5. Raed Tawfeeq Jaradat, "Electronic, Structural and Magnetic properties of $\text{Al}_{1-x}\text{Mn}_x\text{N}$ in Zincblende Structure: First Principle Study" 2009.
6. Haneen Yousef Saeed Shalash, "FP-LAPW Study of Phase Changes in AN (A=Al, In, and B) under High Pressure, 2009.
7. Kamal Falah Mostafa, "FP-LAPW calculations of the electronic properties and structural phase transitions in CoO and CdO", 2009.
8. Hani Ghalib Daraghmeh, "Electronic and Structural Properties of ScSb and ScP compounds under High Pressure", 2009.
9. Mahmoud Mohammed Eissa, "Structural, Electronic and Magnetic Properties of $\text{Ga}_{1-x}\text{Fe}_x\text{N}$ ($x=0, 0.25, 0.75, 1$) Alloy in Zincblende Structure: First – Principles Study, 2010.

10. Eman Mohammad Al-Rabi, "Structural, Electronic and Magnetic Properties of $Al_{1-x}V_xP$ Alloys in Zincblende Structure using FP-LAPW Method, 2012.
11. Rowaida Fakhri Dewaikat, "High-Pressure Band Structure and Structural Stability of EuTe and EuO Compounds, 2012.
12. سامية عمر الديك، "اثر المحاكاة بالحاسوب على التحصيل الآني والمؤجل لطلبة الصف الحادي عشر العلمي واتجاهاتهم نحو وحدة، ميكانيكا ومعلمها"

XII. External Examiner of Post Graduate Students:

1. Mai Ibrahim Khalel, "Effect of the Surface Charge Discretization (Fixed Charge) on Electronic Double Layer, 2011.
2. Azzam Ali Abu Khalil, "Analytical Model Study of Complications of Linear Polyelectrolyte with a Charged Dendrimer of Diferent Generations, 2011.

XIII. Internal Examiner of Post Graduate Students:

1. Naim "Ahmed Rasheed" Malak, "Effect of a uniform Applied Magnetic Field and Temperature on the Magnetic Properties of the Dipolar Anti-ferromagnetic planar systemic Parametric Study", 2008.
2. Baseemeh Daas Zpeedeh, "First Principle Electronic Structure Calculations of Ternary alloys. BN_xP_{1-x} , $Ga_xB_{1-x}N$ and $B_xIn_{1-x}N$ in Zincblende Structure", 2008.
3. Thaer "Mohammed Said" Abu-Labdeh", Influences of a uniform External Magnetic Field on the Magnetic properties of the Dipolar Anti-ferromagnetic Heisenberg System", 2009.
4. Muzaian Abdulhameed Shaqqur, "Confined hydrogen atom in a spherical cavity in N dimensions", 2009.
5. Tajweed Hashim Nierate, "Temperature and Storage Age Dependence of Olive Viscosity in Different Locations in Palestine, 2012.

XIV. Non-Curricular Activities:

- 1- Education activities.
- 2- Swimming.
- 3- Tennis.

XIII. Other Skills:

1. COMPUTER & Software SKILLS

- A) FORTRAN Programming
- B) FP-LMTO Technique
- C) FP-LAPW Technique
- D) Mathematica
- E) Maple

2. VARIATIONAL METHODS

XV. Current Research Interests:

I - Computational Condensed Matter Physics.

In our research we use the program package WIEN2K which allows to perform electronic structure calculations of solids using density functional theory (DFT). It is based on the full-potential (linearized) augmented plane-wave ((L)APW) + local orbitals (lo) method, one among the most accurate schemes for band structure calculations. In DFT the local (spin) density approximation (LDA) or the improved version of the generalized gradient approximation (GGA) can be used. WIEN2K is an all-electron scheme including relativistic effects and has many features.

Additionally, We use the PWscf (Plane-Wave Self-Consistent Field) which is a set of programs for electronic structure calculations within Density-Functional Theory and Density-Functional Perturbation Theory, using a Plane-Wave basis set and pseudopotentials.

II- Multiperturbation Theory And Its Applications To Polyatomic Molecules.

Recently computational physics becomes an important branch of physics because it complements experimental and theoretical physics. Using this relatively new part of physics one carry computer experiments to study some physical phenomena, calculate numerically a physical quantity or predict a theoretical model from available experimental data.

The application of high order perturbation theory to the calculation of atomic and molecular properties has several advantage over conventional; approaches generally applied to these systems.

Molecular surfaces for polyatomic molecules are difficult to compute with any degree of accuracy and very expensive in terms of computing resources. Perturbation theory provides important theoretical and computational simplifications to this problem while continuing to provide comparable accuracy with a relatively small expenditure of computational resources.

XVI. Committee Membership:

Committees:

University Level

- 1- University Council.
- 2- Many other committees such as student Regulation, Student Union Council Election, Investigation Committees.
- 3- An-Najah N. University prize Establishing Committee (2006/2007).
- 4- An-Najah N. University prize Committee, Chairman (2011/2012).
- 5- Higher Academic Counseling and Supervising Committee (2008-present).
- 6- Health Insurance Committee (For more than 8 years).

Science College Level

- 1- Board of College of Science.
- 2- Registration & Supervision Committee.
- 3- Library Committee / Coordinator.

Department Level

- 1- Graduate Studies Committee / Coordinator.
- 2- Graduate Student Admission.
- 3- Registration.
- 4- Library Committee / Coordinator.

XVII. Professional Activities:

1. Physics graduate committee member, physics department, An-Najah National University, Nablus, West Bank, Palestine, (1996- present).
2. Physics library committee, physics department, An-Najah National University, Nablus, West Bank, Palestine.
3. Coordinator of the computer physics lab for the undergraduate Students.
4. Coordinator of the computational condensed matter physics lab for graduate students.
5. Member of organization committee for physics conference, An-Najah National University, Nablus, West Bank, Palestine, 2000
6. Member of Dean's Council, An-Najah National University, Nablus, West Bank, Palestine, (2008-present).
7. Member of University Council, An-Najah National University, Nablus, West Bank, Palestine, (2002-present).
8. Member of organization committee for the second physics conference, An-Najah National University, Nablus, West Bank, Palestine, 2007.
9. Coordinator of the International Graduate Conference on Science, Humanities and Engineering, (IGCSHE2011), 2011.
10. Member of organization Committee for Difference and Pluralism from an Islamic Perspective Conference, An-Najah National University, Nablus, West Bank, Palestine, 2012.
11. Coordinator of the Conference in exploring the future of graduate studies in Palestine, 2009.
12. Member of the guidance and direction supreme.

XVIII. Summer Schools, Workshops & Conferences:

- 1 - Twelfth International Conference on Atomic Physics-Ann Arbor-U.S.A., 1990.
- 2 - The First Palestinian Chemical Conference, Nablus-West Bank, Palestine, 1992.
- 3 - Second Symposium on Computational Condensed Matter Physics, Yarmouk University, Irbid-Jordan, 1995.
- 4 - First Workshop on the Applications of Computer for Physics Teaching, Yarmouk University, Irbid, Jordan, 1996.
- 5 - Research Workshop on Condensed Matter Physics, (Electronic Structure, Semiconductor Physics), ICTP, Trieste-Italy, 1996.

- 6 - Workshop on “Modernizing Basic and Engineering Sciences University Education Through Computational and Networking Technologies”, Jordan University for Science and Technology, Irbid-Jordan, 1997.
- 7 - Colleges on Advanced Computational Physics, ICTP-Trieste-Italy, 1997.
- 8 - Third Symposium on Computational Condensed Matter Physics, Yarmouk University, Irbid-Jordan, 1997.
- 9 - Multimedia Workshop, Birzeit University, West Bank -Palestine, 1998.
- 10- An International Workshop on LAPW, ICTP, Trieste-Italy, 1998.
- 11- Scholarship from DAAD Ruhr-University, Bochum-Germany, 1998.
- 12- Fourth Symposium on Condensed Matter Physics (Advances in High Tc-Superconductivity), Yarmouk University, Irbid-Jordan, 1999.
- 13- The Palestinian Physics Conference “Condensed Matter and Applications”, Member of The Organising Committee, An-Najah N. Univ., Nablus-West Bank, Palestine, 2000.
- 14- Spring College on Electronic Structure Approaches to The Physics of Materials, ICTP-Trieste-Italy, 2000.
- 15- Second Physics Conference-2007,Member of The Organising Committee,An-Najah N. University,Nablus-West Bank ,Palestine ,2007 .
- 16- Exploring the Future of Graduate Studies in Palestine, Member of the organizing committee, Faculty of Graduate Studies, An-Najah N. University, Nablus, West-Bank, Palestine, 2009 .
- 17- First Yarmouk School for Computational Condensed Matter and Nano Technology, Yarmouk University, Irbid – Jordan,2010
- 18- International Graduate Conference on Science, Humanities and Engineering 2011(IGCSHE2011), Coordinator, Faculty of Graduate Studies, An-Najah N. University, Nablus, West-Bank, Palestine, 2011 .
- 19- The Right to Difference and Pluralism from an Islamic Perspective and the Role of Universities in the Development of this Right”,Member of the organizing committee,An-Najah N. University,West Bank,2012 .
- 20- Symposium on Mont-Carlo Simulations(MC), “Application to Nanomagnetic Particles Systems”,An-Najah N. University,West Bank, 2012 .

- 21- Towards Oxide-Base Electronics: science, sample growth and applications of transition metal oxides, Sapienza University, Rome, Italy, September 22-23, 2014
- 22- Second Conference on Superconductivity and Functional Oxides (SuperFOx), Sapienza University, Rome, Italy, September 24-26, 2014.

XIX. List of Publications

- 1) D.H. Galvan, M. Abu-Jafar and F.C. Sanders, "Polyatomic Molecules Via z-dependent, Perturbation Theory-Ground state of H_3^+ ", Bull. Am. Phys. Soc. 34, 1382(1989).
- 2) M. Abu-Jafar, F.C. Sanders, and D.H. Galvan, "Potential Energy Surface for H_3^+ via z-dependent Perturbation Theory – A Third-order study", Twelfth International Conference on Atomic Physics, Ann Arbor, 1990.
- 3) M. Abu-Jafar and F.C. Sanders, "A Fourth-order Multiperturbation study of H_3^+ ", Bull. Am. Soc. 36, 1243(1991).
- 4) D.M. Galvan, M. Abu-Jafar and F.C. Sanders, "Multiperturbation Approach to Potential Energy Surfaces for Polyatomic Molecules" J. chem. Phys., Vol. 102, No. 12, (1995).
- 5) M. Abu-Jafar, et al "A Fifth-order Multiperturbation Derivation of Polyatomic Molecules", An-Najah University Journal For Research (Natural Science), Vol. IV, No. 10, Sep. (1996).
- 6) S. Musameh, I. Abdulraziq and M. Abu-Jafar, "Shielding Effectiveness of Carbon Fiber-Epoxy Composite at Microwave Frequencies", Bethlehem University Journal, Vol. 15(1996).
- 7) I. Abdulraziq, S. Musameh and Abu-Jafar, "Shear Viscosity Anomaly Near the Critical Binary System of Nitrobenzene-n-heptane", Bethlehem University Journal, Vol. 16(1996).
- 8) A. Qteish, M. Abu-Jafar and A. Nazzal, "The Instability of the Cinnabar Phase in ZnS Under High Pressure", J. Physics Condense. Matter, Vol. 10, U.K.(1998).
- 9) M. Abu-Jafar, "Calculation of Ground state Energy for Linear HeH_2^{++} Through Fifth Order (United Atom Treatment), An-Najah Univ. J. Res., Vol. 12, Palestine (1998).
- 10) M. Abu-Jafar, A.I. Al-Sharif and A. Qteish, "FP-LAPW and Pseudopotential Calculations of the Structural Phase Transformations

- of GaN Under High-Pressure”, Solid State Communications, Vol. 116(2000).
- 11) A.I. Al-Sharif, M. Abu-Jafar and A. Qteish, “Structural and Electronic Structure Properties of FeSi: The Driving Force Behind The Stability of The B20 Phase”, J. Condensed Matter Physics, Vol. 13, No. 12, U.K. (2001).
 - 12) I. Abdelraziq, Z. Majjad, M. Abu-Jafar, B. Manasrah, ”Special functions, Deanship of Scientific Research, An-Najah National University, 2004 .
 - 13) M. S. Abu-Jafar , A. M. Abu- labdeh , M. El-Hasan , " The energy band gap of ScN in the rocksalt phase obtained with LDA/GGA +USIC approximations in FP-LAPW method " , computational materials science , Vol. 50 (2010) .
 - 14) M.W.Suleiman, M. AbuJafar, I.R. Abdelraziq, “The effect of light intensity on employees health in pharmaceutical companies”, Environmental Science, Vol. 10 , issue 2 (2015).
 - 15) Reham Issam Thaher, Mohammed AbuJafar, Issam Rashid Abdelraziq”The effect of electromagnetic radiation from antennas on children in schools in Nablus area”, Environmental Science, Vol. 10, issue 3 (2015).
 - 16) Iman Al-Faqeeh, Moahmmmed Abu-Jafar, Issam Rashid Abdelraziq”The effect of the electromagnetic radiation from high voltage transformers on students health in Hebron district”, International Journal of Geology, Agriculture and Environmental Sciences, Vol. 3 , issue 1(2015).

XX. Names of Referees:

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2. **Prof. Sharif Musameh**, Ph.D., Physics, An-Najah National University.
E-mail: musameh@najah.edu
3. **Prof. Abdallah Qteish**, Ph.D., Physics, Yarmouk University- Jordan
E-mail: aqteish@yu.edu.jo
4. **Dr. Abdorrahman Abu-Labdeh**, Ph.D., Physics, Arab American University.
E-mail: alabdeh@aauj.edu
5. **Dr. Khalid Eleiwi**, Ph.D., Physics, An-Najah National University.

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