

Emad K. Jaradat

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Al-Karak Jordan
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EDUCATION

Sep.2004- Dec.2008	The University of Jordan	Amman, Jordan
PhD, Physics	Advisor: Dr. Jamil M. Khalifeh, Thesis Title: "Electromagnetic Lagrangian Density: Fractional Treatment"	
Sep.2000-Dec.2003	Mutah University	Alkarak, Jordan
M.Sc., Physics	Advisor: Dr. Ismail. Algaraibeh, Thesis Title <i>Influence of Molecular Weight on the Melting Behavior of Poly Ethylene Oxide.</i>	
Aug.1993-May.1997	Yarmouk University	Irbid, Jordan

COMMITTEES

Sep.2021-Sep.2022	Chairman Physics Department	Mutah University
Sep.2015-Sep.2016		
Sep.2010-Sep.2011	Assistant Dean of the Faculty of Science at Mutah University	Mutah University
Sep.2012-Sep.2013	Assistant Dean of Student Affairs at Mutah University	Mutah University

PERSONAL DATA

<i>Full Name</i>	<i>Emad Khaled Yousef Jaradat</i>
<i>Date of Birth:</i>	<i>January 1, 1975</i>
<i>Place of Birth:</i>	<i>Bushra-Irbid-Jordan</i>
<i>Nationality:</i>	<i>Jordanian</i>
<i>Marital Status</i>	<i>Married, two daughters, two sons.</i>
<i>Academic Rank:</i>	<i>Professor in Theoretical Physics</i>

TEACHING EXPERIENCE

Sep.2009-present	Mutah University	Al-Karak, Jordan
Sep.2007-Dec.2008	The University of Jordan TA: Lab-Phys. 105 & 106	Amman Jordan
Sep.1999-Sep.2008	Secondary teacher in the Ministry of Education during the period of 1999-2008	Irbid, Jordan

Undergraduate Courses

- General Physics with emphasis on mechanics and electricity (Phys 0302101, Phys 0302102)
- General Physics for medicine with emphasis on mechanics, electricity, Fluids, Optics, and Modern Physics (Phys 0302100).
- General Physics with emphasis on mechanics, electricity, Fluids (Phys 0302201)
- General Physics labs with emphasis on mechanics, electricity (Phys 0302111, phys0302112)
- Mathematical Physics I (Phys 0302201)
- Optics (Phys0302281)
- Optics lab (Phys 282)
- Mathematical Physics II (Phys 0302392)
- Classical Mechanics I (Phys 0302214)
- Classical Mechanics II (Phys 0302315)
- Quantum Mechanics I (Phys 0302351)
- Electromagnetic Theory I (Phys 0302333)
- Electromagnetic Theory II (Phys 0302334)
- Waves and Vibrations (Phys 0302202)
- Intermediate Physics Laboratory (Phys 0302422)

Graduate courses

- Mathematical Physics (Phys 0302791)
- Quantum Mechanics I (Phys 0302751)
- Quantum Field Theory (Phys 0302793)

RESEARCH EXPERIENCE

Sep.2009-present	Mutah University	Alkarak-Jordan
Fields	<ul style="list-style-type: none">Electromagnetic theory in Caputo's Definition,Canonical Quantization in Left Right Riemann-Liouville DefinitionSolving Linear and non-linear Partial Differential Equations Using the Adomian Decomposition MethodSolving non-Linear Equation Using Homotopy Perturbation methodUsing Tansh Method to investigate non-linear Electrical CircuitSolving Partial Differential Equation FractionallyLagrangian and Hamiltonian Densities of continuous Field SystemsFractional Calculus and its applications in physicsNumerical Solution for nonlinear physical PhenomenaFractional Treatment for Quantum Field Theory and Classical Field TheoryPolymer Crystallization.Lattices Green's Function and it's applications in Physics	

DISSERTATIONS

As an Advisor

Khaled S. Al-khazali, The Fractional Treatment of Coupled Field Theory Of two scalar field χ, φ .	2015
Ghada Ali Al-Gralleh, Fractional Equation of Motion for Coupled Maxwell's and Dirac field.	2015
Ebrahim M. Alokour, Fractional Treatment for Nonlinear Schrodinger Lagrangian Density Using Riemann-Liouville Fractional Definition.	2015
Yazan M. Al-Awaida, The Complex Scalar Field Interacting With the Electromagnetic Field.	2015
Sondos A. Al-Bashabsheh, "Exact Solution For Fraction DRLC Circuit In Caputo Definition.	2016
Ali Ahmad Kan'an, Exact Solution for Damped Simple Harmonic Motion Using Fractional Laplace Transform.	2016
Rabea'h A. Al-Fuqaha, Rewrite the Equation of Motion for Fluid Dynamics using Caputo's Fractional Definition.	2016
Essam Assaid Al-Mgaig, Stress Energy Tensor in Fractional Form for Quantum Electrodynamics Field.	2016
Reham A. Al-Sawalgah, Fractional stress energy tensor for Yukawa lagrangian density in Caputo definition.	2016
Jomana K. Alnawaseh, Sloution of the Vander Pol Oscillator Equationby Laplace Transform Method.	2017
Wajd A. Al Habashneh, An approximate solution for a projectile motion using Laplace decomposition method.	2018
Ala' M. Al Faqeeh, Analytical Methods to Schrodinger Equation Solve with Nonlinearity Terms.	2018
Abdullah K. ALHugian, Approach method for solving nonlinear Boussinesq type equation.	2018
Belal A. Al Assassfeh, Stiffness Calculation of Infinite Square Lattice.	2018
Majdi H. Al Fugaha, An approximate Analytical solution to Duffing oscillator.	2018
Oday Al Zogoul, Analytical Solution of the Nonlinear Rayleigh Oscillator Equation.	2019
<i>Ebrahim Alzubi, Investigate on Structural, electronic, elastic and optical properties of perovskite compounds BaAO3 (A=Zr, Hf, Ta) :First principles calculation.</i>	2019
Heba Ibrahim Abu-RadwanA Theoretical Investigation of the Physical Properties of Cubic Perovskites	2020
Reem Gassan, ANALYTICAL METHODS TO SOLVE EQUATION OF NON-LINEAR RLC CIRCUIT	2021
Reem Daradkeh, Separation of Variables as a Powerful Tool to Solve Non-linear Physical Problems: The Case of Cubic Non –linearity	2022

As a member

Osama M. AL-zu'bi, Effective spring constant calculation of an Infinite Network of Springs – Application on Green's Function	2016
Bashar M. Al-Khamiseh, The Linear Sigma Model Lagrangian Density: Fractional Formulation.	2015
Remah Y. Al-Masarwah, Resistance Calculation of Uniform tiling With Electrical Resistors Using Lattice Green's Function.	2015
Shadi S. Al-Nawasrah, "Carbon Nano Tips-Based Field Emission Characterization For Low Power High Speed Multiplexing Application.	2016
Ahmed S. Al-Dhoun, "The Massive Vector Field Fractional Formulation.	2016
Hassan R. Al-Thubyani," Hamilton Jacobi Analysis Reparametrized Lagrangian Systems.	2014
Lama. O. AL-Sohimat," Inductance Calculation of Infinite Networks Using Greens Function: Perfect and Perturbed Training Triangular Lattice.	2014
Ghadeer A. Alharazneh	2016
Al. AlSarayreh	2015

COLLABORATIONS

- Prof. Dr. Jamil M. Khalifeh, The University of Jordan
- Prof. Dr. Omar K. Jaradat, Mutah university
- Dr. Omar AL Omari, German Jordan University
- Prof. Dr. Raed S. Hijjawi, Mutah University
- Dr. Amer D. Aloqaly, Mutah University
- Dr. Ahmed Mousa, Middle East University
- Dr. Abed Al Rahman Okour, Al- Balqa' Applied University
- Dr. *Abudayah Mohammad* German Jordan University

WORKSHOPS

- | | |
|--|------|
| - Eighth International Petra School of Physics The university of Jordan | 2016 |
| - The International Conference on Fractional Differentiation and its Applications, 16-18 July 2018, Amman, the Hashemite Kingdom of Jordan | 2018 |

PUBLICATIONS

Refereed Research

24. **Emad K. Jaradat**, Abdurrahman Alokour, Ala'a Al-Faqih an Approximate Solution for the Non-Linear Fractional Schrödinger Equation with Harmonic Oscillator, Discontinuity, Nonlinearity, and Complexity, **accepted**, 2022.

23. Investigation of electronic, optical and thermoelectric properties of perovskite BaTMO₃ (TM= Zr, Hf): First principles calculations S Al Azar, I Al-Zoubi, AA Mousa, RS Masharfe, **Emad K. Jaradat**. **Journal of Alloys and Compounds** 887, 161361, 2021

Articles

22. Solution of Non-Linear RLC Circuit Equation Using the Homotopy Perturbation Transform Method, Reem G Thunibat, **Emad K Jaradat**, Jamil M Khalifeh, Jordan J. Phys., 14 (1) (2021) 89-100

21. First principle investigation of the structural, electronic and elastic properties of the Laves phase compounds SrX₂ (X= Pd and Pt) Ahmad A. Mousa, Raed Jaradat, Said M. Azar, Mohammed Abu-Jafar,*, **Emad K. Jaradat**, J.M. Khalifeh, K.F. Ilaiwib, Chinese Journal of Physics, 59, 210-219, 2019.

20. **Emad K. Jaradat**, Ala'a Al-Faqih, Approximate Solution to Non-Linear Schrödinger Equation with Harmonic Oscillator by Elzaki Decomposition Method, International Journal of Physical and Mathematical Sciences Vol:13, No:2, 2019.

19. **Emad. K. Jaradat**, Canonical Quantization for Fractional Complex Scalar and Vector Field, *Advances and Applications in Discrete Mathematics, Volume 20, Number 1, Pages 89-100, (2019).*

18. **Emad K. Jaradat**, Omar Al-Omari, Abudayah Mohammad and Ala'a Al-Faqih, An Approximate Analytical Solution of the Nonlinear Schrodinger Equation with Harmonic Oscillator Using Homotopy Perturbation Method and Laplace-Adomian Decomposition Method, *Advances in Mathematical Physics, Volume 2018, Article ID 6765021, 11 pages (2018).*

17. **Emad. K. Jaradat**, Solving Nonlinear Equations Using the Laplace Decomposition Method: An Application to Projectile Motion with Resistive Term, **Indian Journal of Science and Technology** Vol 11(44), DOI: 10.17485/ijst,(2018).

16. **Emad. K. Jaradat**, Hamiltonian Formulation of Piano String Lagrangian Density with Riemann-Liouville Fractional Definition, **Al-Hussein Bin Talal's Journal of Research(AHUJ)**, V. 4, No. 1, (2018)

15. **Emad. K. Jaradat**, Amer D. Aloqali, Wajd Alhabashneh, Using Laplace Decomposition Method to Solve Nonlinear Klein-Gordon Equation, **U.P.B. Sci. Bull., Series D**, Vol.80, Iss.2, (2018).

14. **Emad. K. Jaradat**, Rabea Alfuqaha, Equation of Motion for an Ideal Hydrodynamics in Rotating Frame Using Caputo's Definition, **Jordan Journal of Physics JJP**, Volume 11, Number 1, (2018).

13. **Emad K. Jaradat**, Fractional Equation of Motion for Coupled Field Theory, **International Journal of Applied Engineering Research** Vol 13, N.6 (2018) .

12 **Emad K. Jaradat**, Hamiltonian Formulation for Single Fluid Flows with Caputo's Definition, **Sci. Int. (Lahore)**, 29(3), 541-543, (2017).

11. **Emad K. Jaradat**, Sondos A. Al-Bashabsheh, Exact Solution for Damped RLC Circuit Equation in Caputo's Definition, **Mu'tah Lil-Buhoth wad-Dirasat**, Vol.32. No.1, (2017).

10. D. Al-Oqali, Bashar M. **Emad K. Jaradat** and Ra'ed S. Hijjawi, The Linear Sigma Model Lagrangian Density: Fractional Treatment, **CJPAC**, 10, 1, pp. 3803-3807, (2016).

9. Lama. O. AL-Sohimat, Amer D. Al-Oqali, **Emad K. Jaradat**, et al, Inductance Calculation of Infinite Networks Using Greens Function: Perfect and Perturbed Training Triangular Lattice, **Sci.Int.(Lahore)**, 28(2),811-818,(2016).
8. Amer D. Al-Oqali, **Emad K. Jaradat**, Heisenberg Equations for Real Scalar Field with Interaction $\lambda\phi^3$, **Sci.Int.**,28(3),2237-2240, (2016).
7. **Emad. K. Jaradat**, Canonical Quantization of fractional Schrodinger lagrangian density in Caputo sence, **Jordan Journal of Physics JJP**,6(2), 55-63, (2013).
6. **Emad K. Jaradat**, Klein Gordon Equation in terms of Riesz Fractional Definition, **Mu'tah Lil-Buhoth wad-Dirasat**, Vol.28. No.3, (2013).
5. Omar K. Jaradat, **Emad K. Jaradat**, Fractional Treatment for Einstein Lagrangian Density, **American Journal of Scientific Research AJSR**. Vol 89, no. 4, 31-37, (2013).
4. **Emad K. Jaradat**, A. D. Aloqali, O. K. Jaradat and R. S. Hijjawi, Green's Function for a Perturbed Anisotropic Triangular Lattice, **European Journal of Scientific Research EJSR**, Vol 101, no. 1, 53-58, (2013).
3. **Emad K. Jaradat**, R.S. Hijjawi and J.M. Khalifeh; Maxwell's equations and electromagnetic Lagrangian density in fractional form **Journal of Mathematical Physics**. 53, 033505. (2012).
2. **Emad K. Jaradat**, Proca Equations of a Massive Vector Boson Field in Fractional Form, **Mu'tah Lil-Buhoth wad-Dirasat**, Vol.26. No.2. (2011).
- 1 **Emad K. Jaradat**, R.S. Hijjawi and J.M. Khalifeh, Fractional Canonical Quantization of the Free Electromagnetic Lagrangian Density ,**Jordan Journal of Physics JJP**,3(2), 47-54, (2010).

On Going Publications

7. **Emad K. Jaradat**, Abdullah K. AL-Hagyan, Omar K. Jaradat, Approximation Solution for Boussinesq-Type Equation Using Homotopy Perturbation Method (HPM).
6. **Emad K. Jaradat**, Majdi H. Al-Fogha, Omar K. Jaradat, The Approximation of Solution for forced Duffing Oscillator.
5. **Emad K. Jaradat**, Majdi H. Al-Fogha, The Approximation of Solution for Duffing Oscillator Using Polynomial Least Square Method (PLSM).
4. **Emad. K. Jaradat**, Ahmed A. Mousa, Amer D. Aloqali, Wajd Alhabashneh, An Approximate Solution for Nonlinear Casimir Oscillator Equation.
3. **Emad. K. Jaradat**, Raed S. Hijjawi, Belal, A. AlAssassfeh, solution of the nonlinear telegraph Equation with two space variables.
2. **Emad. K. Jaradat**, Amer D. Aloqali, Wajd Alhabashneh, an Approximate Solution for Projectile Motion with Air Resistance Using the Laplace Decomposition Method, **Jordan Journal of Physics**.
1. **Emad K. Jaradat**, Ala'a Al-Faqih, Approximate Solution to Non-Linear Schrodinger Equation

With Harmonic Oscillator by Elzaki Decomposition Method.

HONORS AND SCHOLARSHIPS:

Member of the Editorial Board of Mutah Journal for Research and Studies from Sep 2021 up to now.

Chairman of the Department of Physics at the Mutah University from Sep 2021-Sep2022.

Chairman of the Department of Physics at the Mutah University from Sep 2015-Sep2016.

Professor in Mathematical Physics at Mutah University, from Sep 2019
Associated Professor in Mathematical Physics at Mutah University, from Sep 2014

Assistant Professor in Mathematical Physics at Mutah University, from September 2009-2014.

Assistant Dean of the Faculty of Science at Mutah University, from September 2010-September 2011.

Assistant Dean of Student Affairs at Mutah University, from September 2012-September 2013.

Director of student bodies in the Deanship of Student Affairs at Mutah University, from September 2013- November 2013.

Teacher in the laboratories of the University of Jordan during work on a doctoral thesis during 2007-2008.

Secondary teacher in the Ministry of Education during the period of 1999-2008.

COMMUNITY SERVICE, DEPARTMENTAL COMMITTEES

Head of Delegation of Mutah University of Omrah trip to the Holy Land / Omrah goodness.

Head of the mission work of the induction program for freshmen students who have been accepted for the academic year 2013/2014.

Chairman of the committee to oversee the order of faculty members and ordering them according to academic rank at graduation for students of the civilian wing of the academic year 2012/2013 ceremony.

Chairman of the task processing, preparation, and supervision of the administrative committee elections for the student union Mutah University / civil wing Twentieth session.

Chairman of the committee to study the files relating to the financial Students' Union and student clubs for the financial year 2011/2012.

Chairman of the committee to assess the damage to the vehicles number of workers at the university through some quarrels that took place in the university.

Chairman of the committee to examine the proposal submitted by the Director of Student Services Department regarding the special instructions for issuing cards to college Tab mode.

Member of the Committee to prepare and supervise the graduation of graduate students and honor the top student's ceremony.

Member of the Supreme Committee to oversee the elections, the Union of Students Mutah University / civil wing Twentieth session.

Member of the Supreme Committee to oversee the class graduation fourth and twenty of civil / Mutah University students wing.

Member of the Committee the task of putting general grounds for the granting of incentives to outstanding students mathematically and technically and by achievement.

Member of the Subcommittee for the student union elections of the Faculty of Medicine of the academic year 2012/2013.

Participation in the conference in Shobak Sports Club and Cultural about the causes and methods of treatment as a representative of Mutah University campus violence.

Member committee to interview job applicants' functions / physics teacher at the Model School at the University of Mutah and their order and trade-off work schedule so.

Member committee to develop and debug the website of the Faculty of Science.

Member of the Subcommittee for the student union elections for the Faculty of Science / Department of Physics / eighteenth session.

Member of the Subcommittee for the student union elections for the Faculty of Science / Department of Physics / nineteenth session.

Member of the Committee of Graduate Studies in Physics / Faculty of Sciences.

REFERENCE

Prof. Dr. Jamil M. Khalifeh	Physics Department, The University of Jordan	jkalifa@ju.edu.jo
Prof. Dr. Ismael A. AlGaraibeh	Physics Department, Mutah University	ismailfff@yahoo.com
Dr. Shafer AL Momani	Department of Mathematics, The University of Jordan	s.momani@ju.edu.jo
Prof. Dr. Mohammed A. Share	Physics Department, Mutah University	alshared@mutah.edu.jo
Prof. Dr. Marwan S. Al Mousa	Physics Department, Mutah University	mmousa@mutah.edu.jo
Prof. Dr. Omar K. Jaradat	Department of Mathematics, Mutah University	jaradat@mutah.edu.jo
Prof. Dr. Raed S. Hijjawi	Physics Department, Mutah University	Hijjawi@mutah.edu.jo
Prof. Dr. <i>Rateb H. AlBtoush</i>	Department of Mathematics, Mutah University	btoush@mutah.edu.jo
Prof Dr. Kamal A. ALbanawi	Department of Mathematics, Mutah University	kbanawi@mutah.edu.jo