

Curriculum Vitae

Personal Information

Full Name: Ahmed Fawaz Al-Jamel

DOB/place: Oct. 31, 1975. Irbid-Jordan

Nationality: Jordanian

Marital Status: Married with 3 daughters and two sons

Languages: Arabic and English.

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Scopus: <https://www.scopus.com/authid/detail.uri?authorId=57189867669>

Education

1. Ph.D. in High Energy Physics.

New Mexico State University, USA (July 2004).

Dissertation Title: *J/ψ Production Properties from Polarized Proton-Proton Collisions at 200 GeV.*

2. M.S. in Physics: Magnetism (Fall 1997 - Fall 1999).

Yarmouk University, Jordan (Jan 2000).

Thesis Title: *Magnetocaloric Effect in Magnetic Fluids.*

3. B.S. in Physics with Minor in Mathematics.

Yarmouk University, Jordan (June 1997).

Employment:

1. Dean of Faculty of Science, Al Al-Bayt University, Sept 1, 2021-now.

2. Full Professor at Al Al-Bayt University, 2019-now.

3. Associate Professor at Al Al-Bayt University, Jan. 16, 2013-Oct 2019.

4. Head of Mathematical and Physical Sciences Department DMPS (Math, Physics, Computer Science, and Statistics) at University of Nizwa, Sultanate of Oman, Sept 17, 2014 – August 31, 2016.

5. Associate Professor –Sabbatical leave provided by Al Al-Bayt University and spent at University of Nizwa, Sept. 2014-Sept 2015.

6. Head of Physics Department, Al Al-Bayt University (Sept , 2010- Sept. 2012).
7. Assistant Professor at Al Al-Bayt University (Sept 14, 2008- Jan. 15, 2013)
8. Head of Physics Department, Al-Hussein Bin Talal University (Sep 10, 2006-Sept 16, 2007).
9. Assistant Professor at Al-Hussein Bin Talal University (Sept 10, 2005- Sept 14, 2008).
10. Full-time lecturer at Al-Hussein Bin Talal University (Sept 25, 2004- Sept 25, 2005).
11. Research Assistant: (Jan 2002 – June 2004), Physics Department, New Mexico State University, USA, and stationed at Brookhaven National laboratory (www.bnl.gov) in New York.
12. Teaching Assistant: (Spring 2001 - Fall 2001), Physics Department, New Mexico State University, USA.
13. Teaching Assistant during my M.Sc. study: (Spring 1998 - Spring 1999), Physics Department, Yarmouk University, Jordan.

Research of Interest:

As a faculty member, research is an indispensable part of our daily lives. Although, I am usually heavily loaded with teaching during the working days, I spend most of the other times doing research.

- Originally, I was involved in experimental particle physics: J/psi production and polarization and the spin structure of the proton problems. Most of my expertise in that field and in its detector construction and installation were gained while I was stationed at Brookhaven National Laboratory, Upton, NY (PHENIX EXPERIMENT), which is one of the largest US-DOE laboratories. I participated in Run 03 and Run 04 data collections.
- Due to the lack of funds to stay with large collaborations, my current research topics of interest are mainly theoretical and mathematical:
 1. **Confined systems, particularly heavy quarkonia:** *general properties such as mass spectra, decay rates, transition rates, and saturation in mass spectra from energy-dependent potential model, dynamics of heavy quarkonia in QGP.*
 2. **Quantum mechanics related topics such as noncommutative QM and quantization of systems with dissipation:** *The dissipation of energy of particles propagating inside a nonlinear environment such as QGP needs a careful way for quantizing such systems. We did a careful work on this topic which is considered of the origin of physics.*
 3. **Fractional and memory-dependent calculus applications in physical problem:** *Nonlinear phenomena and memory-effects are of important topics in all aspects of physics. To investigate such systems, I used the concepts of fractional derivative and memory-dependent derivative to model dissipation or nonlinear effects in such systems. The ideas are extended to explore the dynamics of heavy quarks or heavy quarkonia bound states in the nonlinear environment, viz., the QGP. The heavy quarkonia suppression and enhancement in such systems are then recovered from this model.*

4. **Magnetism and Magnetic Materials:** *Because of my background during the M.Sc., a little work with others as time permits.*

Taught Courses

Teaching is a major part of my work at the University, and usually I am heavily loaded with different courses each semester, mainly advanced or graduate courses. And during the last 14 years at two different Universities (Al al-Bayt Univ. and Al-Hussein Bin Talal Univ) and during my Sabbatical leave to University of Nizwa, I taught many undergraduate and graduate courses (*some of them voluntarily taught to solve the lack of specialized instructors or number of instructors*) including:

General Physics I	Heat and Waves	Quantum Mechanics <i>graduate-level</i>
General Physics II	Geometrical Optics	Statistical Mechanics
Physics General Labs I and II.	Physical Optics	Statistical Mechanics <i>graduate-level</i>
Heat and Waves	Mathematical Physics II	Classical electrodynamics <i>graduate-level</i>
Geometrical Optics	Mathematical Physics III	Quantum Field Theory <i>graduate-level</i>
Physical Optics	Modern Physics	Polymer Physics
Mathematical Physics II	Quantum Mechanics I	Elementary Particle Physics
Mathematical Physics III	Quantum Mechanics II	Nuclear Physics
Solid State Physics <i>graduate-level</i>	Special Theory of Relativity	Computational Physics <i>graduate-level</i>
Computational Physics	Research and Seminar	Thermal and Statistical Physics
Introduction to Laser Sciences	Laser Interaction with Matter	Special Topics in Lasers

Special Topics in Physics

Classical Mechanics graduate-level (This Fall 2018-2019)

Committees

During my work, I was involved in miscellaneous committees at the Department, College, and University level such as:

1. Curriculum Review Committee
2. Scientific research and higher studies committee.
3. Department executive committee
4. Quality assurance committee
5. Timetable and Schedule committee
6. Promotion committee
7. Benchmarking committee
8. Investigation committee
9. Course equivalency committee
10. لجنة التحكيم: الملتقى الابداعي الطلابي السابع عشر.
11. لجنة التحضير في مؤتمر الرياضيات- جامعة الحسين.
12. لجنة التحضير في مؤتمر العلوم-جامعة ال البيت.

Curriculum Development

I have participated in the curriculum development intensively.

1. Writing learning outcomes for programs and courses in physics, Math, Computer Science, and Statistics using the **Bloom's Taxonomy**.
2. Mapping course learning outcomes to student learning outcomes to graduate attributes (**Mapping Matrices**).
3. Review the programs and submit recommendations for revising.
4. Participate in the development of the M.Sc. program in Physics at Al Al-Bayt University.

Quality Assurance and Accreditation related work

During my work as HoD at UoN – Oman:

1. I was working hard along with my team to ensure that the work at the department follows the quality teaching management system (**QTMS**) of UoN.
2. Prepare the department operational plan (using **ADRI**: Approach, Deployment, Review, and Improvement) based on the College strategic plan, which based on the University strategic plan. The strategic plans are based on the Oman Academic Accreditation Authority (**OAAA**).
3. Follow up all work needed from the department to address the recommendations and affirmations of the Audit Panel in their report at the first stage.

4. Preparation of action plans for various committees.

Community Services and other activities

1. Academic enrichment for the teachers of Physics for the 12th grade in Nizwa Governorate 2015/3/10-9 الإثراء الأكاديمي لمعلمي مادة الفيزياء للصف الثاني عشر في محافظة نزوى
2. Seminars delivered in different places.
3. Cultural weeks.
4. Scientific Open days.
5. All graduation ceremonies

Skills

1. While stationed at BNL-NY ~(2002-2004), I participated heavily with my Colleagues in the construction, installation and commissioning of the PHENIX Muon arms detectors. This opportunity provided me with a unique environment to gain experimental skills and to work with groups positively.
2. The Vibrating Sample Magnetometer (VSM): During my M.Sc. I had the chance to use and run and deal with the VSM particularly at low temperatures using the liquid Nitrogen (~77 K) as a cryogenic system.
3. Linux and windows administration.
4. Coding in LaTeX, and HTML under linux, ROOT, Mathematica, Origin41, and others. And some C and C++.

Training Classes, Workshops and Seminars attended

1. Assessment of academic programs using **Weaveonline**.
2. Strategic and Operational Planning.
3. Toward Designing Better Learning Outcomes.
4. While stationed at Brookhaven National Laboratory, I passed the following training courses:
 - Collider User Training
 - PHENIX Awareness Training
 - Radiological Training
 - Fall Protection
 - Confined Space Entry
 - Cyber Security Training
5. New faculty orientations.

Conferences, Workshops, Meetings

1. المؤتمر الخليجي الثاني للتتقيف بتقنية النانو 2015/12/29-28، سلطنة عمان
2. 15th International Arab Conference on Information Technology (ACIT2014) Chair session, Nizwa, Oman.
3. Workshop on “Toward Designing Better Learning Outcomes”, March 22 2015, University of Nizwa.
4. Workshop on “Strategic and Operational Plans”, April 02 2015, University of Nizwa.
5. الإثراء الأكاديمي لمعلمي مادة الفيزياء للصف الثاني عشر في محافظة نزوى 2015/3/10-9
6. Training on Assessment using Weaveonline, University of Nizwa, 20-22/1/2015.
7. International Conference on Sciences (ICS-2012), ICS-AABU-UKM, Al Al-Bayt University (2012).
8. Fifth Symposium on Use of Nuclear Techniques in Environmental Studies, Yarmouk University, Jordan (2005).
9. Four-Corner Conference, NMSU, Las Cruces, USA. (2001).
10. Forth-Symposium on Magnetics, Yarmouk University, Jordan (2000).
11. Third-Symposium on Magnetics, Yarmouk University, Jordan (1998).

Theses

1. Natali Sabah, Spectroscopic properties of confined systems using the variational method, in progress, (M.Sc. Thesis, Supervisor & Prof. Hatem Widyan as Co-Supervisor).
2. Fedaa Hussien Ali Staiti, Eigen Spectra For The Confined Quantum Systems In a Polynomial Potential Of Second Degree: Heun's Functions, August 25, 2021 (M.Sc. Thesis, Supervisor & Prof. Hatem Widyan as Co-Supervisor).
3. Ahmad Awwad Saad Al-Khawaldah, Heavy mesons spectra from the screened Cornell potential with spin effects, August 23. 2021 (M.Sc. Thesis, Supervisor).
4. Fadi Adnan Khader Suleiman, Analysis of The Fractional Wave Equations with Different Fractional Definitions, July 18, 2021 (M.Sc. Thesis, Supervisor).
5. Mohamed Ghalieb Mohamed Al-Masaeed, Approximation Methods in Quantum Mechanics using Conformable Derivative, March 2021 (M.Sc. Thesis, Supervisor & Prof. Eqab Rabei as Co-Supervisor).
6. Saif Mofeed Mahmoud Al-Mbydeen, Energy spectra for bound states in the Eckart plus Yukawa potential March 2021 (M.Sc. Thesis, Supervisor).
7. Tariq Mohammad Odeh AL-Banwa, Quantization of the Fractional Bateman System, Nov 24 2020 (M.Sc. Thesis, Supervisor).

8. Sana'a Mohammad Najeeb Al-hayajneh, Thermal properties of heavy mesons, Dec 05 2019 (M.Sc. Thesis, Supervisor).
9. Feda' Mohammad Menahi AL Essa, Confined systems in noncommutative space, July 10, 2019 (M.Sc. Thesis, Supervisor).
10. Salman Saleem Salman ALMoudaibry, Mass spectrum and wave function at the origin for heavy mesons, July 10, 2019 (M.Sc. Thesis, Supervisor).
(طيف الكتلة والذالة الموجية عند نقطة الأصل لأنظمة الميزونات الثقيلة) هذه الرسالة كتبت باللغة العربية.
11. Eman Ali Soud Eleimat, The 3-quarks mass spectrum from Schrodinger equation using the Nikiforov-Uvarov method, July 10, 2019 (M.Sc. Thesis, Supervisor).
12. Ahmed Jaradat, Spectra of quarkonia at finite temperature using multi-dimensional Schrodinger equation, May 2017 (M.Sc. Thesis, Supervisor).
13. Ayed Al-Sharafat, The Fermionic partition function from the bosonic partition function and its applications. The University of Jordan, Dec 2016 (Ph.D. Dissertation, External Examiner).
14. Khaled Baniayesh, The University of Jordan, May 2014 (M.Sc. Thesis, External Examiner).
15. Anood Al-Oon, Heavy quarkonia properties from different potential models Anood, Dec. 2012 (M.Sc. Thesis, Supervisor).
16. Quantization of Damped Harmonic Oscillator in terms of Riesz Fractional Calculus, by Khawla Harahsheh, 2012 (M.Sc. Thesis, Committee member).
17. Numerical Treatment of the Quantum Fractional Oscillator, by Noor Elimat, 2011 (M.Sc. Thesis, Co-Supervisor).
18. Numerical Treatment of Damped Harmonic Oscillator Using Fractional Calculus, by Nadeen Hayek, 2009 (M.Sc. Thesis, Co-Supervisor).
19. On nucleon-nucleon potential using Born Approximation, by Haitham Al-Asii, 2009 (M.Sc. Thesis, Committee member).

Books and Notes

It is of my great interest to write my class notes for the students in a simplified pedagogical way and equipped with examples that reflect the course learning outcomes. Some of these course notes are *under preparation*:

1. Statistical Mechanics (in English) 60%
2. Quantum Mechanics (in Arabic ميكانيكا الكم) 60%
3. Classical Mechanics (in Arabic الميكانيكا الكلاسيكية) 80%
4. Mathematical Physics (in English) 40%
5. Particle Physics (in English). 40%

And this Research book:

6. Muons: New Research. J. Caparthy, ed. Nova Science Publishers Inc. NY, 2005. (247 pp.). ISBN 1-59454-175-2

Publications: (partial)

1. Eqab M Rabei, **Ahmed Al-Jamel**, Quantisation of particle motion in dissipative harmonic environment. *Pramana - J Phys* **94**, 1 (2020). <https://doi.org/10.1007/s12043-019-1882-4>
2. M Abusini, M Serhan, Mohammad F Al-Jamal, **Ahmed Al-Jamel** & Eqab M Rabei . Some exactly solvable PT-invariant potentials with real spectra via the (extended) Nikiforov–Uvarov method. *Pramana - J Phys* **93**, 93 (2019). <https://doi.org/10.1007/s12043-019-1860-x>
3. M. Serhan, M. Abusini, **Ahmed Al-Jamel**, H. El-Nasser, and Eqab M. Rabei, Response to “Comment on ‘Quantization of the damped harmonic oscillator’” [J. Math.Phys. 60, 094101 (2019)]J. Math. Phys. 60, 094102 (2019); <https://doi.org/10.1063/1.5125816>
4. **Ahmed Al-Jamel**, Heavy quarkonia properties from a hard-wall confinement potential model with conformal symmetry perturbing effects, [Modern Physics Letters A Vol. 34, No. 37, 1950307 \(2019\)](#)
5. **Ahmed Al-Jamel**, The search for fractional order in heavy quarkonia spectra, [International Journal of Modern Physics A Vol. 34, No. 10, 1950054 \(2019\)](#)
6. **Ahmed Al-Jamel**, *Dynamics of heavy quarkonia in memory-dependent dissipative environment from Bohmian trajectory perspective*, International Journal of Modern Physics A, Vol. 33, No. 28, 1850164 (2018).
7. **Ahmed Al-Jamel**, *Saturation in heavy quarkonia spectra with energy-dependent confining potential in N-dimensional space*, Modern Physics Letters A, Vol. 33, No. 32 (2018).
8. M. Serhan, M. Abusini, **Ahmed Al-Jamel**, H. El-Nasser, and Eqab M. Rabei, Quantization of the damped harmonic oscillator, Journal of Mathematical Physics 59, 082105 (2018).
9. S.K. Maurya, Y. K. Gupta, Baiju Dayanandan, M. K. Jasim, and **Ahmed Al-Jamel**, *Relativistic anisotropic models for compact star with equation of state $p=f(\rho)$* , Int. J. Mod. Phys. D, Vol. 26 (2017) 1750002 (22 pages).
10. K.A.M. Khalaf, A.D. Al Rawas, A.M. Gismelssed, **Ahmed Al Jamel**, S.K.J. Al Ani, M.S. Shongwe, K.O. Al Riyami, S.R. Al Alawi, *Influence of Cr substitution on Debye-Waller Factor and related structural parameters of ZnFe 2-x Cr x O 4 spinels*, Journal of Alloys and Compounds, 701, 474-486. DOI: [10.1016/j.jallcom.2017.01.083](https://doi.org/10.1016/j.jallcom.2017.01.083)
11. **Ahmed Al-Jamel**, Mohammad F Al-Jamal, and Ahmed El-Karamany, *A memory-dependent derivative model for damping in oscillatory systems*, Journal of Vibration and Control 1-9, 2016.
12. A. Adare et al. (PHENIX Collaboration), *Transverse energy production and charged-particle multiplicity at midrapidity in various systems from $\sqrt{s_{NN}}$ 7.7 to 200 GeV*, - Phys. Rev. C 93, 024901 – Published 3 February 2016

13. **Ahmed Al-Jamel**, *Energy Spectra of Tightly Confined Systems*, Applied Physics Research; Vol. 7, No. 5; 2015.
14. Anood al-Oun, **Ahmed Al-Jamel**, and H. Widyan, *Various Properties of Heavy Quarkonia From Flavor-Independent Coulomb Plus Quadratic Potential*, Jordan Journal of Physics Oct 2015.
15. A. Adare *et al.* (PHENIX Collaboration), Systematic study of azimuthal anisotropy in Cu + Cu and Au + Au collisions at $\sqrt{s_{NN}} = 62.4$ and 200 GeV, Phys. Rev. C 92, 034913 – Published 23 September 2015.
16. Eqab M. Rabei, **A. Al-Jamel**, H. Widyan and D. Baleanu, *Comment on “Maxwell's equations and electromagnetic Lagrangian density in fractional form”* J. Math. Phys. 55, 034101 (2014); <http://dx.doi.org/10.1063/1.4868479>.
17. I. Bsoul, S.H. Mahmood, Abdel-Fatah Lehlooh, **Ahmed Al-Jamel**, *Structural and magnetic properties of SrFe_{12-2x}Ti_xRu_xO₁₉*, Journal of Alloys and Compounds 551 (2013) 490–495.
18. **Ahmed Al-Jamel** and Hatem Widyan, *Heavy quarkonium mass spectra in a Coulomb field plus quadratic potential using Nikiforov-Uvarov method*, Applied Physics Research, Vol. 4, No. 3, August 2012.
19. **Ahmed Al-Jamel**, Hatem Widyan, Eqab M. Rabei, *The octupole field effect on the H-atom spectrum in Noncommutative space*, Adv. Studies Theor. Phys., Vol. 6, 2012, no. 17-20, 887-892.
20. Nadeen Hayk, **Ahmed Al-Jamel**, Eqab M. Rabei, *The fractional model for damping in oscillatory systems*, Proceedings of the 3rd (2011) CUTSE International Conference, Miri, Sarawak, Malaysia, 8-9 Nov, 2011.
21. **A. Al-Jamel**, *Heavy Quarkonia with Cornell potential on Noncommutative space*, Journal of Theoretical and Applied Physics, **5-1**, 21-24 (2011).
22. **A. Al-Jamel**, M. Serhan, M. Abusini, *Analytical Expressions for Nucleon-Nucleon Phase Shift at High Energy Using Separable Potential*, Journal of Theoretical and Applied Physics, **5-2**, 47-52 (2011).
23. N. Chair, **A. Al-Jamel**, M. Sarhan, M. Abu Sini and E. M. Rabei, *The Noncommutative quadrupole field effect for the H-atom*, Journal of Physics A: Mathematical and Theoretical: J. Phys. A: Math. Theor. **44** 095306 (2011).
24. S. Adare *et al.* (PHENIX Collaboration), Enhanced Production of Direct Photons in Au+Au Collisions at $\sqrt{s_{NN}} = 200$ GeV and Implications for Initial Temperature, PRL 104, 132301 (2010).

25. S. Afanasiev et al. (PHENIX Collaboration), Photoproduction of J/ψ and of high mass e^+e^- in ultraperipheral Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV, Physics Letters B (2009) 321-329.
26. S. S. Adler et al. (PHENIX Collaboration), Production of ω mesons at large transverse momenta in p+p and d+Au collisions at $\sqrt{s_{NN}} = 200$ GeV, PHYSICAL REVIEW C 75, 051902(R) (2007).
27. Detailed measurement of the e^+e^- pair continuum in p+p and Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV and implications for direct photon production, PHENIX Collaboration (A. Adare et al.). Dec 2009, Phys.Rev.C81:034911,2010.
28. Correlated Production of p and anti-p in Au+Au Collisions at $\sqrt{s_{NN}} = 200$ -GeV, By PHENIX Collaboration (A. Adare et al.), Phys.Lett.B649:359-369,2007.
29. Nuclear effects on hadron production in d+Au collisions at $\sqrt{s_{NN}} = 200$ GeV revealed by comparison with p+p data S. S. Adler et al. (PHENIX Collaboration) Phys. Rev. C 74, 024904 (2006).
30. Azimuthal Angle Correlations for Rapidity Separated Hadron Pairs in d+Au Collisions at $\sqrt{s_{NN}} = 200$ GeV, S. S. Adler et al. (PHENIX Collaboration) Phys. Rev. Lett. 96, 222301 (2006).
31. J/Ψ Production and Nuclear Effects for d+Au and p+p Collisions at $\sqrt{s_{NN}} = 200$ GeV S. S. Adler et al. (PHENIX Collaboration) Phys. Rev. Lett. 96, 012304 (2006).
32. Jet structure from dihadron correlations in d+Au collisions at $\sqrt{s_{NN}} = 200$ GeV S. S. Adler et al. (PHENIX Collaboration), Phys. Rev. C 73, 054903 (2006).
33. Improved measurement of double helicity asymmetry in inclusive midrapidity π^0 production for polarized p+p collisions at $\sqrt{s} = 200$ GeV, S. S. Adler et al. (PHENIX Collaboration) Phys. Rev. D 73, 091102 (2006).
34. Saturation of Azimuthal Anisotropy in Au+Au Collisions at $\sqrt{s_{NN}} = 62-200$ GeV, S. S. Adler et al. (PHENIX Collaboration), Phys. Rev. Lett. 94, 232302 (2005).
35. Nuclear Modification Factors for Hadrons at Forward and Backward Rapidities in Deuteron-Gold Collisions at $\sqrt{s_{NN}} = 200$ GeV, S. S. Adler et al. (PHENIX Collaboration), Phys. Rev. Lett. 94, 082302 (2005).

36. Jet structure of baryon excess in Au+Au collisions at $\sqrt{s_{NN}}=200$ GeV S. S. Adler et al. (PHENIX Collaboration), Phys. Rev. C 71, 051902 (2005).
37. Optical Alignment System for the PHENIX Muon Tracking Chambers, J. Murata, A. Al-Jamel, R.L. Armendariz, M.L. Brooks, T. Horaguchi, N. Kamihara, H. Kobayashi, D.M. Lee, T.-A. Shibata, W.E. Sondheim. Nuclear Instruments and Methods in Physics Research A 500 (2003) 309-317
38. Absence of Suppression in Particle Production at Large Transverse Momentum in $\sqrt{s_{NN}}=200$ GeV d+Au Collisions, S. S. Adler et al. (PHENIX Collaboration) Phys. Rev. Lett. 91, 072303 (2003).
39. I. Abu-Aljarayesh, **A. F. Al-Jamel**, M. R. Said, Magnetic entropy change of magnetic fluids, Physica B, Aug 2002.