Curriculum Vitæ

Name: **Jamil Mahmoud KHALIFEH**
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Ph.D. (Doctorat d'Etat) in Physics: Louis Pasteur University, Strasbourg France, 1982.

Thesis Title: Electronic structure of Impurities in Metals: Application to Hydrogen in Transition metals.

Key Words: Electronic Structure- Elastic Energy-Size effect- Atomic Displacements- Hydrogen in Metals.

Higher Education:

(1977 - 1982) Louis Pasteur University, (Strasbourg I) I.P.C.M.S. 4, Rue Blaise-Pascal 67070 - Strasbourg Cedex, France, Candidate for the degree of Docteur es Sciences Physiques (Doctorat d'Etat).

(1973 - 1977) University of Jordan, Amman, Diploma of Education + M.Sc. in Physics (Title: A Microscopic Study of Dilute ^{3}He- ^{4}He mixtures).

(1968 - 1972) University of Jordan, Amman, B.Sc. in Physics.

Employment: University of Jordan, Department of Physics

(1983 - 1988) AssistantProfessor.

(1988-1998) Associate Professor.

(1998- present) Professor.

References:

- Dr. C.Demangeat and Dr. Hugues Dreysse,
IPCMS/GEMME
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- Dr M.Gupta,
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- Dr. Abdelkader Abed,
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Honors and Scholarships:

- *Scholarship from Ministry of Foreign Affairs (C.R.O.U.S., France) for the period 1977 - 1982.*

- *Visiting Scientist to the Condensed Matter Workshop, ICTP, Trieste Italy. June- August during 1983, 1985, 1987, and 1990.*

- *Visiting Scientist to the Louis Pasteur University, I.P.C.M.S. 23, Rue du Loess 67070 Strasbourg Cedex, France, for short periods during summers in 1983, 1985, 1986, 1987, 1991, 1994, 1995,2004.*

- *Associate Membership of the International Center for Theoretical Physics 1985-1990.*

- President of the Jordanian Association of Physicists for the period August 1983- August 1985.

- Chairman, Department of Physics, University of Jordan, 1989-1990.
- Chairman, Department of Physics, University of Jordan, 2007-2009.

- Visiting research fellow, SERC fellowship, Warwick University, England, 1990-1991.

- Executive Committee of the IOTP Arab friends Society (SARF), Trieste, Italy.
- Visiting research fellow (Alexander von Humboldt fellowship) as follows:
Insitut Fur Kernphysik, Frankfurt, Germany March 1991.
Insitut Fur Kernphysik, Frankfurt, Germany July - September 1991
Department of Theoretical Physics, Martin Luther University, Germany June - September 1994.
Department of Theoretical Physics, Martin Luther University, Germany June - September 1995.

- In addition to the above, I have participated in several local and International Activities.

- Chairman of the7th Petra School of Physics (Physics of New Materials),2000.

- Member of Several Regional Activities(Palmera School of Physics,The Second Regional Conference on Magnetic and Superconducting Materials MSM-01,etc).

- Examining committees of many graduate students inside Jordan.

- Member of the Scientific Committee of the Applied Science University Journal.

- Member of the "Research Council" and "Trustees Council" of Middle East University for Graduate Studies, 2005-2009.

- Member of the Editorial Board of Jordan Journal of Physics (JJP).

- Scopus Recognition for my Contribution to Science, Amman- First of April, 2009.

- Local organizer for the RAS6054/9001/01, First coordination meeting Jordan, Amman 2009-06-07 - 2009-06-11**.** Regional Medical Physics MSc Program.

- Member of the National Committee of the International Giosphere-Biosphere Program(IGBP).

- Member of the "Research Council" of the Theoretical and Applied Physics Center at Yarmouk University.

- Regional Advisory Committee of the Palestinian Conference on Modern Trends in Mathematics and Physics II -AN-Najah National University, Nablus, Palestine Summer 2010.

Languages: *Arabic, English, and French.*

Research Work

My research interests include mainly the electronic structure of transition metal-based alloys:

- *The single electronic structure of impurities within the frame- work of the tight-binding approximation; a localized potential for the substitutional impurities and an extra-orbital Hamiltonian for the interstitial are usually used on our calculations.*

- *The electronic pair interactions such as the Hydrogen-Hydrogen, Hydrogen-Metal, and Metal-Metal impurities in transition hosts.*
- *Relaxation effects around point defects, i.e., field of forces, atomic displacements, and relaxation energies due to a single and a pair of impurities.*

- *My interest has been extended towards studying ion beam mixing of thin metallic or semimetallic films evaporated on the top of quartz substrates. The mixing process is indicated by a measurement of the receptivity of the film as a function of dose.*

- *In addition to the above, my current interest includes the mathematical derivations of Green's Function for different cubical periodic and disordered systems within the framework of the tight-binding approximation.*

- *Furthermore, my interest has been extended towards studying the magnetism of surfaces and interfaces using:(i) a real space recursion technique and (ii)ab-initio methods(*TB-*LMTO,FLAPW, etc) in callaboration with Dr. Demageat group in Strasbourg (France) and Prof. P. Rennert in Halle (Germany).*

- *Recently, I'm also interested in investigating some problems related to catalytic surface reactions in collaboration with Prof. P.Legare(ECPM-Strasbourg-France).*

PUBLICATIONS

1. M. A. Khan, J. Khalifeh and C. Demangeat, *"Activation energy in α-palladium hydrides", Phys. lett. 83A (1981) 457.*

2. J. Khalifeh, G. Moraitis and C. Demangeat, "*The dipole force tensor in α- PdH", J. Less. Comm. Met., 85 (1982) 171.*

3. _____, " *A simple tight-binding estimate of the dipole force tensor in α-palladium hydrides", J. Phys., 43 (1982) 165.*

4. _____, Workshop in *" Hydrogen in metals: problems related to the impurity and to nonstoichiometric compound", Rapport CECAM , Paris (1982) 44-49.*

5. _____, *"Forces, dipole force tensor and elastic binding energy in α-palladium hydrides", Int. Symp. on Hydrogen in Metals (1982), eds Jena, Satterthwaite (New-York), Pelnum, 1983) 119-124.*

6. _____, *"Elastic interaction of two hydrogen atoms in α-palladium hydrides, Hydrogen in materials (H3)", Paris (1982) 125-129.*

7. M. A. Khan, J. Khalifeh, J. C. Parlebas and C. Demangeat, *" Trapping effect on the hydrogen migration in α-palladium hydrides, Hydrogen and materials (H3)", Paris (1982) 503-508.*

8. J. Khalifeh, and C. Demangeat, *" The Metal-Hydrogen bond conference on Solid compounds of transition elements", Grenoble (1982).*

9. J. Khalifeh, F. Gautier, *"Asymptotic interaction between point defects in free-electron gas", Phil Mag. B46 (1982) 635.*

10. J. Khalifeh, G. Moraitis and C. Demangeat, *" Elastic binding energy in α- PdH", Phys. Lett. A93 (1983) 235.*

11. J. Khalifeh and C. Demangeat, *" Charge transfer in α-PdH", Phil. Mag. B47 (1983) 191.*

12. J. Khalifeh, *"Size effect in simple metals", Phys. Stat. Sol. (b) 120 (1983) 161 .*

13. G. Moriaittis, J. Khalifeh and C. Demangeat, *" Tight-binding calculation of force constants in α-PdH", 3e Reunion Generale de la Division Matiere Condensee de 1 EPS, Lausanne (1983).*

14. J. Khalifeh, G. Moraitis, M. A. Khan and C. Demageat, *" A step towards self - consistency in α-PdH ", International Meeting on Hydrogen in Metals, Wroclaw (1983).*

15. _____, *" Binding energy of Hydrogen atoms in transition metals", Phys. Chem. Sol. State: Application to Metal and their compounds ed. P. Lacombe (Elsevier, Paris, 1984).*

16. J. Khalifeh, G. Moraitis and C. Demangeat, *" Crystal field effect in the determination of the dipole force tensor in transition metal based alloys", Phil. Mag. B46 (1984) 533.*

17. _____, *" Tight binding calculations of force constants in α-PdH", J. Less-Comm. Met., 101 (1984) 203.*

18. J. Khalifeh, G. Moraitis and C. Demangeat, *" Local enviroment of a Hydrogen atom in cubic transition metals", Egyp. J. Solids 7 (1985) 157.*

19. _____, *" Strain effect of hydrogen impurity in fcc transition metals", Proc. Int. Symp. on Electronic Structure of Metals and Alloys, Technische Universitat, Dresden (1985).*

20. _____, *" Electronic Structure of a single hydrogen interstitial in fcc ferromagnetic nickel" , Egyp. J. Sol. 9 (1987).*

21. Z. Badirkhan and J. Khalifeh, *" Charge transfer in NiH system", Phys. Stat. Sol. (b) 143 (1987) 637.*

22. Z.Bdirkhan, J.Khalifeh and C.Demangeat, *" Electronic Structure of NiH and its trapping by impurities", J. Less-Comm. Met. 130 (1987) 275; and Int. Symp. on the Prop. and Appl. of Metal hydrogen, V, Maubuisson, France (1986) P. 275.*

23. J. Khalifeh, *" H-H Chemical Interaction in nickel", Phil . Mag. B 58 (1988) 111.*

24. _____, *"Trapping of hydrogen by 3d-transition metal impurities in ferromagnetic nickel", J. Phys. F: Metal Phys. 18 (1988) 1527.*

25. ج. خليفة و ع. أبو الهيجاء، مجال القوى للهيدروجين في النكل، مجلة جامعة دمشق، *11 (1988) 123.*

26. B. Shadid, J. Khalifeh and C. Demangeat, *"Effect of the bound State on the chemical binding energy of hydrogen with point defect in α-PdH". Conference Metal-Hydrogen systems, Stuttgart, 4-9 Sept. (1988) B. Shadid and J. Khalifeh, 2nd Conf. on Condensed Matter (1989) Amman.*

27. A. J. Abu El-Haija, K. A. Saleh, D. E. Arafeh, N.A. Halim, M. R. Kamal, J. Khalifeh and N.S. Saleh, *"Quantitative analysis of Stainless Steel using nuclear techniques", Mater. Sci. Eng., 95 (1987) 267.*

28. A. J. Abu El-Haija, K. A. Saleh, D. E. Arafeh, N.A. Halim, J. Khalifeh, and N. S. Saleh, *"Study of ion beam induced mixing in Sn/Si system using electrical resistivity measurements", JRNC, 120 (1988) 387.*

29. _____, *"Study of ion beam mixing in Sb/Si system using electrical receptivity measurements", Appli. Phys. Comm. 7 (1987)301.*

30. _____, *"Ion beam mixing in Cu/Si system using Electrical receptivity measurements", Phys. Stat. Sol. (a), 106 (1988) 651.*

31. _____, *"Photon - Induced L-Shell X-Ray Intensity Ratio for Elements with 73 Z 83 In the Energy Range 17 E 47 KeV". Int. J. Appl. rad. Isot. , 39 (1988) 1213.*

32. _____, *A.C. "Conductivity of Jordanian Rockwool", Dirasat, Vol XV (1988) 126.*

33. B. Shadid and J. Khalifeh, *"Electronic Band and Bound - State contributions to the chemical H - H and H- impurity binding energy in α-PdH, J.Phys. : Condens. Matter, 2 (1990) 1719.*

34. م. عبدالله و ض. عرفة و ج. خليفة، أساسيات الكهرباء والمغناطيسية
(عمان ، دار المناهج، 1995م)

35. H. Nait - Laziz , H. Dreyssé, C, Demangeat, J. Khalifeh, *"Magnetic Order in ultrathin Fe layers on Pd(001), JMMM 148 (1995) 28.*

36. D. Homouz and J. Khalifeh, *"Magnetism of relaxed V(001) slabs", JMMM 153(1996)355.*

37. J.Khalifeh, *"C(2x2) Antiferromagnetic Superstructure of Mn Overlayers on Pd(001)", JMMM 159(1996)201.*

38. O. Elmouhssine, M. Freyss, P. Kruger, J. C. Parlebas, C. Demangeat, J. Khalifeh, A. Vegas and Mokrani, *"Spin-polarization of thin Mn films on Fe(107)",JMMM 156(1996)199.*

39. H. Dreysse, A. Vega, D. Stoeffler, J. Khalifeh and C. Demangeat, *"Magnetism of transition metal overlayers:Fe/Cr stepped surfaces"Surfaces,Vacuum ,and their Applications"378 (1996)482.*

40. K.M. Khan, J. Khalifeh, K. Yaldram, H.A. Khan, *"Subsurface effects in Catalytic reactions",J.Chem. Phys.106(1997)8890.*

41. J. Khalifeh, *"Magnetic structure of vanadium overlayers on semi-infinite Nb substrate",JMMM 168 (1997) 25.*

42. T. Khajil and J. Khalifeh , *"Spin polarization of vanadium overlayers on semi-infinite tantalum substrate",Surf.Sci.389 (1997)310.*

43. J. Khalifeh, *"C(2x2) and P(1x1) Magnetic Order of Cr/Pd(001)",.JMMM 185(1998)213.*

44. J. M. Khalifeh and T. M. Khajil, *"* Magnetic structure of manganese overlayers on semi-infinite chromium substrate*",* Surface Science (2000), 469(2-3), 118-126.

45 B. A. Hamad and J. M. Khalifeh, *"*On the magnetism of iron- vanadium systems*",* Surface Science (2000), 470(1-2), 149-154.

46. B. A. Hamad and J. M. Khalifeh, *"*Magnetism in vanadium-molybdenum systems*",*

Journal of Physics: Condensed Matter(2001), **13** (4): 573-578.

47. **B. A.** Hamad and J. M. Khalifeh, *"* Magnetism of (Fe, V, Mo)/Pd(0 0 1) systems*",* Surface Science (2001), 481(1-3), 33-38.

48. B. A. Hamad, J. M. Khalifeh, and C. Demangeat, *"* Spin-polarization of V/Mo(1 0 2n-1) stepped structures*",* Surface Science (2001), 481(1-3), 119-123.

49. B. A. Hamad and J. M. Khalifeh, *"* Spin polarization of Cr/V vicinal structures*",* Surface Science (2001), 492(1-2), 161-166.

50. J. M. Khalifeh and C. Demangeat, *"*Cr monolayer on vicinal Pd surfaces*",* Surface Science (2001), 492(3), 235-242.

51. M. A. Abbadi, N. M. Bani-Hani, and J. M. Khalifeh, *"* A variational wave function for 2p2-orbitals in atomic negative ions*",* International Journal of Theoretical Physics (2001), 40(11), 2053-2066.

52. M. A. Abbadi, N. M. Bani-Hani, and J. M. Khalifeh, *"* A variational Calculation of Binding Energies in atomic negative ions*",* Mu'tah Lil-Buhuth Wal-Dirasat,(2001)16,2,69-88.

53. B. A. Hamad and J. M. Khalifeh, *"* Magnetism of Ultrathin Fe films on Mo substrates with low and high Miller indices*",* Physica B: Condensed Matter (Amsterdam, Netherlands) (2002), 321(1-4), 217-221.

54. Mohammed, Y. Sh. Hamad, A. B. and Khalifeh, J. M. Ferromagnetism of Cr/Mn Systems. Physica B: Condensed Matter (Amsterdam, Netherlands) (2002), 321(1-4), 213-216.

55**.** Khalifeh, J. M. and Hamad, B. A. "Substitutional alloyed overlayers on Pd(0 0 1) substrates". Physica B: Condensed Matter (Amsterdam, Netherlands) (2002), 321(1-4), 230-233.

56. N. T. Shawagfeh and J. M. Khalifeh , , *"* Electronic and magnetic structures of Ni/Fe(0 0 1) overlayers: first-principles study*"*. Physica B: Condensed Matter (Amsterdam, Netherlands) (2002), 321(1-4), 222-229.

57. Hamad, B. A.; Khalifeh, J. M.; Demangeat, C. Magnetization of Fe monolayer on vicinal W semi-infinite substrate Surface Science (2002), 516(1-2), 69-73.

58. A. Sakaji, R. S. Hijjawi, N. Shawagfeh, and J.M. Khalifeh ,*"*Remarks on the lattice Green's Function, the Glasser Case*",* J. Math. Phys.(2002),43(1),1-8.

59. A. Sakaji, R. S. Hijjawi, N. Shawagfeh, and J.M. Khalifeh **,"**Remarks on the lattice Green's Function for the Body Centered Cubic Lattice", Int. J. Theor. Phys.(2002),41(5),973-983.

60. Y. Sh. Mohammed and J. M. Khalifeh**,"**Antiferromagnetism of Cr/Mn Systems*",*Phys.Stat. Solidi(b): Basic Research (2002), 233(3), 530-535.

61. B. A. Hamad, T. Khajil, and J. M.Khalifeh, "Magnetism of alloyed models of Cr(Mn)xV1-x and MnxCr1-x overlayers on V (001) substrates", European Physical Journal B: Condensed Matter Physics (2002), 29(3), 497-501.

62. S. Elayyan, M. Hussein, B. A. Hamad and J. M. Khalifeh, "Magnetism of bcc nickel overlayers on a semi-infinite iron substrate", Al-Magallat Al-Urduniyyat Lil-Ulum Al-Tatbiqiyyat, Al-Ulum Al-Tabiiyyat (2002), 4(1), 55-64.

63. R. S. Hijjawi and J.M. Khalifeh ,*" Lattice Green's Function in the General Glasser Case",* Int. J. Theor. Phys.(2002),41(9),1769-1780.

64. M.A. Abbadi; I.I. Al-Qasir and J.M. Khalifeh, "Three-Parameter Wave Functions for ns^2 – Orbitals in Alkali-Metal Negative Ions", Int. J. Theor. Phys.(2003), 42(7), 1629-1639.

65. B.A. Hamad; J.M. Khalifeh and C. Demangeat, " Spin Polarization of Fe Monolayers on Ir Substrates", Surface Science (2003), 525(1), 100-106.

66. B.A.Hamad; J.M. Khalifeh and C. Demangeat, " Stabilization of the Ferromagnetic Configuration Through Alloying for Monolayers of V, Cr, Mn on Pt(001) Substrates", Surface Physics (2003), 542(3), 230-234.

67. B.A. Hamad and J.M. Khalifeh, " Spin Polarization of Cr Monolayers on W(10k) Vicinal Surfaces", J.Phys. : Condens. Matter (2003), 15(34), 5821-5828.

68. - B. A. Hamad and J, M. Khalifeh, " Spin Polarization of Cr/Ir vicinal Structures", *J. Phys.: Condens. Matter (*2003) **15** , 8157-8163.

69. N. T. Shawagfeh and J. M. Khalifeh, "Stability and Magnetism of Ni-Fe alloyed overlayers on Fe(001)", phys. stat. sol. (c), **1(7)**,(2004) 1765-1768.

70. N. T. Shawagfeh and J. M. Khalifeh, "Magnetism of Ni overlayers on Fe(111)", phys. stat. sol. (c),**1(7),**(2004) 1760-1764.

71. J. H. Asad, R. S. Hijjawi, A. Sakaji and J. M. Khalifeh, "Resistance Calculation for an Infinite Simple Cubic Lattice- Application of Green's Function", Int. J. Theor. Phys. **43(11)**, (2004) 2223-2235.

72. R. S. Hijjawi, J. H. Asad, A. Sakaji and J. M. Khalifeh , "Lattice Green's Function for the Face Centered Cubic Lattice", Int. J. Theor. Phys.(2004), 43(11), 2299-2309.

73. A. J. Sakaji, N. T. Shawagfeh and J. M. Khalifeh, "Applications of the Lattice Green's Functions for One- and Two-Dimensional Lattices", Academic Open Internet Journal,**11**(2004)1-14.

74. A. J. Sakaji, J. M. Khalifeh and R. S. Hijjawi, "Nonlinear Impurity for a Square and BCC Lattices", Academic Open Internet Journal,**12**(2004)1-15.

75. A. Sakaji, J. H. Asad, R. S. Hijjawi, and J. M. Khalifeh , " Applications of the Lattice Green's Functions for Triangular Lattice", Electronic J. Theor. Phys.,**3**(2004) 8-21.

76. J. H. Asad, R. S. Hijjawi, A. Sakaji and J. M. Khalifeh, " Remarks on Perturbation of Infinite Networks of Identical Resistors", Int. J. Theor. Phys.(2005), 44(4), 3977-.

77. A. M. Bakir, B. A. Hamad and J. M. Khalifeh , " Surface and interface magnetism of V/W systems", phys. stat. sol. (c)**24**2,12(2005) 2522 - 2529**.**
78. J. H. Asad, R. S. Hijjawi, A. Sakaji and J. M. Khalifeh, "Capacitance between Two Points on an Infinite Grid", Eur. Phys. J. Appl. Phys.**32**(2005)149-154.

79. J. H. Asad, R. S. Hijjawi, A. Sakaji and J. M. Khalifeh, " Infinite Network of Identical Capacitors by Green's Function", Int. J. Modern Phys. **B 19**(2005) 3713-3721.

80. K. M. Tarawneh, B. A. Hamad and J. M. Khalifeh, "Dimensional and Proximity Magnetic Effects in Cr/V Systems", Surface Physics **600**(2006) 1026-1033.

81. J. H. Asad, A. Sakaji, R. S. Hijjawi and J. M. Khalifeh, "On the Resistance of an Infinite Square Network of Identical Resistors(Theoretical and Experimental Comparison)", Eur. Phys. J. B **52** (2006) 365-370.

82. Nasrallah, R. A. Hamad , B. A. and Khalifeh, J. M. , "Interface Magnetic Effects in Vanadium Overlayers on Manganese Substrate " , Solid State Comm. 138, (2006)412 -.

83. R. S. Hijjawi, J. H. Asad, A. J. Sakaji and J. M. Khalifeh, "Perturbation of an Infinite Network of Identical Capacitors", Int. J. Mod. Phys. B **21** 2 (2007) 199-209.

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88. A.A. Ramanathan, J.M. Khalifeh, and B.A. Hamad, "The Structure and magnetism of Fe/Mo(001) surface:A pseudopotential calculation", JMMM **320**(2008)2629-2634.

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92. G Ameereh, B. Hamad and J. M. Khalifeh, "Fe4SixGex (x=0to 4) compounds: ab initio calculation: Ab-initio Calculation", Phys. Stat. Sol. **B246** (2009)129-134.

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95. A. Mubarak, B. Hamad and J. M. Khalifeh," The influence of hydrogen on the electronic and magnetic structures of TM(001) (TM=Fe, Co, Ni, and Cu) surfaces and interfaces : Ab-initio calculations", JMMM**, 322**(2010)780-785.

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98. E. K. Jaradat, R. S. Hijjawi and J. M. Khalifeh, " Fractional Canonical Quantization of the Free Electromagnetic Lagrangian Density ", **JJP,3(2)2010.**

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104. Ramanathan, A. A.; Khalifeh, J. M.; Hamad, B. A. , "A DFT study of substrate effect on the magnetism of the V(001)surface",Surface Science(2011), Accepted.

Graduate Programs:

I have directed the research of several students at the University of Jordan. Below are the titles:

1- Z. Badirkhan, *" The Electronic Structure of Dilute Hydrogen in Nickel", M.Sc., July 1986.*

2- B. Shadid, *" Electronic pair Interactions in Paramagnetic Transition Metals", M.Sc., March 1989.*

3- R. Zeitoun, *"Green`s Functions for Simple Cubic Lattices", M.Sc., December 1991.*

4- A. Sakaji, *" Green`s Function for Point Defects in Cubic Lattices", M.Sc., May 1994.*

5- D. Homouz, *" Magnetism of Layered Transition Metals", M.Sc., May 1994.*

6- O. Al- Alem, *"The Study of Magnetic Moments in Chromium Cr Thin Films Grown on Iiron Fe Substrate using the Tight-Binding Approach ", M.Sc , July 1997.*

7- S. Elayyan, *"A Study of Magnetic Moments of BCC Nickel Films on BCC Iron: Tight-Binding Method", MSc., July 1997.*

8- ***N***. Bany Hani, *"Application of a Variational Method to Calculate the Binding Energy of the Extra Electron in Atomic Ions having two Outer Equivalent p-Electrons", M.Sc., May 2000.*

9- *Y. Shoayb, "Spin polarization of Cr/Mn systems", M.Sc., May 2001.*

10- *M*. Hussain, *" Pair Distribution Function forA Gas Model", M.Sc., May 2001.*

11- *B. Hamad, " Magnetic Structure of Transition - Metal Surfaces", Ph.D., May 2001.*

12- R. Hijjawi, "*Green's Function for a Point Defect in Simple Cubic, Face Centered Cubic and Tetragonal Lattices* ", Ph.D., May 2002.

13- *N. Shawagfeh, "Electronic and Magnetic Structure of bcc-Transition Metals on Fe(001):A First Principle Study", Ph.D., May 2002.*

14- I. Al-Qasir, **"***Laser Spectroscopy of Alkali-Metal AnionsUsing a Correlated Theoretical Model", M.Sc., July 2002.*

15- K. Tarawneh, "Magnetic Structure of Cr/V System", M.Sc., August 2003.

16- R. Nasrallah, *"Spin polarization of Mn-V systems", M.Sc, January 2004.*

17- J. Asad, *Resistance Calculation of an Infinite Network of Resistors-Application on Green`s Function", Ph.D., May 2004.*

18- *R. Faouri, "Dirac Delta Function Derivatives Potential", M.Sc, January 2005.*

19- *N. Bakir, "Spin Polarization of V Overlayers on W Substrate" , M.Sc, January 2005.*

20- M.Abd al-Salam "*First principles study of some physical properties of transition metal monosilicides", Ph.D.,2006.*

21- B. Qassem, "*Invistigation of Interlayer Exchange Coupling Across Metallic Spacer Layers", Ph.D., January 2007.*

22- A. Ramanathan, "*Study of Magnetic in Transition Metal Nanostrucures Using Ab-Initio Methods", Ph.D., January, 2008.*

23- G. Ameerah, "*Electronic and Magnetic Structures of M(Si,Ge) with M= Co ,Ni, Fe in the B20-type Structure", Ph.D. , 2008.*

24- A. Diab,*"Conductance through Simple Molecules between Metallic Contacts", Ph.D.,* ***2008.***

25- E. Jaradat, **"***Electromagnetic Lagrangian Density: Fractional Formulation***"**, *Ph.D.,* ***2009.***

26- A. Mousa, **"***A Theoretical Study of the Electronic and Elastic Properties of Shape Memory Alloys(SMA)* ", *Ph.D., 2009.*

27- *A. Mubarak.***"***Effect of Hydrogen on Electronic and Magnetic Structures of Transition Metals Surfaces", Ph.D.* ***, 2009.***

28- M. Dalabeeh, *"Connection between the Perturbative Chern-Simons Theory and the Penner* Model**"**, Ph.D., 2010.

29- M . Q. Owaidat, "Impedance Calculation of Infinite Networks using Lattice Green's Functions: Perfect and Perturbed Lattices", Ph.D., 2010.

30- M. Shtaiyah, "The Exact Behavior of Electromagnetic Faraday Rotation in Colliding Waves in General Relativity**",** M.Sc.,2010.

31- A. Haidari, "First-Principles Investigation of Oxygen Adsorption on Fcc (110) Transtion-Metal Surfaces",M.Sc.,2010.

32-S. S. Azar , "Investigation of Half-Metallic Behavior and Spin Polarization for the Heusler Alloys $Fe_{3-x}Mn_xZ$(Al,Ge,Sb): A First Principles Study", Ph.D.2011.

Teaching:

In addition to the previous activities, I have frequently taught the following courses:

M.Sc.+Ph.D. Programs:	Subject	Course No.
	Quantum Theory of Solids	*302971*
	Advanced Quantum Chemistry	*303941*
	Advanced Solid State Physics	*302771*
	Advanced Quantum Mechanics	*302754*
	Advanced Mathematical Physics	*302781*
	Advanced Mathematical Physics	*302981*
	Seminar Project	*302791*
	Advanced Statistical Mechanics	*302756*
	Advanced Electrodynamics	*302753*
B.Sc. Program:		
	Solid State Physics	*302471*
	Electricity and Magnetism	*302453*
	Advanced Experimental Physics	*302411*
	Seminar	*302491*
	Mathematical Physics	*302381*
	Quantum Mechanics	*302354*
	Electricity and Magnetism	*302353*
	Classical Mechanics	*302351*
	Mathematical Physics	*302281*
	Classical Mechanics	*302251*
	Electronics	*302231*
	Electricity and Magnetism	*302253*
	Waves and Vibrations	*302222*
	General Physics -1	*302101*
	General Physics -2	*302102*
	General Physics	*302107*
	Calculus	*301101, 301102*
	Applied Mathematics	*201*
	Freshman Practical Physics	*302111, 302112,*
	etc	*302113*