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Usama Al Khawaja

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University of Jordan

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h-index: Scopus 24, Google Scholar 25
citations: > 2000

1. Personal information

Name:	Usama Gh. S. Al Khawaja
Date and place of birth:	7/Feb./1970, Amman-Jordan
Address (work):	Department of Physics, School of Science, The University of Jordan, Amman, 11942, Jordan
E-mail:	u.alkhawaja@ju.edu.jo
Languages	1) Arabic (native) 2) English (excellent) 3) Danish (fair) 4) Urdu (beginner)
Marital status	Married

References	
1	Prof. Lincoln Carr Physics department, Colorado School of Mines USA Email: lcarr@mines.edu
2	Prof. Yuri Kivshar, Nonlinear Physics Centre Fundamental & Theoretical Physics Australian National University, Email: yuri.kivshar@anu.edu.au
3	Prof. Henk Stoof, Institute for Theoretical Physics (ITP). P. O. Box 80.195, 3508 TD Utrecht, The Netherlands. Phone: +31-30 253 2955 email: H.T.C.Stoof@phys.uu.l
4	Prof. Maamar Benkrouda, Dean College of Science, UAE University, Email: maamar@uaeu.ac.ae
5	Prof. C. J. Pethick, (my PhD supervisor) NORDITA, Blegdamsvej 17, DK-2100 Copenhagen Ø, Denmark. Phone: +45 - 35 32 52 26, e-mail:pethick@nordita.dk
6	Prof. Abdulaziz D. Alhaidari Saudi Center for Theoretical Physics (SCTP) Dhahran, Saudi Arabia e-mail: haidari@mailaps.org , mobile: +966-505664635
7	Prof. H. Bahlouli, Physics Department, King Fahd University for Petroleum and Minerals and SCTP bahlouli@kfupm.edu.sa
8	Prof. Fedor Mitschke Rostok University, Germany, Email: fedor.mitschke@uni-rostock.de
9	Prof. Hamid Noaimi, Provost University of Sharja

2. Academic and work profile

Professor	University of Jordan, Physics Department, Oct. 2023-present
Chairman	United Arab Emirates University, Physics Department, Sept. 2016-2023
MSc. program coordinator	United Arab Emirates University, Physics Department, Sept. 2015- Sept. 2016.
Full professor	United Arab Emirates University, Physics Department, Sept. 2012-present.
Associate professor:	United Arab Emirates University, Physics Department, Sept. 2007-2012.
Assistant professor:	United Arab Emirates University, Physics Department, Sept. 2002-Sept. 2007.
Researcher (Postdoc):	Utrecht University, The Netherlands, Sept. 1999-Sept. 2002.
Degree: Ph.D. in physics	March 1996-September 1999 Niels Bohr Institute and H.C. Ørsted Institute/ University of Copenhagen/Denmark Supervisors: 1) Henrik Smith/H.C. Ørsted Institute/ University of Copenhagen 2) C.J. Pethick/NORDITA (Copenhagen) Thesis title: <i>Bose-Einstein Condensation in a Confining Potential.</i>
Degree: M.Sc. in physics	September 1992-June 1995, University of Jordan. Thesis title: A microscopic study for two- dimensional neutral Fermi systems. Supervisor: Prof. Dr. Humam B. Ghassib
Degree: B.Sc. in physics	September 1988-June 1992, University of Jordan.

3. Awards:

1	<i>Award of Excellence in Research</i> (University of Jordan 1991, undergraduate student)
2	<i>Research Project Award</i> (UAE University, 2006).
3	<i>Performance Excellence Award</i> (UAE University, 2006).

4	<i>Research Project Award</i> (UAE University, 2007).
5	<i>Faculty of Science Research Award</i> (UAE University, 2007).
6	<i>Abdul Hameed Shoman Award for Young Arab Scientists</i> (Physics, 2007 in Amman, single, 10,000 US \$).
7	<i>Distinguished Arab Researcher Award</i> by the Association of Arab Universities (Jan. 2015 in Beirut, 7,500 US \$).
8	<i>The UAEU Award for Publishing in Top 10% Journals</i> UAEU, 2013.
9	<i>The UAEU Award for Publishing in Top 10% Journals</i> UAEU, 2014.
10	<i>College Award for Excellence in Research 2014-2015</i> UAEU, 2015.
11	<i>University Award for Excellence in Research 2015-2016</i> UAEU, 2015.
12	<i>The UAEU Award for Publishing in Top Journals</i> UAEU, 2015.
13	<i>Chancellor recognition award for patents, UAEU 2016.</i>
14	<i>The UAEU Award for Publishing in Top Journals</i> UAEU, 2016.
15	<i>The UAEU Award for Publishing in Top Journals</i> UAEU, 2017.
16	<i>Excellence Allowance Award, UAEU 2017 (salary increase).</i>
17	<i>Excellence Allowance Award, UAEU 2018 (salary increase).</i>
18	<i>Khalifa Award of Distinguished Professor in the Field of Scientific Research, 2018.</i>
19	<i>The UAEU Award for Publishing in Top Journals</i> UAEU, 2018.
20	<i>Excellence Allowance Award, UAEU 2019 (salary increase).</i>
21	<i>Excellence Allowance Award, UAEU 2021 (salary increase).</i>
22	<i>Reached third phase (interview) for Mohamad Ben Rashed Medal 2020.</i>
23	<i>The UAEU Award for Publishing in Top Journals</i> UAEU, 2019.
24	<i>The UAEU Award for Publishing in Top Journals</i> UAEU, 2020.

4. International Collaboration:

Note: Addresses of the below-mentioned scientists are listed up in the References section.

1. Prof. Hocine Bahlouli from King Fahd University for Petroleum and Minerals/ Dhahran, Saudi Arabia.
2. Prof. Abdulaziz Al-Haidary, the founder of Saudi Institute for Theoretical Physics.
3. **Prof Yuri Kivshar, ANU, Australia. Co-investigator on UPAR grant.**
4. Prof. Lincoln Carr, Colorado School of Mines, USA. Collaborator.
5. Prof. Bakhtiyor Baizakov, Physical-Technical Institute, Uzbekistan.
6. Prof. Majid Taki, Lille University/France. Collaborator.
7. Prof. Fedor Mitschke, Rostok University/Germany. Collaborator.
8. Prof. H.T.C Stooft from Institute of Theoretical Physics/ Utrecht University/The Netherlands. Previous collaborator.
9. Prof. Henrik Smith from Niels Bohr Institute and Copenhagen University/Denmark, and Prof. C.J. Pethick from NORDITA in Stockholm/Sweden. PhD supervisors.

5. Publications

A. Books:

Handbook of Exact Solutions to the Nonlinear Schrödinger Equations

Usama Al Khawaja and Laila Al Sakkaf,

Published November 2019,

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<https://iopscience.iop.org/book/978-0-7503-2428-1>

B. International Journals:

1	<i>Ring contribution to two-dimensional neutral Fermi systems,</i> U. Al Khawaja and H. Ghassib, Czech. J. Phys. 46 (1996), Suppl. S5 (In the proceedings of the 21st international conference on low temperature physics, Prague, August 8-14, 1996.).
2	<i>The surface of a Bose-condensed gas,</i> U. Al Khawaja , C. J. Pethick, and H. Smith: Phys. Rev. A 60 , 1507(1999).

3	<p><i>Kinetic theory of collective modes in atomic clouds above the Bose-Einstein transition temperature,</i> U. Al Khawaja , C. J. Pethick, and H. Smith J. Low Temperature Physics, 118, 127(2000).</p>
4	<p><i>Kinetic theory of collective excitations and damping in Bose- Einstein condensed gas,</i> U. Al Khawaja , H. T. C. Stoof, Phys. Rev. A 62, 53602(2000).</p>
5	<p><i>Skyrmions in a ferromagnetic Bose-Einstein condensate,</i> U. Al Khawaja and H. T. C. Stoof, Nature 411, 918 (2001).</p>
6	<p><i>Skyrmion Physics in Bose-Einstein Ferromagnets,</i> U. Al Khawaja and H. T. C. Stoof, Phys. Rev. A 64, 043612 (2001).</p>
7	<p><i>Monopoles in an Antiferromagnetic Bose-Einstein Condensate,</i> H. T. C. Stoof, E. Vliegen, and U. Al Khawaja, Phys. Rev. Lett. 87, 120407 (2001).</p>
8	<p><i>Nonlinear Coupling Between Scissors Modes of a Bose-Einstein condensate,</i> U. Al Khawaja and H. T. C. Stoof, Phys. Rev. A 65, 013605 (2001).</p>
9	<p><i>Phase Fluctuations in Atomic Bose Gases,</i> J. O. Andersen, U. Al Khawaja, and H. T. C. Stoof, Phys. Rev. Lett. 88, 070404 (2002).</p>
10	<p><i>Low-dimensional Bose Gases,</i> U. Al Khawaja, J. O. Andersen, and H. T. C. Stoof, Phys. Rev. A 66, 013615 (2002).</p>
11	<p><i>Bright Soliton Trains of Trapped Bose-Einstein Condensates,</i> U. Al Khawaja, H. T. C. Stoof, R. G. Hulet, K. E. Strecker, and G. B.Partridge, Phys. Rev. Lett. 89, 200404 (2002).</p>
12	<p><i>Erratum: Low-Dimensional Bose Gases,</i> U. Al Khawaja, J. O. Andersen, N. P. Proukakis, H. T. C. Stoof, Phys. Rev. A 66, 059902 (2002).</p>
13	<p><i>Collisional Damping and Resonance Behavior of Coupled Scissors Modes of a Bose-Einstein Condensate,</i> U. Al Khawaja, H. Bahlouli, S.M. Alamoudi and A. Alsunaidi, J. Low Temp. Phys. 131, 113 (2003).</p>
14	<p><i>Dimensional and Temperature Crossover in Trapped Bose Gases.</i></p>

	U. Al Khawaja , N.P. Proukakis, J.O. Andersen, M. W. J. Romans, H.T.C. Stoof, Phys. Rev. A 68 , 043603 (2003).
15	<i>Vortex Stability Near the Surface of a Bose-Einstein Condensate</i> , U. Al Khawaja , Phys. Rev. A 68 , 063614 (2003).
16	<i>Feshbach Resonances in an Optical Lattice</i> , D.B.M. Deckerscheid, U. Al Khawaja , D. van Oosten, and H.T.C. Stoof, Phys. Rev. A 71 , 043604 (2005).
17	<i>Vortex Dynamics Near the Surface of a Bose-Einstein Condensate</i> , U. Al Khawaja , Phys. Rev. A 71 , 063611 (2005).
18	<i>The Effect of Temperature and Pinning Density on the Critical Current of a Superconductor with a Square Periodic Array of Pinning Sites</i> , I. M. Obaidat, U. Al Khawaja and M. Benkraouda, Supercond. Sci. Technol. 18 , 1380 (2005).
19	<i>Temperature and Pinning Strength Dependence of the Critical Current of a Superconductor with a Square Periodic Array of Pinning Sites</i> , M. Benkraouda, I. M. Obaidat and U. Al Khawaja , Physica C 433 , 205 (2006). (Top 25 read papers during Jan-March 2006)
20	<i>Dynamic Phases of Low-Temperature Low-Current Driven Vortex Matter in Superconductors</i> , M. Benkraouda, I. M. Obaidat, U. Al Khawaja and N. Mulaa*, Supercond. Sci. Technol. 19 , 368 (2006).
21	<i>Direct Support for the Extrinsic Model of Semiconductor Interfaces using Density Functional Calculations</i> , M. Obaidat, N. Qamhieh, M. Benkraouda and U. Al Khawaja , International Journal of Pure and Applied Physics, (IJPAP), Vol. 2 , No. 1, pp. 1-10 (2006).
22	<i>Numerical Simulations on the Role of Defect Size on the Critical Depinning Current in High-temperature Superconductors</i> , U. Al Khawaja , M. Benkraouda, I. M. Obaidat and S. Alneaimi*, Physica C 442 (2006)1-8.
23	<i>The Behavior of the Critical Current Density Below and Above the First Matching Field in Superconductor with Periodic Square Arrays of Pinning Sites</i> , I. M. Obaidat, U. Al Khawaja , M. Benkraouda, and N. Salmeen*, Physics Letters A, 359 , Issue 4, pp. 249-334 (2006).

24	<i>Error Control in the Adomian's Decomposition Method Applied to the Time-Dependent Gross-Pitaevskii Equation,</i> U. Al Khawaja and K. Al-Khaled, International J. of Computer Mathematics 00 , (2007) 1-7.
25	<i>Lax Pairs of Time-Dependent Gross-Pitaevskii Equation,</i> U. Al Khawaja , J. Phys. A: Math. Theo. 39 (2006) 9679-9691.
26	<i>Numerical prediction of a dip effect in the critical current density,</i> U. Al Khawaja , M. Benkraouda and I.M. Obaidat, Physica C: Superconductivity 452 , (2007) 48-53.
27	<i>Exact solitonic solutions of the Gross-Pitaevskii equation with a linear potential,</i> U. Al Khawaja , Phys. Rev. E 75 , 066607 (2007).
28	<i>Investigating the Effect of the Density of Vortices at the First Matching Field on the Critical Current Density,</i> M. Obaidat, F. Hamed, U. Al Khawaja , and M. Benkraouda . IJoMS 2 , 159(2007)
29	<i>Absence of the Role of Temperature and Size of Pinning Sites on the Occurrence of the Dip Effect,</i> I. M. Obaidat, F. Hamed, M. Benkraouda and U. Al Khawaja International Journal of Pure and Applied Physics, Vol. 3, No.2, pp. 163-172 (2007)
30	<i>Dependence of the critical current density on the first matching field density,</i> I.M. Obaidat *, M. Benkraouda, and U. Al Khawaja , Physica C 468 , 2208-2212 (2008).
31	<i>Dependence of the peak effect on the density of pinning sites</i> I. M. Obaidat, U. Al Khawaja and M. Benkraouda, Modern Physics Letters B 22 , 3125-3134 (2008).
32	<i>Roles of pinning strength and density in vortex melting,</i> I M Obaidat, U Al Khawaja and M Benkraouda, Supercond. Sci. Technol. 21 , 085004(7pp) (2008).
33	<i>Soliton Bullets of Compressing Bose-Einstein Condensates in Mexican-Sombrero like Expulsive Potentials</i> V.N. Serkin, T.L. Belyaeva, U. Al Khawaja , and L.M. Kovachev, Internet Electron. J. Nanoc. Moletrón. 2008, Vol. 6, N° 2, pp 1233-1246.
34	<i>Investigating Dynamic Vortex Transitions in 2D Superconductors .</i> I. M. Obaidat, U. Al Khawaja , and M. Benkraouda: Modern Physics Letters B, 23 , No. 19(2009) 2399-2408.
35	<i>Soliton localization in Bose–Einstein condensates with time-dependent harmonic potential and scattering length</i> U. Al Khawaja , J. Phys. A: Math. Theor. 42 (2009) 265206.
36	<i>Integrability of a general Gross–Pitaevskii equation and exact solitonic solutions of a Bose–Einstein condensate in a periodic potential</i>

	U. Al Khawaja , Physics Letters A 373 , 2710(2009).
37	<i>Singular short range potentials in the J-matrix approach</i> M.S. Abdelmonem, I. Nasser, H. Bahlouli, U. Al Khawaja , A.D. Alhaidari, Physics Letters A 373 , 2408-2412(2009).
38	<i>Computation of Resonances and Bound States Using J-matrix Approach</i> , I. Nasser, M. S. Abdelmonem , H. Bahlouli and U. Al Khawaja , Applied Mathematics & Information Science 3 , 213 (2009).
39	<i>A comparative analysis of Painlevé, Lax Pair, and Similarity Transformation methods in obtaining the integrability conditions of nonlinear Schrödinger equations</i> , U. Al Khawaja , J. Math. Phys. 51 , 053506 (2010). <i>(Top 20 Most Downloaded, May 2010,</i> http://jmp.aip.org/features/most_downloaded?month=5&year=2010)
40	<i>Stability and dynamics of two-soliton molecules</i> , U. Al Khawaja , Phys. Rev. E 81 , 056603 (2010).
41	<i>Scattering of a matter-wave single soliton and two-soliton molecule by an attractive potential</i> , S. M. Al-Marzoug, S. M. Al-Amoudi, U. Al Khawaja , H. B. Bahlouli, and S.M Alamoudi, Phys. Rev. E 83 , 026603 (2011). Selected for PRE Kaleidoscope Images: February 2011 (http://pre.aps.org/kaleidoscope/pre/83/2/026603)
42	<i>Spontaneous formation and resonant scattering of soliton molecules</i> , U. Al Khawaja , S. M. Al-Marzoug, and H. Bahlouli, J. Phys. B: At. Mol. Opt. Phys. 44 , 115304 (2011).
43	<i>Formation of Matter-Wave Soliton Molecules</i> , U. Al Khawaja and H.T.C. Stoof New J. Phys. 13 , 085003 (2011).
44	<i>Interaction forces among two-dimensional bright solitons and many-soliton molecules</i> U. Al Khawaja , Phys. Rev. E 85 , 056604 (2012)
45	<i>Binding energy of soliton molecules in time-dependent harmonic potential and nonlinear interaction</i> U. Al Khawaja and Abdelali Boudjumaa* Phys. Rev. E 86 , 036606 (2012). *My PhD student
46	<i>Directional flow of solitons through asymmetric potentials: a soliton diode</i> Muhammad Asad Azzaman and U. Al Khawaja , European Physics letters EPL, 101 (2013) 50008.
47	<i>Unidirectional soliton flows in PT -symmetric potentials</i> U. Al Khawaja , S. M. Al-Marzoug, H. Bahlouli, and Yuri S. Kivshar,

	Phys. Rev. A 88 , 023830 (2013).
48	<i>Rogue waves management by external potentials</i> U. Al Khawaja and M. Taki Phys. Lett. A 377 , 2944 (2013).
49	<i>Stability and Dynamics of soliton molecules in Dispersion-managed Optical Fibers,</i> Abdelali Boudjumaa*, and U. Al Khawaja , Phys. Rev. A 88 , 045801 (2013). *My PhD student
50	<i>Modulational Instability of the Peregrine Soliton</i> U. Al Khawaja , M. Asad-uz-zaman, and S. M. Al-Marzoug, H. Bahlouli, Commun Nonlinear Sci Numer Simulat, 19 , 2706 (2014).
51	<i>Averaged dynamics of soliton molecules in dispersion-managed optical fibers</i> S. M. Alamoudi, U. Al Khawaja , and B. B. Baizakov, Phys. Rev. A 89 , 053817 (2014). <i>Selected for PRE Kaleidoscope Images for June, see:</i> http://journals.aps.org/prl/kaleidoscope/prl/89/5/053817
52	<i>Exact localized and oscillatory solutions of the nonlinear spin and pseudo-spin symmetric Dirac equations,</i> U. Al Khawaja , Phys. Rev. A 90 , 052105 (2014).
53	<i>Effect of third-order dispersion on the solitonic solutions of the Schrodinger equations with cubic nonlinearity</i> C. H. Houria*, Benarous Mohammed, Asad-uz-zaman Muhammad and U. Al Khawaja Advances in Mathematical Physics Volume 2014 (2014), Article ID 323591, 6 pages http://dx.doi.org/10.1155/2014/323591 *My PhD student
54	<i>Unidirectional of solitons in waveguide arrays,</i> U. Al Khawaja and Andrey A. Sukhorukov, Optics Letters 40 , 2719-2722 (2015).
55	<i>Modulational Instability of the Kuznetsov-Ma Breather in Optical Fibers with Constant and Periodic Dispersion,</i> U. Al Khawaja , S.M. Al-Marzoug, H. Bahlouli, and F.Kh. Abdullaev Communications in Nonlinear Science and Numerical Simulation 32 , 1 (2016).
56	<i>Lax pairs and integrability conditions of higher-order nonlinear Schrodinger equations</i> M. Asad-uz-zaman, H. Chachou Samet, and U. Al Khawaja Communications in Theoretical Physics, Volume 66, Number 2 (2016).
57	<i>All-optical switches, unidirectional flow, and logic gates with discrete solitons in waveguide arrays</i> U. Al Khawaja , S.M. Al-Marzoug, H. Bahlouli Optics Express 24 (10) 11062-11074 (2016).
58	<i>Force of interaction between discrete solitons</i>

	U. Al Khawaja , S.M. Al-Marzoug, H. Bahlouli Optics Express Vol. 24, Issue 16, pp. 18148-18162 (2016).
59	<i>Peierls-Nabarro potential profile of discrete nonlinear Schroedinger equation</i> U. Al Khawaja , S.M. Al-Marzoug, H. Bahlouli <i>Commun Nonlinear Sci Numer Simulat</i> 46 74–80 (2017).
60	<i>Collisional dynamics of solitons in the coupled PT symmetric nonlocal nonlinear Schrödinger equations</i> PS Vinayagam, R Radha, U Al Khawaja , L Ling <i>Communications in Nonlinear Science and Numerical Simulation</i> 52 , 1-10 (2017).
61	<i>Dissociation of soliton molecules under periodic perturbation in dipolar quantum gases</i> SR Otajonov, BK Turmanov, U Al Khawaja , BB Baizakov <i>Journal of Physics Conference Series</i> 869 (1), (2017).
62	<i>Device for performing multiple optical operations in communication network</i> U Al Khawaja , S Al Marzoug, H Bahlouli <i>US Patent</i> 9,547,215, (2017)
63	Lax Pair and new exact solutions of the nonlinear Dirac equation YH Sabbah, U Al Khawaja, PS Vinayagam <i>Communications in Nonlinear Science and Numerical Simulation</i> 61 , 167-179 (2018).
64	New classes of solutions in the coupled PT symmetric nonlocal nonlinear Schrödinger equations with four wave mixing PS Vinayagam, R Radha, U Al Khawaja, L Ling <i>Communications in Nonlinear Science and Numerical Simulation</i> 59 , 387-395 (2018).
65	High-accuracy power series solutions with arbitrarily large radius of convergence for the fractional nonlinear Schrödinger-type equations U Al Khawaja, M Al-Refai, G Shchedrin, LD Carr <i>Journal of Physics A: Mathematical and Theoretical</i> 51 (23), 235201 (2018).
66	Enhanced mobility of discrete solitons in anisotropic two-dimensional waveguide arrays with modulated separations U Al Khawaja, PS Vinayagam, SM Al-Marzoug <i>Physical Review A</i> 97 (2), 023820 (2018).
67	A Numerical Algorithm for Solving Higher-Order Nonlinear BVPs with an Application on Fluid Flow over a Shrinking Permeable Infinite Long Cylinder LY Al Sakkaf, QM Al-Mdallal, U Al Khawaja <i>Complexity</i> 2018 (2018).
68	Convergent Power Series of and Solutions to Nonlinear Differential Equations U Al Khawaja, QM Al-Mdallal <i>International Journal of Differential Equations</i> 2018 (2018).
69	Families of localized and oscillatory solutions to the coupled nonlinear Dirac equations in two-dimensions, H. Chachou Samet, M. Benarousa, M. Asad-uz-zaman, and U. Al Khawaja, accepted for publication in <i>Physics of Wave Phenomena</i> (Oct. 2018)
70	Stable discrete soliton molecules in two-dimensional waveguide arrays

	PS Vinayagam, A Javed, U Al Khawaja Physical Review A 98 (6), 063839, (2018).
71	Integrability conditions and solitonic solutions of the nonlinear Schrödinger equation with generalized dual-power nonlinearities, PT-symmetric potentials, and space- and time-dependent coefficients U Al Khawaja, H Bahlouli Communications in Nonlinear Science and Numerical Simulation 69, 248-260 (2019).
72	Analytical analysis of soliton propagation in microcavity wires U Al Khawaja, H Eleuch, H Bahlouli Results in Physics 12, 471, (2019).
73	Handbook of Exact Solutions to the Nonlinear Schrödinger Equations U Al Khawaja, L Al Sakkaf IOP Publishing, November (2019).
74	Unidirectional flow of solitons with nonlinearity management MOD Alotaibi, SM Al-Marzoug, H Bahlouli, U Al Khawaja Physical Review E 100 (4), 042213 (2019).
75	Interwires polar soliton molecules in a biwire system KM Elhadj, A Boudjemâa, U Al-Khawaja Physica Scripta 94 (8), 085402 (2019).
76	Weakly bound solitons and two-soliton molecules in dipolar Bose–Einstein condensates BB Baizakov, SM Al-Marzoug, U Al Khawaja, H Bahlouli Journal of Physics B: Atomic, Molecular and Optical Physics 52 (9), 095301 (2019).
77	Peregrine solitons of the higher-order, inhomogeneous, coupled, discrete, and nonlocal nonlinear Schrödinger equations T Uthayakumar, U Al Khawaja, L Al Sakkaf Frontiers in Physics 8, 501, (2020).
78	Singular soliton molecules of the nonlinear Schrödinger equation K Mohammed Elhadj, L Al Sakkaf, U Al Khawaja, A Boudjemâa PhRvE 101 (4), 042221, (2020).
79	Families of Skyrmions in Two-Dimensional Spin-1/2 Systems A Javed, L Al Sakkaf, U Al Khawaja IEEE Journal of Selected Topics in Quantum Electronics, (2020).
80	Amplifying optical signals with discrete solitons in waveguide arrays A Javed, A Shaheen, U Al Khawaja Physics Letters A, 126654, (2020).

81	<p>Peregrine Soliton Management of Breathers in Two Coupled Gross–Pitaevskii Equations with External Potential HC Sameut, S Pattu, U Al Khawaja, M Benarous, H Belkroukra Physics of Wave Phenomena 28 (3), 305-312, (2020)</p>
82	<p>Adding binary numbers with discrete solitons in waveguide arrays A Shaheen, A Javed, U Al Khawaja Physica Scripta 95 (8), 085107, (2020).</p>
83	<p>Superposition principle and composite solutions to coupled nonlinear Schrödinger equations L Al Sakkaf, U Al Khawaja Mathematical Methods in the Applied Sciences 43 (17), 10168-10189, (2020).</p>
85	<p>Critical soliton speed for quantum reflection by a reflectionless potential well U Al Khawaja Physical Review E 103, 062202 (2021).</p>
86	<p>High-speed soliton ejection generated from the scattering of bright solitons by modulated reflectionless potential wells T. Uthayakumar, L. Al Sakkaf, U. Al Khawaja Physical Review E 104 (3), 034203, (2021).</p>
87	<p>Unidirectional flow of composite bright-bright solitons through asymmetric double potential barriers and wells Amaria Javed, T Uthayakumar, MOD Alotaibi, SM Al-Marzoug, H Bahlouli, U Al Khawaja, Communications in Nonlinear Science and Numerical Simulation 103, 105968 (2021).</p>
88	<p>High accuracy power series method for solving scalar, vector, and inhomogeneous nonlinear Schrödinger equations LA Sakkaf, UA Khawaja Alexandria Engineering Journal 61 (12), 11803-11824 (2022). arXiv preprint arXiv:2108.13174, (2021).</p>
89	<p>Unidirectional flow of composite bright-bright solitons through asymmetric double potential barriers and wells M Alotaibi, U Al-Khawaja, H Bahlouli, S Al-Marzoug, A Waqar, ... APS March Meeting Abstracts 2022, S34. 011, (2022).</p>

90	Simulating an all-optical quantum controlled-NOT gate using soliton scattering by a reflectionless potential well A Javed, T Uthayakumar, U Al Khawaja Physics Letters A 429, 127949, (2022).		
91	Quantum reflection of dark solitons scattered by reflectionless potential barrier and position-dependent dispersion L Al Sakkaf, T Uthayakumar, U Al Khawaja Physical Review E 105 (6), 064207, (2022).	3	2022
92	Bound-states spectrum of the nonlinear Schrödinger equation with Pöschl-Teller and square-potential wells L Al Sakkaf, U Al Khawaja Physical Review E 106 (2), 024206, (2022).		
93	Realization of the Hadamard gate based on superposition of the composite solitons T Uthayakumar, U Al Khawaja Physics Letters A 452, 128451, (2022).		
94	High accuracy power series method for solving scalar, vector, and inhomogeneous nonlinear Schrödinger equations L Al Sakkaf, U Al Khawaja Alexandria Engineering Journal 61 (12), 11803-11824, (2022).		
95	Reflectionless potentials and resonant scattering of flat-top and thin-top solitons L Al Sakkaf, U Al Khawaja Physical Review E 107 (1), 014202, (2023).		
96	Unidirectional flow of flat-top solitons MOD Alotaibi, L Al Sakkaf, U Al Khawaja Physics Letters A 487, 129120, (2023).		
97	Quantum droplet molecules in Bose-Bose mixtures KM Elhadj, L Al Sakkaf, A Boudjemâa, U Al Khawaja Physics Letters A, 129274, (2023).		

*student

C. Submitted papers

1	Expansion of fractional derivatives in terms of an integer derivative series: physical and numerical applications Anastasia Gladkina (corr-auth) , Gavriil Shchedrin, Usama Al Khawaja, Lincoln Carr J. Math. Phys. 2018
2	<i>PT-Symmetric potentials for polariton Bose-Einstein condensate: 1D case</i> U. Al-Khawaja, H. Bahlouli, and PS Vinayagam. Results in Physics. 2018

6. Conferences, workshops, and scientific visits

International meetings and scientific visits .A		
	meeting	conference/ workshop/ visit
1	<i>Quantum MonteCarlo Simulations</i> , July 7- July21, ICTP/Italy, 1997.	Workshop
2	Visited the Abdos Salam International Center for Theoretical Physics (ICTP) in Trieste/Italy two times in the Summers of years 1997 and 1998. The total period of the two visits is 4 months.	Visit, conference, and workshop
3	Visited The Physics Department at Helsinki University /Finland, July 2001 for one week.	Visit
4	<i>Vortices in Bose-Einstein condensates</i> , Lyon/France, July 2000.	Conference
5	<i>Quantum Gases</i> in ASPEN/Colorado/USA in the period 16 June-8 July 2001.	Workshop
6	I have attended other numerous conferences, workshops, and short scientific visits throughout Denmark, The Netherlands, Europe, and USA.	1996-2002
7	<i>Solitons in Bose-Einstein Condensates</i> , Feb. 8-12, 2005, Almagro/Spain. Talk: <i>Bright matter-wave soliton trains in Bose-Einstein condensates</i>	conference
8	<i>Nonlinear Phenomena in Cold Quantum Gases</i> 1-4 April, 2008, Toledo, Spain Talk: <i>Exact Solitonic Solutions of the Gross-Pitaevskii Equation</i>	conference
9	<i>Nonlinear Phenomena in Quantum Degenerate Gases</i> 12-16 April, 2010, Ourense, Spain.	conference

	Talk: <i>Soliton-soliton force and soliton molecules dynamics and stability</i>	
10	First Porto meeting on Theory and Experiment in Nonlinear Physics, Porto/Portugal, 6 July, 2010. <i>Soliton localization in a vibrating harmonic trap</i>	conference
11	Visited the Institute of Physics at Utrecht University for about one month during July 2004, July 2005, July 2008, and July 2010.	Visits
12	Physical-technical Institute of the Uzbek Academy of Science, 4-11 July, 2011, I presented a talk on soliton molecules.	Workshop and scientific collaboration
13	First International Winter Schools on Quantum Gases, Algiers, 21-31 January 2012. I have Presented 5 lectures to MSc students on Lax Pairs and exact solutions of nonlinear partial differential equations.	Workshop,
14	Visited Prof. Fedor Mitschke at University of Rostock during July 2-6, 2012.	
15	Nonlinear physics day, Dec. 4, 2012: A one-day activity with leaders in the field attending, namely Y. Kivshar and George Stegeman.	
16	<i>The Third International Conference Nonlinear Waves: Theory and Applications</i> Place and date: Beijing, June 12-15, 2013. Activity: Attended and presented a talk.	
17	International conference in quantum optics and quantum information icQoQi Place and date: 3 – 4 Dec 2013 @ Bukit Gambang Resort City, Kuantan, Malaysia. Activity: Attended and presented a talk.	
18	<p>a) Visiting Australian National University (ANU)/Australia I have visited the ANU from Aug.14 to sept.6 2013. I have collaborated with the nonlinearity physics group of Yuri Kivshar and some discussions with the group of Nail akhmediev were also conducted.</p> <p>b) A second visit was conducted in March-April 2014 for 2 weeks.</p>	
19	Regularly Visiting King Fahd University for Petroleum and Minerals at least twice a year.	

	Each visit lasts about one week and is about continuing my collaboration with the theoretical physics group and the Saudi Center for Theoretical Physics.	
20	<p>a) Visited the group of Prof. Milivoj Bellec at Texas A&M in Qatar Foundation: On 25 Feb. 2015 attended a one day international conference on photonics.</p> <p>b) On 16 April 2015, I presented a talk and discussed future collaboration.</p>	
21	<p>a) Visited Prof. Lincoln Carr at the Physics department of the School of Mines, 12-23 May 2015, to discuss the nonlinear Dirac equation and its applications in waveguide arrays.</p> <p>b) A second visit is planned 25 Nov.-5 Dec. 2015 to work on methods of solving fractional nonlinear differential equations.</p>	
22	Gave an invited talk in the international conference: EMN Optoelectronics Meeting (Energy Material Nanotechnology) , Beijing, China from April 24 to 27, 2015.	
23	Middle East Photonics , Qatar Foundation, Texas A&M University, Doha, Qatar, 13-16, Dec. 2015. (organizing committee, http://www.photonics-me.org/)	
24	Frontiers in Theoretical and Applied Physics, American University in Sharja, Feb. 22-25 2017	Organizing committee and contributor
25	Probing the Environment of Planet Mars: Past, present and future of our next-door neighbor in Space, UAEU, November 9 2017	Organizing committee

Regional meetings .B		
	meeting	conference/ workshop/visit
1	<i>Effect of Pinning Size on the Bose-Glass Melting International Conference On Superconductivity And Magnetism ICSM-2008, 25-29 August 2008 Side-Antalya, Turkey.</i>	Conference (presented by a colleague)

2	<i>Al-Azhar Scientific International Conference (AISC'08), Faculty of Science, Al-Azhar University, Cairo, Egypt, 24-26 March 2008. (presented by first author). Bound States and Resonances Using J-matrix Approach, I. Nasser, U. Al Khawaja, M. S. Abdelmonem, D. Alhaidari and H. Bahlouli.</i>	Conference (presented by a colleague)
3	<i>Fourth Saudi Society Meeting (SPS4), Riyadh, Saudi Arabia. Computation of Resonances and Bound States Using J-Matrix Approach, M. Nasser, M. S. Abdelmonem, H. Bahlouli, and U. Al Khawaja Applied Mathematics & Information Sciences 3, 213 (2009).</i>	Conference
4	<i>Theoretical Physics Day, KFUPM, Nov. 9, 2007</i>	One-day conference
5	<i>Theoretical Physics Day, KFUPM, May 3, 2009</i>	One-day conference
6	<i>Nonlinear Physics Day, KFUPM, April 11, 2010</i>	One-day conference
7	<i>New Frontiers in Photonics – looking towards The International Year of Light 2015, May 24 – 25, Texas A&M University at Qatar</i>	
8	Since 2002, I regularly visit the theoretical Physics group at King Fahd University for Petroleum and Minerals often twice a year with average total period of one week. The group has also visited me in Al-Ain three times.	Visits

Local meetings .C		
	meeting	conference/works hop/visit
1	<i>Physics by Enquiry Workshop, the Department of Physics, UAEU, May-12-2004.</i>	Workshop
2	<i>The 5th Annual UAE University Research Conference, Al-Ain, United Arab Emirates, April 25 – 27, 2004.</i>	Conference

3	<i>The 6th Annual UAE University Research Conference, Al-Ain, United Arab Emirates, April 24 – 27, 2005.</i>	Conference
4	<i>The 7th Annual UAE University Research Conference, Al-Ain, United Arab Emirates, April 22 – 24, 2006.</i>	Conference
5	<i>Nanostructured Pins and the Anomaly in the Critical Depinning Force. 1st Nanoconference Sharjah, M. M. Obaidat, U. Al Khawaja, M. Benkraouda, F. Hamid, and N. Salmeen. AIP Conference Proceedings – August 22, 2007 – Volume 929, pp. 22-27.</i>	Conference
	Proceedings of the 8 th ARC at UAEU. Apr-22-2007. <i>Interesting Nonmonotonic Behavior of the Critical Depinning Force in High Temperature Superconductors,</i> I. M. Obaidat, U. Al Khawaja, M. Benkraouda, and N. Salmeen.	Conference
6	Proceedings of the 8 th ARC at UAEU. Apr-22-2007. <i>Numerical Study of Equilibrium and Non-Equilibrium Phases of the Vortex Lattice in High-Temperature Superconductors with a Periodic Array of Pinning Sites,</i> M. Benkraouda, I. M. Obaidat, and U. Al Khawaja.	Conference
7	The Second International Conference on Modeling, Simulation and Applied Optimization, The Petroleum Institute, Abu Dhabi, UAE, March 24-27, 2007. The title of the talk is: <i>Darboux Transformation, Lax Pairs, and Exact Solutions of the Nonlinear Schrödinger Equation.</i>	Conference
8	Gulf Mathematica Conference, 10 Dec. 2007.	Conference
9	<i>World Energy Summit,</i> 22 Jan 2008, Abu Dhabi.	Conference
10	The Third International Conference in Mathematical Sciences ICM 2008, March 3-6 2008, UAEU, Al-Ain. Talk: <i>Exact solitonic solutions of nonlinear partial differential equations using Darboux transformation .</i>	conference

Meetings I organized or participated in organizing .D

	meeting	conference/workshop/visit
1	<i>UN/ESA/NASA/UAE workshop on BSS & IHY held in Abu-Dhabi and Al-AIN during the period 20th – 23rd, November, (2005).</i>	International conference Organizing Committee member

2	<i>The First International Conference on Biological and Medical Physics</i> , at Al-Ain Rotana Hotel, Mar-27-05. Organized by the department of physics at UAEU.	International conference Organizing Committee member
3	<i>First Workshop on Medical Physics</i> , the Inter Continental Hotel, Dubai, UAE, Apr-01-2004. Organized by the Physics Department at UAEU.	International Conference and Workshop Organizing Committee member
4	UAE-CERN workshop , 26-28 Nov., Al-Ain, 2007.	International Conference and Workshop Organizing Committee member
5	Physics Symposium I , 13 Dec. 2007.	Organizer
6	Physics Symposium II , 22 April 2009.	Organizer
7	Workshop: "Programing in Mathematica" . The workshop was held in F1 Building at UAEU on Wednesday Sep. 11, 2013. The workshop was conducted by Wolfram presenter: Markus van Almsick.	Organizer
8	Middle East Photonics, Texas A&M University, Qatar 13-16 Dec. 2015, http://www.photonics-me.org/	Organizing committee member
9	One-Day Mini-Symposium on Mars, UAEU, 9 Nov. 2017.	Organizer

7. Referee

A. Journals:

I referee an average of 5 papers per year. I am a regular referee of the

journals:

1. Physical Review A,
2. Physical Review B,
3. Physical Review E,
4. Physical Review Letters,
5. Rapid Communications,
5. European Physics Letters,
6. Journal of Low Temperature Physics,
7. The Arabian Journal for Science and Engineering,
8. The Canadian Journal of Physics,

B. Books:

1. I have refereed a project for a book on *Advanced Quantum Mechanics* for authors in the King Fahad University for Petroleum and Minerals in Saudi Arabia (2006).
2. Refereed a book entitled *Essential Principles of Electrical and Magnetic Theory*, by I. Nasser, and M.S. Abdelmonem. (2007).
3. Refereed a book on Principles of *Thermal and Statistical Physics*, by I Nasser and A. Al-Sunaidi. (2008).
4. Refereed a book entitled Principles of *Quantum Mechanics with Solved Examples*, by A. Abdel Hadi and I. Nasser, (2009).

C. Research Projects: Refereed many individual and interdisciplinary UAEU research projects. Refereed many large projects for the King Fahd University/ Saudi Arabia.

D. Faculty promotion

1. Faculty member name: xxx
University: Al Jouf University/Saudi Arabia
Department: Physics
Rank: from associate to full professor.
Date of sending back the report: 13 March 2013.
2. Faculty member name: xxx
University: Nizwa University/Oman
Department: Physics
Rank: **from Assistant to associate professor**
Date of sending back the report: April 4, 2013.
3. I served as the coordinator of the Faculty promotion committee at the department and as a member of college promotion committee (2012-2015). I have worked on 12 promotion files of colleagues.

E. PhD Thesis defense examiner

1. **Student name:** Cherine D.

Title of the Thesis: Modeling The Collective Excitations In
Magnetic Multilayer Systems

University: Anna University Chennai/India

Date: 7 July 2014.

2. **Student name:** Abdelaziz Benseghir

Title of the Thesis: Matter-Wave Bright Solitons In Bose-
Einstein Condensates

University: University of Malaya/Malaysia

Date: 7 May 2015.

3. **Student name:** V. Senthil Kumar,

Title of the Thesis: Propagation of electromagnetic soliton and
localized magnetization dynamics in the nanoscale magnetic
systems”.

University: Periyar University, Salem, India.

Date: 7 June 2017

4. **Student name:** Anastasia Gladkina, MSc student at Colorado School of
Mines/USA,

Expected defense in March 2017.

8. Graduate students

1. Co-supervised a master project in Materials Science for the student Salama Al Noaimi together with Drs. Maamar BenKrouda and Ihab Obaidat. (finished, 2006.).

2. Co-supervised a master project in Materials Science for the student Rehab Al Ameri together with Drs. Maamar BenKrouda and Ihab Obaidat. (student withdrew from thesis option after about 6 months of research work).

3. Co-supervised a PhD student in theoretical physics
Student name: Abdelaali Boudgema,

University: Hassiba Ben Bouali of Chlef
 Faculty of Sciences
 Department of physics
 Completed: March 2013

4. Supervised a PhD student in theoretical physics

Student name: Houria Chachou,
 University: Hassiba Ben Bouali of Chlef
 Faculty of Sciences
 Department of physics
 Completed: Dec. 2015.

5. Supervising 2 MSc students at UAEU, started Fall 2014, and Fall 2015.

6. Supervising three PhD student currently. One has defended in Nov. 2021.

9. Research Grants

1	UAE University individual research grant for the year 2002/2003 . Grant number: 01-02-2-11/03 Collaborators: Usama Al Khawaja . Title: Quantum Computation with Bose-Einstein Condensation. Dates: Feb-03 to Feb-04.
2	UAE University joint research grant for the year 2004/2005 . Grant number: 03-02-2-11-04 Collaborators: Maamar Benkrouda, Ihab Obaidat, and Usama Al Khawaja . Title: Vortex Lattice Dynamics in Superconductor Systems of Periodic Pinning Arrays Dates: Feb-05 to Feb-06.
3	UAE University joint research grant for the year 2005/2006 . Grant number: 03-02-2-11/06 Collaborators: Ihab Obaidat, Maamar Benkrouda and Usama Al Khawaja . Title: Molecular dynamics simulations on the peak effect of the critical current density in High-Temperature Superconductors Dates: Jan-06 to Feb-07
4	UAE University joint research grant for the year 2005/2006 . Grant number: 07-02-2-11/06

	<p>Collaborators: Maamar Benkrouda, Ihab Obaidat, and Usama Al Khawaja. Title: Numerical Study of the Equilibrium and Nonequilibrium Phases of the Vortex Lattice Transitions in High-Temperature Superconductors with a Periodic Array of Pinning Sites Dates: Jan-06 to Feb-07</p>
5	<p>UAE University joint research grant for the year 2005/2006. Grant number: Collaborators: Ihab Obaidat, Maamar Benkrouda, and Usama Al Khawaja. Title: <i>Lattice Transitions in High-Temperature Superconductors with a Periodic Array of Pinning Sites</i> Dates: Jan-06 to Feb-07</p>
6	<p>UAE University individual research grant for the year 2005/2006. Grant number: 01-02-2-11/05 Collaborators:Usama Al Khawaja. Title: Vortex Dynamics Near the Surface of a Bose-Einstein Condensate. Dates: Feb-05 to Feb-06</p>
7	<p>UAE University individual research grant for the year 2006/2007. Collaborators:S. Moussa and Usama Al Khawaja. Title: Exact Solutions of Inhomogeneous Schrodinger Equation with Power-Law Nonlinearity Using Darboux Transformations. Dates: Jan-06 to Feb-07</p>
8	<p>[Accepted but NOT FUNDED] National Research Foundation (NRF) research grants (2010) Grant number: RSA-1108-00591 Collaborators: Usama Al Khawaja. Title: Soliton Transport in Optical Fibers with Impurities Amount: 825000.00 AED Status: Accepted, ranked "Highly Competitive", not funded.</p>
9	<p>[ACCEPTED FOR FUNDING] National Research Foundation (NRF) research grants (2011) Principal Investigator: Usama Al Khawaja. Title: Using solitons and soliton molecules as data carriers to increase the bit rate of optical telecommunications Amount: 750,000.00 AED (250,000 AED per year) Duration: Fall 2011-Fall 2014 (3 years). Status: completed.</p>
10	<p>[A Joint Externally-Funded Project with King Fahd University for Petroleum and Minerals]</p>

	<p>Title: Stability, dynamics, and applications of two- and multi- soliton molecules Collaborators: Saeed Al-Marzoug¹, Saeed Al-Amoudi¹, Hocine Bahlouli¹, Ahmed Bouketir¹, Usama Al Khawaja², Bakhtiyor Baizakov³, ¹ Physics Department, King Fahd University for Petroleum and Minerals. ² Physics Department, UAEU. ³ Physical-technical Institute, Uzbek Academy of Science. Duration: Jan 2011-Jan 2013 (2 years). Amount: 236,300.00 Saudi Riyals. (Two hundred thirty six thousands and three hundred) Status: completed.</p>
11	<p>A funded research grant by KFUPM that serves one objective of this grant. Here are the details of the grant:</p> <p>Title: Forecasting and Manipulating Rogue waves in Nonlinear Media Amount: 226,700 SAR Dates: 01/2013-01/2015 (24 months) Investigators: Hocine Bahlouli (PI, from KFUPM) Saeed Al-marzoug (KFUPM) Saeed Al-Amoudi (KFUPM) Usama Al Khawaja (UAEU) Majid Taki (Lille University/France) Status: Completed.</p>
12	<p>National Research Foundation (NRF) research grants (UPAR 2013) Principal Investigator: Usama Al Khawaja. Title: Al-Optical Technologies with Solitons in Optical Wave-Guide Arrays</p> <p>Amount: 88,000.00 AED. Duration: Fall 2013-Fall 2015 (2 years). Status: Completed.</p>
13	<p>National Research Foundation (NRF) research grants, 2015 Principal Investigator: Usama Al Khawaja. Title: Using solitons and soliton molecules as data carriers to increase the bit rate of optical telecommunications. Amount: 180,000.00 AED. Duration: Fall 2015-Fall 2017 (2 years). Status: Completed.</p>
14	<p>A funded research grant by KFUPM, National Science and Technology Plan (NSTIP) Title: <i>Soliton-based information transfer and processing in optical communication systems</i> Amount: 1,061,440 SAR (one million sixty one thousand four hundred and 40 Saudi Riyals) Duration: March 01, 2015 - March 01, 2017 (24 Months) Investigators:</p>

	<p>Saeed Al-marzoug (PI, from KFUPM) Hocine Bahlouli (KFUPM) B. Baizakov (Uzbekistan) Usama Al Khawaja (UAEU)</p> <p>Status: completed.</p>
15	<p>UAEU Program for Advanced Research 2015 Principal Investigator: Usama Al Khawaja. Title: Optical Data Processing with Solitons in Waveguide Arrays Amount: 400,000.00 AED. Duration: Fall 2017-Fall 2021 (2 years). Hired a postdoc. Status: Completed.</p>
16	<p>SURE PLUS 2017 Grant (Research Training of undergraduate students in Summer) Principal Investigator: Usama Al Khawaja. Title: Designing and testing optical devices for all-optical computatio Amount: 58,000.00 AED. Duration: Summer 2017-March 2018 (1 years). Three undergraduate students. Status: Completed.</p>
17	<p>UAEU Program for Advanced Research 2016 Collaborators: Usama Al Khawaja. Title: Performing optical data processing with discrete solitons in two-dimensional waveguide arrays Amount: 600,000.00 AED. Duration: Fall 2017-Fall 2021 (4 years). Hired PhD student. Awarded Travel budget of 100,000.00 AED to visit the co-investigator from a Top-100-University (Prof. Yuri Kivshar from Australian National University). Status: running.</p>
18	<p>UAEU Program for Advanced Research 2017 Collaborators: Usama Al Khawaja. Title: Handbook of exact solutions to the nonlinear Schroedinger equations Amount: 270,000.00 AED. Duration: Fall 2017-Fall 2019 (2 years). Hired an RA. Remark: Authoring a book. Publisher is Institute of Physics (IoP), London, UK. Status: running.</p>

10. Patent

Title: A DEVICE FOR PERFORMING MULTIPLE OPTICAL OPERATIONS IN COMMUNICATION NETWORK

Contribution: Main inventor

Status: i) Granted, Jan. 2017: <https://www.google.com/patents/US9547215>

ii) Filed by the Research Office at UAE University for international (US) patenting:

Patent No.	14/933,530
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Contact from UAEU Research Office: Dr. Mohamad Hmairy (Director of the Innovation unit), m.hussien@uaeu.ac.ae.

iii) Awarded by UAEU on this achievement (16000 AED).

11. Invited talks

[Invitations are attached in the supporting documents electronic file]

1. **First International Winter Schools on Quantum Gases**, Algiers, 21-31 January 2012. Workshop, I have Presented 5 lectures on Lax pairs and exact solutions.
2. Gave an invited talk in the international conference: **EMN Optoelectronics Meeting (Energy Material Nanotechnology)**, Beijing, China from April 24 to 27, 2015.
3. **4th International Conference on Applied and Computational Mathematics (ICACM '15)** conferences in Seoul, South Korea, September 5-7, 2015.
(Received invitation as an Invited speaker but did not attend.)
4. **Collaborative Conference on 3D and Materials Research (CC3DMR) 2016**. 20th - 24th (M-F) June 2016 at the Convensia in Incheon/Seoul, South Korea.
5. I receive many invitations per year, but can not attend most of them due to local duties (teaching, administration, and research).

12. Seminars and Lectures in conferences and meetings

1	<i>Search Method for Lax Pairs of Nonlinear Partial Differential Equations</i> 11 Nov. 2010 (Seminar at the department of Mathematics, UAEU)
2	<i>Soliton localization in a vibrating harmonic trap,</i> First Porto meeting on Theory and Experiment in Nonlinear Physics Porto 6 July, 2010.
3	<i>Formation of Matter-Wave Soliton Molecules, Phys. Dept. UAEU, 9 Dec. 2010.</i>
4	<i>Soliton localization in a vibrating harmonic trap,</i> Phys. Dept. UAEU, Oct. 28, 2009.
5	<i>Nonlinear Soliton Dynamics, Theoretical Physics Day, KFUPM, May 03, 2009.</i>
6	<i>Vortex Stability Near the Surface of a Bose-Einstein Condensate,</i> March 2003, Physics Department, UAE University and 5 th UAE research conference.
7	<i>Bright soliton dynamics in Bose-Einstein condensates,</i> Feb. 2005, AlMagro/Spain.
8	<i>Vortex Dynamics Near the Surface of Bose-Einstein condensates,</i> July 2004, Utrecht University, Niels Bohr Institute, and 7 th UAE University research conference.
9	<i>Collective modes of a Bose-Einstein condensate above the transition temperature,</i> July 2000, Lyon/France.
10	<i>Scissors mode of a Bose-Einstein condensate,</i> March 2002, King Fahad University of Petroleum and Minerals.
11	<i>Topological excitations of Bose-Einstein condensates,</i> July 2001, Helsinki University/Finland.
12	<i>Skyrmion Physics in Bose-Einstein Ferromagnets,</i> July 2001, ASPEN/Colorado/USA.
13	A number of talks in local conferences in Denmark and the Netherlands (1999-2002).
	For more, see conferences above.

13. Work

1	Sept. 2016-present: Chairman of the Physics Department at the UAE University.
2	Sept. 2014-Sept.2016: Coordinator of the Physics MSc program.
3	Sept. 2012-present: Full professor in Physics at the UAE University.
4	Sept. 2007-2012: Associate professor in Physics at the UAE University.

5	Sept. 2002-2007: Assistant professor in Physics at the UAE University.
6	Sept. 1999- Sept. 2002: Postdoc researcher in physics at the University of Utrecht/ The Netherlands.
7	I have worked as a teaching assistant at the university of Copenhagen during my Ph.D. study
8	I have also worked in the year 1996 as a Physics and Mathematics high school teacher in an American school in Amman.
9	I have worked during my Masters study as a teaching assistant for the first year physics-lab at the University of Jordan (1992-1995).

14. Teaching Load and Courses Taught (at the UAEU)

- **Teaching load:** average of 12 credit hours per semester which is equivalent to 4 courses.
- I used to teach a **new course** roughly every 2 years.
- List of courses taught at UAEU (number of times taught in parentheses)

1. General Physics I PHYS 105 (10)
2. General Physics II PHYS 110 (1)
3. Introductory Physics for IT PHYS 125 (9)
4. Optics PHYS 245 (2) [note: number changed to PHYS 235]
5. Mathematical Physics PHYS 361 (4) [note: number changed to PHYS 255]
6. Statistical Physics PHYS 312 (10)
7. Modeling of Physical Systems PHYS 490 (8)
8. Quantum Mechanics I PHYS 355 (1)
9. Computational Physics PHYS 330 (6)
10. Electromagnetic Theory I PHYS 335 (2)
11. Methods of Mathematical Physics (PHYS 515, MSc course)
12. Seminar (PHYS 633-634, MSc courses)
13. Computational Physics (PHYS 724, PhD course)

15. Fields of experience

1	Bose-Einstein condensation. (Main field)
2	Solitons
2	Integrability and exact solutions to nonlinear Schrödinger equations
3	Equilibrium and nonequilibrium statistical physics.

4	Some topics in nonlinear physics (percolation theory, chaos, periodic orbit theory) and phase transitions.
5	Computational physics, especially, MonteCarlo simulations and molecular dynamics (attended some workshops in these topics).
6	High degree of literacy in computer languages and software. In particular, I can program with FORTRAN, C, C++, and JAVA.
7	I am experienced in numerical methods such as MonteCarlo simulations.
8	I am an expert in MATHEMATICA.

16. Review Articles

1. *Effect of third-order dispersion on the solitonic solutions of the Schrodinger equations with cubic nonlinearity*

C. H. Houria*, Benarous Mohammed, Asad-uz-zaman Muhammad and U. Al Khawaja
Advances in Mathematical Physics

Volume **2014** (2014), Article ID 323591, 6 pages

<http://dx.doi.org/10.1155/2014/323591>

*My PhD student

2. *Peregrine solitons of the higher-order, inhomogeneous, coupled, discrete, and nonlocal nonlinear Schrödinger equations*

T Uthayakumar, U Al Khawaja, L Al Sakkaf

Frontiers in Physics **8**, 501, (2020).

17. Books, book chapters, and Editorial Board

I have authored the following book together with my previous MSc (now my PhD) student:

Handbook of Exact Solutions to the Nonlinear Schrödinger Equations

Published November 2019,

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Online ISBN: 978-0-7503-2428-1 • Print ISBN: 978-0-7503-2426-7

<https://iopscience.iop.org/book/978-0-7503-2428-1>

I received and keep receiving many invitations to author a chapter in a book or to be a member in an editorial board. I declined all these invitations mainly because 1) I was not convinced by the importance or originality of these activities, 2) to have focus on the research problems and 3) for lack of time due to administrative duties.

I have, nonetheless, started authoring my own book on exact solutions of the nonlinear Schrodinger equation. Since my previous postdoc left, I have applied for a special grant to hire another postdoc in order to help me in finishing the book. The book is now published by IOP.