

Curriculum Vitae

Prof. Mohamed K. Al-Sugheir

Personal Data:

Name: Mohamed Khaled Al-Sugheir

Nationality: Jordanian

Date and place of Birth: 20/12/1967 Irbid/Jordan

Marital status: Married

Mobile Number: ++962 (0) 795609908

Email: msugh@hu.edu.jo

Address: Department of physics, The Hashemite University, 13115, Zarqa, Jordan.

Scientific qualification

PhD in Physics, Theoretical condensed Matter Physics, The University of Jordan, Amman, Jordan, 2000, rank rating excellent.

Dissertation Title: Neutral Many-Bosonic Systems in the Static Fluctuation Approximation.

Advisor: Prof. Humam B. Ghassib (hghassib@orange.jo)

M. Sc. in Physics, Mössbauer spectroscopy, Yarmouk University, Irbid, Jordan, 1994, rank rating excellent.

Thesis Title: Mössbauer Spectroscopic Study of $\text{Fe}_{1-x}\text{Co}_x$.

Advisor: Prof. Sami Mahmood (s.mahmood@ju.edu.jo)

B.Sc. in Physics, Yarmouk University, Irbid, Jordan, 1991, rank rating very good.

Professional Experiences

2000-2002: Lecturer, Physics Department, The Hashemite University, Zarqa, Jordan.

2002-2008: Assistant professor, Physics Department, The Hashemite University, Zarqa, Jordan.

2008- 2013: Associate professor, Physics Department, The Hashemite University, Zarqa, Jordan.

2009-2010: Sabbatical leave, Physics Department, Yarmouk University, Irbid, Jordan.

2013 up to now: Professor, Physics Department, The Hashemite University, Zarqa, Jordan.

2014-2015: Sabbatical leave, Physics Department, Yarmouk University, Irbid, Jordan.

Administrative duties

2016 up to date: Dean of the faculty of science, The Hashemite University, Zarqa, Jordan.

2015/2016: Dean of the faculty of graduate studies, The Hashemite University, Zarqa, Jordan.

2013/2014: Vice dean of the faculty of science, The Hashemite University, Zarqa, Jordan.

2007-2008: Chairman of the physics department, The Hashemite University, Zarqa, Jordan.

2010-2013: Chairman of the physics department, The Hashemite University, Zarqa, Jordan.

Committees:

- Member in the editorial board of the Jordanian Journal of Physics (JJP) (2015-up to date).
- Member of many committees at the physics department, several times.
- Member of many committees at the faculty of science, several times.
- Member of many examination committees for M.Sc and Ph.D theses, inside and outside the Hashemite University.
- Member of the graduate studies council, deanship of scientific research and graduate studies (2013/2104).

Teaching Experiences:

1. Undergraduate Courses

General Physics (1), General Physics (2), General Physics (3), General Physics Lab. (1), General Physics Lab. (2), Modern Physics (1), Modern Physics (2), Thermal and Statistical Physics, Electronics, Vibrations and Waves, Quantum Mechanics (1), Quantum Mechanics (2), Classical

Mechanics, Mathematical Physics (1), Mathematical Physics (2), Electricity and Magnetism (1), Electricity and Magnetism (2), Advance Physics Labs.

2. Graduate Courses

Statistical Mechanics and Thermodynamics

Advanced Quantum Mechanics

Advanced Mathematical Physics

Co-Supervised PhD Dissertations

1. Physical Properties of Low-dimensional Trapped Fermi Gases, H. Al-Khzon, (2014).
2. A Study of the Solid Helium-4 in the Static Fluctuation Approximation, E. M. Alhami, (2013)
3. Thermodynamic Properties of Two-Dimensional Few-Electrons Quantum Dot Using the Static Fluctuation Approximation (SFA). F. Nammias, (2011).
4. Confined Atomic Gases in the Static Fluctuation Approximation, S. Qashou, (2008).
5. A Study of the Electron Fluid in the Static Fluctuation Approximation, A. Bouchebak, (2007).
6. Hot Nuclear Matter in the Static Fluctuation Approximation, N.Ghulam, (2006).
7. Spin-Polarized ^3He - ^4He II Mixtures: A Microscopic Study, A. Sandouqa, (2004).
8. A Microscopic Study of Spin-Polarized Atomic Hydrogen, B. Joudeh, (2004).

Supervised M.Sc. Theses

1. Asymmetric Hot Nuclear Matter in the Static Fluctuation Approximation, M. Dmari, (2016)
2. One-Dimensional electron-hole system, H. Al-Asaly, (2015)
3. One-Dimensional Spin-Polarized Hydrogen Gas in the Static Fluctuation Approximation, M. Harrab, (2013)
4. One-Dimensional Trapped Bose Gases in the Static Fluctuation Approximation, H. Massaed, (2013).

5. Study of Neutral Many-Bosonic Systems in the Static Fluctuation Approximation With a Potential Model Closed to the Real Potential, H. Al-Khzon, (2008).
6. Bose-Einstein Condensation and Thermodynamic Properties of Neutral Many-Bosonic Systems in the Static Fluctuation Approximation, M. Sakhreya, (2008).
7. Effects of Potential Parameters on Thermodynamic Properties of Neutral Many-Fermionic Systems, A. Jaffal, (2008).
8. Jellium Model in Static Fluctuation Approximation, Z. Al-Khateeb, (2007).
9. Many-Bosonic Systems with Repulsive Interactions in the Static Fluctuation Approximation, S. Gasyneh, (2006).

Conferences and Workshops:

1. International Conference on Quantum, Atomic, Molecular and Plasma Physics, WASET, Madrid, Spain, 2012.
2. Materials in Jordan: Recent Developments and Future Resources, Princess Summaya University for Technology, Amman, Jordan, 2011.
3. Second European summer school on microscopic quantum many-body theories and their applications, ICTP, Trieste, Italy, 2001.
4. First symposium on magnetics, Yarmouk University, Jordan, 1993.

Research Interests:

1. Developing the static fluctuation approximation technique, which is a new theoretical approach applied to many body problems.
2. Low and ultra-low temperature physics.
3. Quantum fluids
4. Low-dimensional systems
5. Trapped Bose and Fermi gases
6. Nanophysics

Computer Skills:

1. Operating systems and platforms: Linux, DOS, and windows.

2. Programming: FORTRAN.
3. Data analysis, simulation, and graphics.

Honors, Awards and scholarships:

1. Dean's honor list of distinguished student, Yarmouk University, Irbid, Jordan, many times during my B.Sc. study 1987-1991.
2. Medal of distinguished student, Yarmouk University, Jordan, 1994.
3. The Hashimite University competitive scholarship toward the Ph.D. degree in Physics in the University of Jordan, Amman, Jordan, 2000.
4. Medal of distinguished researcher, The Hashimite University, Zarqa, Jordan, 2008.

Publications:

1. M. Hawamdeh, **M. K. Al-Sugheir**, A. Sandouqa, and H. B. Ghassib **2016**. Thermodynamic Properties of Graphene Using the Static Fluctuation Approximation (SFA). Accepted, *Canadian Journal of Physics*.
2. **M. K. Al-Sugheir**, M. A. Awawdeh, H. B. Ghassib, E. Alhami **2016**. Bose–Einstein condensation in one-dimensional optical lattices: Bogoliubov's approximation and beyond. *Canadian Journal of Physics*, **94**: 697-703.
3. H. Al-Khzon, H. B. Ghassib, **M. K. Al-Sugheir** **2016**. Harmonically-Trapped One-Dimensional Fermi Gas Using the Static Fluctuation Approximation. *Canadian Journal of Physics*, **94**:47-57.
4. E. M. Alhami, H. B. Ghassib, **M. K. Al-Sugheir** **2015**. A Microscopic Study of One-Dimensional Solid ^4He Using the Static Fluctuation Approximation. *Acta Physica Polonica A*, **127**: 1648-1656.
5. **M. K. Al-Sugheir**, F. M. Al-Dweri, G. Alna'washi, M. G. Shatnawi **2013**. Thermodynamics of a Repulsive and Attractive Harmonically Trapped One-Dimensional Atomic Bose Gas. *Physica B*, **408**: 151-157.

6. **M. K. Al-Sugheir**, M. Sakhreya, G. Alna'washi, F. Al-Dweri **2012**. Bose-Einstein Condensation in Neutral Many Bosonic Systems. *International Conference on Quantum, Atomic, Molecular and Plasma Physics, WASET, Madrid, Spain, 2012*. published in *International Journal of Engineering and Applied Sciences*, **6**: 57-61.
7. **M. K. Al-Sugheir**, H. A. Al-Khzon, M. Al-Maghrabi, G. A. Alna'washi **2012**. On the Effects of the Interaction Potential Parameters on Bose-Einstein Condensation. *Acta Physica Polonica A*, **122**: 704-708.
8. **M. K. Al-Sugheir**, G. Alna'washi, H. B. Ghassib, and A. Sandouqa **2012**. A microscopic study of the finite two-dimensional trapped Bose atomic gas. *Physica B*, **407**: 2313-2320.
9. F. Nammas, A. S. Sandouqa, H. B. Ghassib, and **M. K. Al-Sugheir** **2011**. Thermodynamic Properties of Two-dimensional Few-electrons Quantum Dot Using the Static Fluctuation Approximation. *Physica B*, **406**: 4671-4677
10. **M. K. Al-Sugheir**, H. B. Ghassib, M. Awawdeh **2011**. Bose-Einstein Condensation and Heat Capacity of Two-Dimensional Spin-Polarized Atomic Hydrogen. *Physical Review A*, **84**, 013617- 013623.
11. A. S. Sandouqa, B. R. Joudeh, **M. K. Al-Sugheir**, and H. B. Ghassib **2011**. Weak ^3He Pairing in ^3He - HeII Mixtures. *Acta Physica Polonica A*, **119**: 807-813.
12. A. Bouchebak, **M. K. Al-Sugheir**, and H. B. Ghassib **2011**. A New Microscopic Calculation for the Uniform Electron Fluid. *Acta Physica Polonica A*, **119**: 312-322.
13. S. Qashou, **M. K. Al-Sugheir**, A. Sakhel, H. B. Ghassib **2010**. Thermodynamic Properties of an Interacting Hard-Sphere Bose Gas in a Trap Using the Static Fluctuation Approximation. *International Journal of Modern Physics B*, **24**: 4779-4809.
14. B. R. Joudeh, A. S. Sandouqa, H. B. Ghassib, and **M. K. Al-Sugheir**. **2010**. ^3He - ^3He and ^4He - ^4He Cross-Sections in Matter at Low Temperature. *Journal of Low Temperature Physics*, **161**: 348-366.

15. **M. K. Al-Sugheir**, A. S. Sandouqa, B. R. Joudeh, S. Al-Omari, M. Awawdeh, F. Rawwagah **2010**. Bose–Einstein condensation and heat capacity of spin-polarized atomic hydrogen. *Physica B*, **405**: 2171-2174.
16. B. R. Joudeh, A.S.Sandouqa, **M. K. Al- Sugheir**, and H. B. Ghassib **2009**. T-Matrix and Effective Scattering in Spin-Polarized Atomic Deuterium (\downarrow D). *Physica B*, **404**: 1847-1851.
17. **M. K. Al-Sugheir**, S. S. Gasmeh, M. Shatnawi, and M. S Bawa'aneh **2009**. Bose-Einstein Condensation of Hard Sphere Homogeneous Bose Gas in Static Fluctuation Approximation. *Acta Physica Polonica A*, **116**: 154-156
18. N.M. Ghulam, **M.K. Al-Sugheir** and H.B. Ghassib **2008**. The Bethe Homework Problem for Hot Neutron Matter in the Static Fluctuation Approximation. *International Journal of Theoretical Physics*, **47**, 2326-2338.
19. A.S.Sandouqa, B. R. Joudeh, **M. K. Al-Sugheir**, and H. B. Ghassib **2008**. Spin-Polarized Atomic Deuterium (D) in the Static Fluctuation Approximation (SFA). *International Journal of Modern Physics B*, **22**: 257-266.
20. N.M. Ghulam, H.B. Ghassib and **M.K. Al-Sugheir** 2007. Hot nuclear matter in the static fluctuation approximation. *Physical Review C* **75**: 64317(1-8).
21. B. R. Joudeh, **M. K. Al-Sugheir** and H. B. Ghassib **2007**. A Study of Spin-Polarized Atomic Hydrogen in the Brueckner-Bethe-Goldstone Theory. *Physica B*, **388**: 237-243.
22. **M. K. Al-Sugheir**, H. B. Ghassib and B. R. Joudeh **2006**. Fermi Pairing in Dilute $^3\text{He-HeII}$ Mixtures. *International Journal of Modern Physics B*, **20**: 2491-2504.
23. A. S. Sandouqa, **M. K. Al-Sugheir** and H. B. Ghassib 2006. Spin-Polarized $^3\text{He-HeII}$ Mixtures in the Static Fluctuation

- Approximation. *International Journal of Theoretical Physics*, **45**: 159-182.
24. A. S. Sandouqa, **M. K. Al-Sugheir** and H. B. Ghassib **2006**. Hole-Hole Scattering in Spin-Polarized 3 He-HeII Mixtures. *Physica Scripta*,**74**: 5-11.
25. B. R. Joudeh, **M. K. Al-Sugheir** and H. B. Ghassib **2005**. Spin-Polarized Atomic Hydrogen in the Static Fluctuation Approximation. *International Journal of Modern Physics B*, **19**: 3985-4008.
26. **M. K. Al-Sugheir** **2004**. 3He-HeII Mixtures in the Static Approximation. *International Journal of Theoretical Physics*, **43**: 1527-1539.
27. **M. K. Al-Sugheir** and H. B. Ghassib **2002**. Normal Liquid Helium-3 in the Static Fluctuation Approximation. *International Journal of Theoretical Physics*, **41**: 705-719.
28. **M. K. Al-Sugheir**, H. B. Ghassib and R. R. Nigmatullin **2001**. Liquid Helium-4 in the Static Fluctuation Approximation. *International Journal of Theoretical Physics*, **40**: 1033-1060.
29. S. H. Mahmood, **M. K. Al-Sugheir**, A. R. El-Ali, A. F. Lahlooh and S. S. Mahmood **1993**. Mössbauer Spectroscopic Study of $\text{Fe}_{1-x}\text{Co}_x$, Proceeding of CTAP First Symposium on Magnetism, Yarmouk University, Irbid, Jordan, 31-36.