Prof. Dr. **GHASSIB, Humam Bishara**

Born in Amman, Jordan on 27 April 1948. Educated at the University of Manchester, UK, 1968-74: BSc Hons in Physics, 1971; PhD, Theoretical Physics, 1974.

Professor of Physics, The University of Jordan, March 1986 to date.

Fulbright Senior Research Fellow, Cornell University, 1983-84. Chairman, Department of Physics, University of Jordan, 1986-88. Dean of Research, 1990-94. Associate, [Abdul Salam] International Centre for Theoretical Physics, Trieste, 1977-90; Editor-in-Chief: *The Cultural Journal* (Arabic), 1989-99; *Dirasat* (refereed research journal, Arabic and English), 1990-94; *Al Muntada* (Journal of the Arab Thought Forum [ATF], Arabic and English editions), 1999- 2011. ATF Secretary General, 1/8/2009-31/1/2011 (formerly, Director of Studies & Programs, and Deputy Secretary General, 1/9/1999-31/7/2009). Advisor to HRH Prince El Hassan bin Talal, 1/9/1999-31/1/2011.

Awarded: Abdul Hameed Shoman Prize for Young Arab Scientists in Fundamental Sciences, Amman, 1986. Al-Hussein Order of Merit for Distinguished Contribution, Amman: 2nd order, 1998; 1st order, 2000; Innovation Prize in Theoretical Physics, Arab Thought Foundation, 2006.

Member, New York Academy of Sciences, 1981; Jordan Academy of Arabic, 1984 – . Fellow, The Academy of Sciences for The Developing World [formerly, Third World Academy of Sciences] (TWAS), 1988 – .

Research Areas: Low and ultralow temperature physics; many-body theory; liquid ^{3}He and ^{4}He; ^{3}He-^{4}He mixtures; quantum fluids; thin films and low-dimensional systems; superfluidity; nanophysics; trapped Bose and Fermi gases; physics education; history and philosophy of science; Arabic language and culture.

Address: Department of Physics, Faculty of Science, The University of Jordan, Amman – Jordan, Phone: (+962 6) 535-5000, Fax: (+962 6) 535-5511, 535-5522 Phone: (Home) (+962 6) 5827028. **Mobile: (+962 7) 77387870.** E-mail: *hghassib@orange.jo.*

(1/6/2012)

Humam B. Ghassib

List of Publications

I. PHYSICS

1. **H. B. Ghassib,** R. H. Ibarra, and J. M. Irvine,
   "A Study of Liquid ^{3}He in the Brueckner-Goldstone Fomalism".
   Annals of Physics (N.Y.) **85** (2), 378-409, 1974.

2. **H. B. Ghassib** and J. M. Irvine,
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   Journal of Low Temperature Physics **18** (3/4), 201-217, 1975.

3. **H. B. Ghassib**, R. F. Bishop, and M. R. Strayer,
   "A Study of the Galitskii-Feynman T Matrix for Liquid ^{3}He".
   Journal of Low Temperature Physics **23** (3/4), 393-410, 1976.

4. R.F. Bishop. **H. B. Ghassib**, and M. R. Strayer,
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   Physical Review A **13** (4), 1570-1580, 1976.

5. R. F. Bishop, **H. B. Ghassib**, and M. R. Strayer,
   "Low-Energy He-He Interactions with Phenomenological Potentials".
   Journal of Low Temperature Physics **26** (5/6), 669-690, 1977.

6. **H. B. Ghassib,**
   "Bound State for ^{3}He Quasiparticles in Dilute ^{3}He-He II Mixtures".
   Physics Letters **64A** (1), 59-61, 1977.

7. **H. B. Ghassib** and G. Baskaran**,**
   "^{4}He Effective Interaction for Dilute Solutions of ^{4}He in Liquid ^{3}He at Low Temperatures".
   Physical Review A **20** (3), 1116-1119, 1979.

8. **H. B. Ghassib** and S. Chatterjee,
"On Backflow in Two and Three Dimensions".
Zeitschrift für Physik B - Condensed Matter **51**, 93-94, 1983.

9. **H. B. Ghassib** and S. Chatterjee,
"On Density Fluctuations in Dilute ^{4}He-^{3}He Thin Films".
Zeitschrift für Physik B – Condensed Matter **52**, 45-49, 1983.

10. **H. B. Ghassib** and R. Sridhar,
"On the Fröhlich Decomposition and the Condensate Fraction in He II".
Physics Letters **100A** (4), 198-200, 1984.

11. **H. B. Ghassib** and G.V. Chester,
"^{4}He n-mers and Bose-Einstein Condensation in He II."
Journal of Chemical Physics **81** (1), 585-586, 1984.

12. **H. B. Ghassib,**
"The Quantum Parameter and Critical Binding of Helium Dimers".
Journal of Chemical Physics **80** (9), 4568-4569, 1984.

13. **H. B. Ghassib,**
"On Dimers and Trimers in Some Helium Fluids"
Zeitschrift für Physik B – Condensed Matter **56**, 91-98, 1984.

14. **H. B. Ghassib** and G. V. Chester
" On the Asymptotic Behavior of the Pair Correlation Function for Liquid ^{4}He".
Zeitschrift für Physik B – Condensed Matter **59**, 371-378, 1985.

15. **H. B. Ghassib** and S. Chatterjee,
"Some Effects of ^{4}He Impurities on Normal Liquid ^{3}He at Low Temperatures".
Proceedings of the 17th International Conference on Low Temperature Physics LT-7, Part II – Contributed Papers, Universitat Karlsruhe and Kernforschungszentrum Karlsruhe, 15-22 August 1984; Eds.: U. Eckern, A. Schmid, W. Weber, and H. Wühl. North-Holland, Amsterdam; pp. 1241-1242.

16. H. B. Ghassib and A. M. Khudeir,
"Toward a Comprehensive Theory for He II. I. A Zero-Temperature Hybrid Approach".
International Journal of Theoretical Physics **25** (3), 255-271, 1986.

17. J. Chela-Flores and **H. B. Ghassib**,
"Toward a Comprehensive Theory for He II. II. A Temperature-Dependent Field-Theoretic Approach".
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International Journal of Theoretical Physics **26** (11), 1039-1049, 1987.

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"Biophysics and the Microscopic Theory of Helium II."
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"Bose-Einstein Condensation in Quasi-Two-Dimensional Systems".
Physica B **165** & **166**, 595-596, 1990.

21. Humam B. Ghassib and Yahya F. Waqqad**,**
"On the Excitations in the ^{3}He-He II Sandwich System."
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22. Usama Gh. Al-Khawaja and **Humam B. Ghassib**,
"Ring Contribution to the Neutral Two-Dimensional Fermi Gas".
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"Some Physical Applications of the Canonical Method".
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24. Eqab M. Rabei, Khaled M. Al-Khaled, and **Humam B. Ghassib**, "The Path-Integral Approach for Constrained Systems in its Lagrangian Form".
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25. R. R. Nigmatullin, A. A. Khamzin, and **H. B. Ghassib**, "The Classical Two-Dimensional Ising Model in the Static Fluctuation Approximation".
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27. R. R. Nigmatullin, A. A. Khamzin, and **H. B. Ghassib**, "Proton Model of Ferroelectrics with Tunneling in the Static Fluctuation Approximation".
Physical Review E **61** (4-A), 3441-3449, 2000.

28. M. K. Al-Sugheir, **H. B. Ghassib**, and R. R. Nigmatullin, "Liquid Helium-4 in the Static Fluctuation Approximation".
International Journal of Theoretical Physics **40** (5), 1033-1060, 2001.

29. M. K. Al-Sugheir and **H. B. Ghassib**, "Normal Liquid Helium-3 in the Static Fluctuation Approximation".
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30. Eqab M. Rabei, Khaled I. Nawafleh, and **Humam B. Ghassib**, "Quantization of Constrained Systems Using the WKB Approximation".
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"Spin-Polarized Atomic Hydrogen in the Static Fluctuation Approximation".
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38. A. S. Sandouqa, M. K. Al-Sugheir, and **H. B. Ghassib,**
"Spin-Polarized ^{3}He-He II Mixtures in the Static Fluctuation Approximation".
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43. Eqab M. Rabei, Abdul-Wali Ajlouni, and **Humam B. Ghassib**,
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44. Eqab M. Rabei, Abdul-Wali Ajlouni, and **Humam B.Ghassib**,
"Quantization of Nonconservative Systems Using Fractional Calculus".
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"Quantization of Brownian Motion".
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46. N. M. Ghulam, **H. B. Ghassib**, , and M. K. Al-Sugheir**,**
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47. N. M. Ghulam, M. K. Al-Sugheir, and **H. B. Ghassib**,
"The Bethe Homework Problem for Hot Neutron Matter in the Static Fluctuation Approximation".
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48. A. S. Sandouqa, B. R. Joudeh, K. M. Al-Sugheir, and **Humam B. Ghassib,**

"Spin-Polarized Atomic Deuterium (↓D) in the Static Fluctuation Approximation (SFA)".
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49. B. R. Judeh, A. S. Sandouqa, M. K. Al-Sugheir, and **H. B. Ghassib,**
"T-martix and Effective Scattering in Spin-Polarized Atomic Deuterium (↓D)".
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50. Saleem I. Qashou, Mohamed K. Al-Sugheir, Asaad R. Sackel, and **Humam B. Ghassib,**
"Thermodynamic Properties of an Interacting Hard-Sphere Bose Gas in a Trap Using the Static Fluctuation Approximation".
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51. A. S. Sandouqa, **H. B. Ghassib**, and B. R. Joudeh,
"A Ramsauer-Townsend Effect in Liquid ^{3}He".
Chemical Physics Letters **490,** 172-175**,** 2010.

52. Khaldoun M. Tarawneh, Eqab M. Rabei, and **Humam B. Ghassib**,
"Lagrangian and Hamiltonian Formulations of the Damped Harmonic Oscillator Using Caputo Fractional Derivative".
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53. B. R. Joudeh, A. S. Sandouqa, **H. B. Ghassib**, and M. K. Al-Sugheir,
"^{3}He-^{3}He and ^{4}He-^{4}He Cross Sections in Matter at Low Temperature".
Journal of Low Temperature Physics **161** (3/4), 348-366, 2010.

54. Asaad R. Sakhel, Saleem I. Qashou, Roger R. Sakhel, and **Humam B. Ghassib,**
"Application of the Static Fluctuation Approximation to the Computation of the Thermodynamic Properties of an Interacting Trapped Two-Dimensional Hard-Sphere Bose Gas".
Physical Review A **82** (6), 063618-1 – 16, 2010.

55. A Bouchebak, M.K. Al-Sugheir, and **H. B. Ghassib,**
"A New Microscopic Calculation for the Uniform Electron Fluid".
Acta Physica Polonica A **119** (3), 312-322, 2011.

56. A.S. Sandouqa, B. R. Joudeh, M.K. Al-Sugheir, and **H. B. Ghassib,**
"Weak ^{3}He Pairing in ^{3}He-He (II) Mixtures".
Acta Physica Polonica A **119** (6), 807-813, 2011.

57. A.F. Al-Maaitah, B.R.Joudeh, A.S.Sandouqa, and **H. B. Ghassib,**
"Scattering Properties of Spin-Polarized Liquid ^{3}He".
Journal of Low Temperature Physics **164**, 5-22, 2011.

58. M.K.Al-Sugheir, **H. B. Ghassib,** and M. Awawdeh,
"Bose-Einstein Condensation and Heat Capacity of Two-Dimensional Spin-Polarized Atomic Hydrogen".
Physical Review A **84** (7), 013617-1 – 6, 2011.

59. Roger R. Sakhel, Asaad R. Sakhel, and **H. B. Ghassib,**
"Self-Interfering Matter-Wave Patterns Generated by a Moving Laser Obstacle in a Two-Dimensional Bose-Einstein Condensate inside a Power Trap Cut off by Box Potential Boundaries".
Physical Review A **84** (9), 033634-1 – 13, 2011.

60. F.S.Nammas, A.S.Sandouqa, **H. B. Ghassib,** and M.K. Al-Sugheir,
"Thermodynamic Properties of Two-Dimensional Few-Electrons Quantum Dot Using the Static Fluctuation Approximation (SFA)".
Physica B **406**, 4671-4677, 2011.

61. H. B. Ghassib, Asaad F. Sakhel, Omar Obeidat, Amer Al-Oqali, and Roger R. Sakhel,
"Effectiveness of the Statistical Potential in the Description of Fermions in a Worm Algorithm Path-Integral Monte Carlo Simulation of ^{3}He Atoms Placed on a ^{4}He Layer Adosrbed on Graphite".
Physical Review E **85**, 016702-1– 6, 2012.

62. M.K.Al-Sugheir, G. Alna'washi, **H. B. Ghassib,** and A. Sandouqa, "A Microscopic Study of the Finite Two-Dimensional Trapped Bose Atomic Gas".
Physica B **407**, 2313-2320, 2012.

63. Amer Al-Oqali, Asaad R. Sakhel, **Humam. B. Ghassib,** and Roger R. Sakhel,
"Worm Algorithm Path Integral Monte Carlo Applied to the ^{3}He-^{4}He II Sandwich System".
International Journal of Modern Physics B ***26*** (31), 1250173-1 – 33, 2012.

[More papers are in the pipeline.]

II. PUBLIC UNDERSTANDING and POPULARIZATION OF SCIENCE

1. Kenneth W. Ford,
Classical and Modern Physics, Volume 1 (Wiley, New York, 1972).
Translated into Arabic by
Humam B. Ghassib and Issa S. Shahin.
Overall Supervision of the Arabic Edition
[+ An Introduction + Additional Footnotes + Design]:
Humam B. Ghassib.
Jordan Academy of Arabic, Amman, 1981. [780 pages, large size.]

2. Fuad Hussein Taffal and **Humam Bishara Ghassib**,
The Concept of Heat in our Arab-Islamic Heritage. [In Arabic.]
Introduction: **Humam Bishara Ghassib**.
The Jordanian Association of Physicists, Amman, 1987.

3. **Humam Ghassib**, Jaser Abu Safiyyeh, and Shayma' Mreish,
"Scientific Accuracy in Color Terminology in the Arabic Language". [In Arabic.]
First Scientific Conference on "Scientific Writing in the Arabic Language: Reality and Future Prospects", Medical Arab University, Benghazi – Libya, 10-13 March, 1990.
Arab Development Institute, Beirut, 1994.

4. **Humam Ghassib** and Nabil Abu Dayyeh,
"The Importance of Syntax: A Look at Prose in Translation of Scientific Texts". [In English.]
Paper submitted to the 13th International Conference on Language, linguistics, Literature and Translation, Irbid-Jordan, April 1-4, 1996.

5. **Humam Ghassib,**
"Creativity and Innovation".
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Higher Council for Science and Technology, Amman, 1998; Volume 2, pp. 312-318.

6. **Humam Ghassib**,
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   1st edition: Arab Institute for Studies and Publishing,
   Amman & Beirut, 2000.
   2nd edition: [Jordan] Family Library Project, Ministry of Culture,
   Amman, 2008.

7. **Humam Ghassib,**
   "The Experience of the Jordan Academy of Arabic in Arabicizing University Education: The Achievements, Difficulties and Challenges". [In Arabic.]
   In: *25th Cultural Season*, Jordan Academy of Arabic, Amman, 2007; pp. 213-240.

8. **Humam Ghassib**,
   Ways of Advancing Scientific Research in the Arab World. [In Arabic.]
   Arab Thought Forum, Amman, 2009.

9. **Humam Ghassib**, ed.,
   Harvest of the [Twentieth] Century:Third Volume – Basic Sciences and Technology. [In Arabic.]
   Abdul Hameed Shoman Foundation, Amman & Arab Institute for Studies and Publishing, Beirut; 2011.

[Plus many other contributions to Arabic literature
as well as to the Arabic language and
culture, and to youth issues.]