

# Curriculum Vitae of Usama Al Khawaja

Associate Professor at the Department of Physics  
UAE University



## 1. Personal information

<b>Name:</b>	Usama Gh. S. Al Khawaja
<b>Date and place of birth:</b>	7/Feb./1970, Amman-Jordan
<b>Address (work):</b>	Physics Department, College of Science, PO Box 17551, UAE University, Al-Ain, UAE
<b>Phone.:</b>	(000713) 7136335 (work)
<b>e-mail:</b>	u.alkhawaja@uaeu.ac.ae
<b>Languages</b>	1) Arabic (native) 2) English (excellent) 3) Danish (fair)
<b>Marital status</b>	Married
<b>Children</b>	5

References	
1	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
2	Prof. Henrik Smith, Universitetsparken 5, DK-2100 Copenhagen Ø, Denmark. Phone: +45 35 32 04 21, e-mail: hsmith@fys.ku.dk
3	Prof. C. J. Pethick, NORDITA, Blegdamsvej 17, DK-2100 Copenhagen Ø, Denmark. Phone: +45 - 35 32 52 26, e-mail:pethick@nordita.dk
4	Prof. Abdulaziz D. Alhaidari Saudi Center for Theoretical Physics Dhahran, Saudi Arabia e-mail: <a href="mailto:haidari@mailaps.org">haidari@mailaps.org</a> , mobile: +966-505664635
5	Prof. Humam B. Ghassib, Physics Department, University of Jordan.

## 2. Academic profile

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

## 3. Awards:

- 1 *Award of Excellence in Research* (University of Jordan 1991, undergraduate student).
- 2 *Research Project Award* (UAE University, 2006).
- 3 *Performance Excellence Award* (UAE University, 2006).
- 4 *Research Project Award* (UAE University, 2007).
- 5 *Faculty of Science Research Award* (UAE University, 2007).
- 6 *Abdul Hameed Shoman Award* (Physics, 2008, single, 10,000 US \$).

#### 4. Connections and Collaborations:

I am an *associate member* of the Saudi Center for Theoretical Physics. I have also a strong collaboration with the Theoretical Physics group at the King Fahd University for Petroleum and Minerals. I am the *nonlinear Physics group leader* at the Center.

Here is a list of these and other collaborations:

1. Prof. H.T.C Stooft from Institute of Theoretical Physics/ Utrecht University/The Netherlands.
2. Prof. Henrik Smith from Niels Bohr Institute and Copenhagen University/Denmark, and Prof. C.J. Pethick from NORDITA in Stockholm/Sweden.
3. Prof. Hocine Bahlouli from King Fahd University for Petroleum and Minerals/ Dhahran, Saudi Arabia.
4. Prof. Abdulaziz Al-Haidary, the founder and head of Saudi Institute for Theoretical Physics.
5. Prof. Bakhtiyor Baizakov, Physical-Technical Institute, Uzbekistan.

#### 5. Publications

##### A. Published in International Journals:

<b>1</b>	<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.).
<b>2</b>	<i>The surface of a Bose-condensed gas,</i> U. Al Khawaja , C. J. Pethick, and H. Smith: Phys. Rev. A <b>60</b> , 1507(1999).
<b>3</b>	<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, <b>118</b> , 127(2000).
<b>4</b>	<i>Kinetic theory of collective excitations and damping in Bose- Einstein condensed gas,</i> U. Al Khawaja , H. T. C. Stooft, Phys. Rev. A <b>62</b> , 53602(2000).

5	<i>Skyrmions in a ferromagnetic Bose-Einstein condensate</i> , U. Al Khawaja and H. T. C. Stoof, <i>Nature</i> <b>411</b> , 918 (2001).
6	<i>Skyrmion Physics in Bose-Einstein Ferromagnets</i> , U. Al Khawaja and H. T. C. Stoof, <i>Phys. Rev. A</i> <b>64</b> , 043612 (2001).
7	<i>Monopoles in an Antiferromagnetic Bose-Einstein Condensate</i> , H. T. C. Stoof, E. Vliegen, and U. Al Khawaja, <i>Phys. Rev. Lett.</i> <b>87</b> , 120407 (2001).
8	<i>Nonlinear Coupling Between Scissors Modes of a Bose-Einstein condensate</i> , U. Al Khawaja and H. T. C. Stoof, <i>Phys. Rev. A</i> <b>65</b> , 013605 (2001).
9	<i>Phase Fluctuations in Atomic Bose Gases</i> , J. O. Andersen, U. Al Khawaja, and H. T. C. Stoof, <i>Phys. Rev. Lett.</i> <b>88</b> , 070404 (2002).
10	<i>Low-dimensional Bose Gases</i> , U. Al Khawaja, J. O. Andersen, and H. T. C. Stoof, <i>Phys. Rev. A</i> <b>66</b> , 013615 (2002).
11	<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, <i>Phys. Rev. Lett.</i> <b>89</b> , 200404 (2002).
12	<i>Erratum: Low-Dimensional Bose Gases</i> , U. Al Khawaja, J. O. Andersen, N. P. Proukakis, H. T. C. Stoof, <i>Phys. Rev. A</i> <b>66</b> , 059902 (2002).
13	<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, <i>J. Low Temp. Phys.</i> <b>131</b> , 113 (2003).
14	<i>Dimensional and Temperature Crossover in Trapped Bose Gases</i> . U. Al Khawaja, N.P. Proukakis, J.O. Andersen, M. W. J. Romans, H.T.C. Stoof, <i>Phys. Rev. A</i> <b>68</b> , 043603 (2003).
15	<i>Vortex Stability Near the Surface of a Bose-Einstein Condensate</i> , U. Al Khawaja, <i>Phys. Rev. A</i> <b>68</b> , 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, <i>Phys. Rev. A</i> <b>71</b> , 043604 (2005).
17	<i>Vortex Dynamics Near the Surface of a Bose-Einstein Condensate</i> , U. Al Khawaja, <i>Phys. Rev. A</i> <b>71</b> , 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, <i>Supercond. Sci. Technol.</i> <b>18</b> , 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, <i>Physica C</i> <b>433</b> , 205 (2006). <i>(Top 25 read papers during Jan-March 2006)</i>
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*, <i>Supercond. Sci. Technol.</i> <b>19</b> , 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, <i>International Journal of Pure and Applied Physics, (IJPAP),</i> Vol. <b>2</b> , 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*, <i>Physica C</i> <b>442</b> (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*, <i>Physics Letters A,</i> <b>359</b> , 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, <i>International J. of Computer Mathematics</i> <b>00</b> , (2007) 1-7.
25	<i>Lax Pairs of Time-Dependent Gross-Pitaevskii Equation,</i> U. Al Khawaja, <i>J. Phys. A: Math. Theo.</i> <b>39</b> (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, <i>Physica C: Superconductivity</i> <b>452</b> , (2007) 48-53.
27	<i>Exact solitonic solutions of the Gross-Pitaevskii equation with a linear potential,</i> U. Al Khawaja, <i>Phys. Rev. E</i> <b>75</b> , 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 <b>2</b> , 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 <b>468</b> , 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 <b>22</b> , 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. <b>21</b> , 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, <b>23</b> , 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 <b>373</b> , 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 <b>373</b> , 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 <b>3</b> , 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. <b>51</b> , 053506 (2010). <i>(Top 20 Most Downloaded, May 2010,</i> <a href="http://jmp.aip.org/features/most_downloaded?month=5&amp;year=2010">http://jmp.aip.org/features/most_downloaded?month=5&amp;year=2010</a> )

<b>40</b>	<i>Stability and dynamics of two-soliton molecules,</i> U. Al Khawaja, Phys. Rev. E <b>81</b> , 056603 (2010).
<b>41</b>	<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 <b>83</b> , 026603 (2011).
<b>42</b>	<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. <b>44</b> , 115304 (2011).
<b>43</b>	<i>Formation of Matter-Wave Soliton Molecules,</i> U. Al Khawaja and H.T.C. Stoof New J. Phys. <b>13</b> , 085003 (2011).
<b>44</b>	<i>Theoretical Investigation of Lindemann's Criterion in the Melting of Two-Dimensional Vortex-Lattice with Nano Defects</i> I.M. Obaidat, B.A. Albiss, S.M. Obeidat, U. Al Khawaja Journal of computational and theoretical nanoscience, <b>8</b> 1252-1258 (2011).

\*student

### **B. Submitted papers:**

<b>1</b>	<i>Interaction forces among two-dimensional bright solitons and many-soliton molecules,</i> U. Al Khawaja, To be submitted to Phys. Rev. E (2011).
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## 6. Conferences, workshops, and scientific visits

<b>A. International meetings</b>		
	<b>meeting</b>	<b>conference/ workshop/ visit</b>
<b>1</b>	<i>Quantum MonteCarlo Simulations</i> , July 7- July21, ICTP/Italy, 1997.	workshop
<b>2</b>	Visited the <b>Abdos Salam International Center for Theoretical Physics (ICTP)</b> 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
<b>3</b>	Visited The <b>Physics Department at Helsinki University</b> /Finland, July 2001 for one week.	visit
<b>4</b>	<i>Vortices in Bose-Einstein condensates</i> , Lyon/France, July 2000.	conference
<b>5</b>	<i>Quantum Gases</i> in ASPEN/Colorado/USA in the period 16 June-8 July 2001.	workshop
<b>6</b>	I have attended other <b>numerous conferences, workshops, and short scientific visits</b> throughout Denmark, The Netherlands, Europe, and USA.	1996-2002
<b>7</b>	<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
<b>8</b>	<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
<b>9</b>	<i>Nonlinear Phenomena in Quantum Degenerate Gases</i> 12-16 April, 2010, Ourense, Spain. Talk: <i>Soliton-soliton force and soliton molecules dynamics and stability</i>	conference
<b>10</b>	<i>First Porto meeting on Theory and Experiment in Nonlinear Physics</i> , Porto/Portugal, 6 July, 2010. <i>Soliton localization in a vibrating harmonic trap</i>	conference
<b>11</b>	Visited the <b>Institute of Physics at Utrecht University</b> for about one month during July 2004, July 2005, July 2008, and July 2010.	visits



<b>B. Regional meetings</b>		
	<b>meeting</b>	<b>conference/ workshop/visit</b>
<b>1</b>	<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)
<b>2</b>	<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)
<b>3</b>	<i>Fourth Saudi Scociety Meeting (SPS4), Riyadh, Saudi Arabia. Computation of Resonances and Bound States Using J-Matrix Approach I. Nasser, M. S. Abdelmonem, H. Bahlouli, and U. Al Khawaja Applied Mathematics &amp; Information Sciences 3, 213 (2009).</i>	conference
<b>4</b>	<i>Theoretical Physics Day, KFUPM, Nov. 9, 2007</i>	One-day conference
<b>5</b>	<i>Theoretical Physics Day, KFUPM, May 3, 2009</i>	One-day conference
<b>6</b>	<i>Nonlininear Physics Day, KFUPM, April 11, 2010 (invited speaker)</i>	One-day conference
<b>7</b>	Since 2002, I <b>regularly visit</b> the theoretical Physics group at King Fahd University for Petroleum and Minerals often twice a year with average total period of two weeks. The group has also visited me in Al-Ain three times.	visits

<b>C. Local meetings</b>		
	<b>meeting</b>	<b>conference/works hop/visit</b>
<b>1</b>	<i>Physics by Enquiry Workshop</i> , the Department of Physics, UAEU, May-12-2004.	workshop
<b>2</b>	<i>The 5th Annual UAE University Research Conference</i> , Al-Ain, United Arab Emirates, April 25 – 27, 2004.	conference
<b>3</b>	<i>The 6th Annual UAE University Research Conference</i> , Al-Ain, United Arab Emirates, April 24 – 27, 2005.	conference
<b>4</b>	<i>The 7th Annual UAE University Research Conference</i> , Al-Ain, United Arab Emirates, April 22 – 24, 2006.	conference
<b>5</b>	<i>Nanostructured Pins and the Anomaly in the Critical Depinning Force.</i> <b>1<sup>st</sup> Nanoconference Sharjah</b> , I. M. Obaidat, U. Al Khawaja, M. Benkraouda, F. Hamid, and N. Salmeen. AIP Conference Proceedings -- August 22, 2007 -- Volume <b>929</b> , pp. 22-27.	conference
	Proceedings of the <b>8<sup>th</sup> ARC at UAEU</b> . 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
<b>6</b>	Proceedings of the <b>8<sup>th</sup> ARC at UAEU</b> . 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
<b>7</b>	<b>The Second International Conference on Modeling, Simulation and Applied Optimization</b> , 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
<b>8</b>	<b>Gulf Mathematica Conference</b> , 10 Dec. 2007.	conference
<b>9</b>	<i>World Energy Summit</i> , 22 Jan 2008, Abu Dhabi.	conference
<b>10</b>	<b>The Third International Conference in Mathematical Sciences ICM 2008</b> , March 3-6 2008, UAEU, Al-Ain. Talk: <i>Exact solitonic solutions of nonlinear partial differential equations using Darboux transformation</i> .	conference

<b>D. Meetings I organized or participated in organizing</b>		
	<b>meeting</b>	<b>conference/workshop/visit</b>
<b>1</b>	<i>UN/ESA/NASA/UAE workshop on BSS &amp; IHY</i> held in Abu-Dhabi and Al-AIN during the period 20th - 23rd, November, (2005).	International conference I was in the Organizing Committee
<b>2</b>	<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 I was in the Organizing Committee
<b>3</b>	<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 I was in the Organizing Committee
<b>4</b>	<b>UAE-CERN workshop</b> , 26-28 Nov., Al-Ain, 2007.	International Conference and Workshop I was in the Organizing Committee
<b>5</b>	<b>Physics Symposium I</b> , 13 Dec. 2007.	I was the Organizer
<b>6</b>	<b>Physics Symposium II</b> , 22 April 2009.	I was the 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, B, E
2. Physical Review Letters and Rapid Communications.
3. I referee also articles for the journals: European Physics Letters, Journal of Low Temperature Physics, and The Arabian Journal for Science and Engineering.

### 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. Projects:** Refereed many individual and interdisciplinary UAEU research projects.

## 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).

## 9. Research Grants

1	<p>UAE University individual research grant for the year <b>2002/2003</b>.  <b>Grant number:</b> 01-02-2-11/03  <b>Collaborators:</b> Usama Al Khawaja.  <b>Title:</b> Quantum Computation with Bose-Einstein Condensation.  <b>Dates:</b> Feb-03 to Feb-04.</p>
2	<p>UAE University joint research grant for the year <b>2004/2005</b>.  <b>Grant number:</b> 03-02-2-11-04  <b>Collaborators:</b> Maamar Benkrouda, Ihab Obaidat, and Usama Al Khawaja.  <b>Title:</b> Vortex Lattice Dynamics in Superconductor Systems of Periodic Pinning Arrays  <b>Dates:</b> Feb-05 to Feb-06.</p>
3	<p>UAE University joint research grant for the year <b>2005/2006</b>.  <b>Grant number:</b> 03-02-2-11/06  <b>Collaborators:</b> Ihab Obaidat, Maamar Benkrouda and Usama Al Khawaja.  <b>Title:</b> Molecular dynamics simulations on the peak effect of the critical current density in High-Temperature Superconductors  <b>Dates:</b> Jan-06 to Feb-07</p>
4	<p>UAE University joint research grant for the year <b>2005/2006</b>.  <b>Grant number:</b> 07-02-2-11/06  <b>Collaborators:</b> Maamar Benkrouda, Ihab Obaidat, and Usama Al Khawaja.  <b>Title:</b> Numerical Study of the Equilibrium and Nonequilibrium Phases of the Vortex Lattice Transitions in High-Temperature Superconductors with a Periodic Array of Pinning Sites  <b>Dates:</b> Jan-06 to Feb-07</p>
5	<p>UAE University joint research grant for the year <b>2005/2006</b>.  <b>Grant number:</b>  <b>Collaborators:</b> Ihab Obaidat, Maamar Benkrouda, and Usama Al Khawaja.  <b>Title:</b> <i>Lattice Transitions in High-Temperature Superconductors with a Periodic Array of Pinning Sites</i>  <b>Dates:</b> Jan-06 to Feb-07</p>
6	<p>UAE University individual research grant for the year <b>2005/2006</b>.  <b>Grant number:</b> 01-02-2-11/05  <b>Collaborators:</b> Usama Al Khawaja.  <b>Title:</b> Vortex Dynamics Near the Surface of a Bose-Einstein Condensate.  <b>Dates:</b> Feb-05 to Feb-06</p>
7	<p>UAE University individual research grant for the year <b>2006/2007</b>.  <b>Collaborators:</b> S. Moussa and Usama Al Khawaja.</p>

	<p><b>Title:</b> Exact Solutions of Inhomogeneous Schrodinger Equation with Power-Law Nonlinearity Using Darboux Transformations.</p> <p><b>Dates:</b> Jan-06 to Feb-07</p>
8	<p><b>[Accepted but NOT FUNDED]</b></p> <p>National Research Foundation (NRF) research grants (2010)</p> <p><b>Grant number:</b> RSA-1108-00591</p> <p><b>Collaborators:</b> Usama Al Khawaja.</p> <p><b>Title:</b> Soliton Transport in Optical Fibers with Impurities</p> <p><b>Amount:</b> 825000.00 AED</p> <p><b>Status:</b> Accepted, ranked "Highly Competitive", last official update by NRF: "awaiting final confirmation of the NRF's 2010 budget".</p>
9	<p><b>[ACCEPTED FOR FUNDING]</b></p> <p>National Research Foundation (NRF) research grants (2011)</p> <p><b>Collaborators:</b> Usama Al Khawaja.</p> <p><b>Title:</b> Using solitons and soliton molecules as data carriers to increase the bit rate of optical telecommunications</p> <p><b>Amount:</b> 750,000.00 AED (250,000 AED per year)</p> <p><b>Duration:</b> Fall 2011-Fall 2014 (3 years).</p> <p><b>Status:</b> Accepted for funding. To start Sept. 2011.</p>
10	<p><b>[A Joint Externally-Funded Project with King Fahd University for Petroleum and Minerals]</b></p> <p><b>Title:</b> Stability, dynamics, and applications of two- and multi- soliton molecules</p> <p><b>Collaborators:</b> Saeed Al-Marzoug<sup>1</sup>, Saeed Al-Amoudi<sup>1</sup>, Hocine Bahlouli<sup>1</sup>, Ahmed Bouketir<sup>1</sup>, Usama Al Khawaja<sup>2</sup>, Bakhtiyor Baizakov<sup>3</sup>,</p> <p><sup>1</sup> Physics Department, King Fahd University for Petroleum and Minerals.</p> <p><sup>2</sup> Physics Department, UAEU.</p> <p><sup>3</sup> Physical-technical Institute, Uzbek Academy of Science.</p> <p><b>Duration:</b> Jan 2011-Jan 2013 (2 years).</p> <p><b>Amount:</b> 236,300.00 Saudi Riyals. (Two hundred thirty six thousands and three hundred)</p> <p><b>Status:</b> running.</p>

## 10. 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, March 2003, Physics Department, UAE University and 5<sup>th</sup> UAE research conference.</i>
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 <sup>th</sup> 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).

## 11. Work

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

## 12. 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)



### 13. Service

#### University service:

1. Working in 14 different committees (2002-2011).
2. Coordinating major tasks of the department such as
  - i) coordinating the preparation of the Physics Ph.D. and M.Sc. programs,
  - ii) preparing the teaching schedule (2 years),
  - iii) coordinating the research and curriculum committees,
  - iv) coordinating the seminars committee.
  - v) coordinating the international accreditation effort.

#### Community service:

1. Being the delegate of UAE in the SESAME synchrotron project.
2. Giving numerous seminars in workshops, over many years, to the teachers and supervisors of the Ministry of Education.
3. Visiting schools all over the country for two years giving seminars in order to attract students to Physics. This was during the Roadshow program (2005-2007) as a celebration of the World Physics Year.
4. Participated in organizing 4 international conferences and self-organized 2 mini-conferences.
5. Participated in the organization of the UAE Physics Olympiad.
6. Reviewed the Secondary schools exams for the Ministry of Education (2 years).

### 13. Job offers

1	1999: The Abdos Salam International Center for Theoretical Physics research position for the years (declined).
2	2002: A research position at the University of Turko in Finland. (declined).
3	2002: Assistant Professor ( <i>forskarassistent</i> ) position at Uppsala University in Sweden. (declined).

## 14. 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 experienced in MATHEMATICA.