Mahmoud El Korek



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Work Experience 9/1979–up till now: - Concordia University, Canada.
- American University of Beirut, Beirut, Lebanon.
- Lebanese University, Lebanon.
- Beirut Arab University, Beirut, Lebanon.

Professor: Teaching and Research

Education: 5/1979 University of Claude Bernard, Lyon, France

Diplome de Doctorat
Doctor of Philosophy

Additional Information

CURRICULUM VITAE

PERSONAL:

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Nationality : Canadian
Marital Status : Married

EDUCATION:

Ph.D. December 1988
Claude Bernard University, Lyon, France
Department of Physics

Title:"Formulation explicite de l'Effet de rotation dans la fonction d'onde de Vibration-Rotation d'une molécule diatomique : les Fonctions Harmoniques de rotation."

Diplôme de Doctorat
May 1978
Claude Bernard University, Lyon, France
Department of Physics

Title:"Contribution à l'étude des potentiels des différents États Electroniques de la molécule CO".

D.E.A June 1975
Centre of Studies and Research in Mathematics and Physics, Beirut, Lebanon
(affiliated to the Claude Bernard University, Lyon, France)

B.Sc. June 1974
Lebanese University, Beirut, Lebanon

P.C. October 1968
Centre of Studies and Research Mathematics and Physics,
Beirut, Lebanon

RESEARCH AWARD

1990 The Research Award in Natural Sciences from the American University of Beirut

PROFESSIONAL EXPERIENCE

- Representative of the President of Beirut Arab University in the Ministry of

Higher Education in the equivalence committee

- Member of the committee for the preparation of a new law for higher education in Lebanon

- Member of the committee for the preparation of a 5-year strategy of Beirut Arab University. (2007-2008)

Nov.. 2001 …… Professor,
Beirut Arab University
Physics Department
Beirut, Lebanon

Dec. 1996 - 2001 . Associate Professor
Beirut Arab University
Physics Department
Beirut, Lebanon

January 1995 - 1997 Assistant Professor
Beirut Arab University
Physics Department
Beirut, Lebanon

October 1991 - June 1994 : Assistant Professor
September 1989 - June 1990 : Assistant Professor
October 1987 - June 1989 : Lecturer (part-time)
American University of Beirut
Physics Department
Beirut, Lebanon

June 1990 - September 1991 Adjunct Assistant Professor
Concordia University
Physics Department
Montreal, Canada

July 1987 - September 1987 (Part-time)
October 1989-February 1990 (part-time) Assistant Professor
American University of Beirut
Faculty of Engineering and
Architecture, Beirut, Lebanon
Computer and Communication Department

Electrical Department

October 1979 - June 1987 : (part-time)
Lebanese University,
Physics Department,
Beirut, Lebanon

October 1980 - June 1985 : (part-time)
Lebanese University,
Faculty of Engineering
Beirut, Lebanon
Civil Engineering Department
Electrical Engineering Department

October 1978 - June 1989: Teaching Physics
Chairman of the Physics Department
(Oct. 1986 - June 1988)
International College
Beirut - Lebanon

October 1987 - June 1989 : Chairman of the Physics Department
in the preparatory year and the
Hariri Secondary School (part-time)
Hariri Foundation
Beirut - Lebanon

COURSES TAUGHT

Undergraduate:

-Electricity and magnetism
-General physics
-Modern physics
-Classical mechanics
-Mathematics for physists
-Statistical physics
-Quantum physics I and II
-Atomic physics
-Molecular physics
-Electromagnetic theory
-Numerical Analysis
-Scientific Language programming

Postgraduate:

- Advanced Quantum physics
- Molecular spectroscopy

- Quantum field theory
- Bose-Einstein Condensate
-Advanced Classical Mechanics

Publications

1982

1. Hafez Kobeissi and Mahmoud Korek,
Analytic expression of the rotation harmonics in the vibration-rotation wave function of a diatomic molecule.
Int. J. Quant. Chem. 22, 23-29 (1982).

1983

2. Hafez Kobeissi, Mounzir Dagher, Mahmoud Korek, and Ahmad Chaalan.
A new treatment of the vibration-rotation eigenvalue problem for a diatomic molecule.
J. Comput. Chem. 4, 218-226 (1983).

3. Hafez Kobeissi and Mahmoud Korek
Rotation harmonics for a numerical diatomic potential.
J. Physique 44, 1257-1262, (1983)

1985

4. Hafez Kobeissi and Mahmoud Korek.
Eigenvalue functions associated with diatomic rotation and distortion constants.
J. phys. B: At. Mol. Phys. 18, 1155-1165 (1985).

1989

5. Hafez Kobeissi, Mahmoud Korek, and Majida Kobeissi.
Canonical formulation of diatomic centrifugal distortion constants.
Arab. J. Sc. Engin. 14, 503-511 (1989).

6. Mahmoud Korek.
Rotation effect in the vibration-rotation wave function of a diatomic molecule.
ICTP-LAMP Series Report 3, 1-35, (1989).

7. Hafez Kobeissi, Mahmoud Korek, and Mounzir Dagher.
On the computation of diatomic centrifugal distortion constants: exact solution for initial value problems.
J. Mol. Spectrosc. 138, 1-12, (1989).

1991

8. Mahmoud Korek and Hafez Kobeissi.
Diatomic Centrifugal Distortion for an RKR Potential: The Canonical Function

method.
J. Mol. Spectrosc. 145, 44-450, (1991).

1992

9. Mahmoud Korek and Hafez Kobeissi.
Highly Accurate Diatomic Centrifugal Distortion Constants.
J. Comput. Chem. 13, 1103-1108 (1992).

10. Hafez Kobeissi and Mahmoud Korek.
One Compact Analytic Expression of the centrifugal Distortion Constants to any Order.
J. Phys. B: At. Mol. Phys., 26, L35-40 (1992).

1993

11. Ali El-Hajj, Hafez Kobeissi, and Mahmoud Korek.
A set of Subprograms for Calculating Eigenvalues for a Diatomic Molecule Using a Simplified Shooting Method.
Comput. Phys. Communications 74, 297-302 (1993).

12. Mahmoud Korek and Hafez Kobeissi.
Diatomic Centrifugal Distortion constants for large orders at any level: application to the XO_g^+-I_2 state.
Can. J. Chem. 71, 313-317 (1993).

1994

13. Hafez Kobeissi and Mahmoud Korek.
Diatomic Rovibrational Matrix Elements: Analytic expression of the Rotational Factor for any Potential.
J. Phys. B: At. Mol. Phy. 27, 3563 (1994).

14. Mahmoud Korek and Hafez Kobeissi
New Analytic expressions of the Herman-Wallis coefficients for the infrared transitions up to the third order.
J.Quant.Spectrosc. and Radiat.Trans. 52, 631 (1994)

1995

16. Mahmoud Korek and Hafez Kobeissi.
New Analytical Expression for the Rotational Factor in Raman Transitions.
Can. J. Phys. 73, 559 (1995).

1996

16 Mahmoud Korek and Hafez Kobeissi
Relative Intensities in the Diatomic Vibration-Rotation Raman Spectra: A Simple

Expression for Fundamental and Higher Overtones.
J. Quant. Spectrosc. and Radiat. Trans. 55, 225 (1996)

17. Mahmoud Korek and Hafez Kobeissi
Analytical Expression for the Relative Intensities of the Pure Rotational Raman Spectrum.
J. Quant. Spectrosc. and Radiat. Trans. 56, 881 (1996)

18. M. Korek and H. Kobeissi
Diatomic rovibrational matrix elements: compact exact value of the rotational factor for any potential and any operator.
Lebanese Scient. Res. Rep., 1, 63 (1996)

1997

19. Mahmoud Korek
Analytical expression for the higher-order Herman-Wallis Coefficients of a diatomic molecule
Can. J. Phys. 75, 795 (1997)

1998

20. M. Korek and H. Kobeissi
Explicit pure rotational effect for diatomic molecule in infrared transition
J. Quant. Spectrosc. and Radiat. Trans. 60, 69 (1998)

1999

21 Mahmoud Korek
Nonintegral expression for the radiative intensities in infrared transitions of a diatomic molecule
J. Quant. Spectrosc. and Radiat. Trans. 62, 123 (1999)

22. Mahmoud Korek
A one-directional shooting method for the computation of diatomic centrifugal distortion constants.
Comput. Phys. Commun. 119, 169 (1999)

23. Khaled Fakhreddine, H. Kobeissi, and M.Korek
Bound State of Coupled-Channel Schrödinger Equation: A General Eigenfunction.
Int. J. Quant. Chem. 73, 325 (1999)

24. M. Korek, B. Hamdan, and K. Fakereddine
General explicit pure rotational effect for infrared, Raman and Higher ΔJ spectra for a diatomic molecule.
Physica Scripta 61, 66 (1999)

2000

25. Mahmoud Korek
Nonintegral expression for the radiative intensities of the pure rotational infrared transitions of a diatomic molecule.
J. Quant. Spectrosc. and Radiat. Trans. 67, 323 (2000)

26. M. Korek, H. Kobeissi, and B. Hamdar
Analytical expressions for the Herman-Wallis coefficients in the Raman Q-Branch transitions of a diatomic molecule.
J. Quant. Spectrosc. and Radiat. Trans. 67, 159 (2000)

27. M. Korek, A.R.Allouche, M. Kobeissi, M. Dagher and M. Aubert-Frecon
Theoretical study of the electronic structure of the LiRb and NaRb Molecules.
Chem. Phys. 256,1, (2000)

28. A.R.Allouched, M. Korek, M. Dagher, A. Chaalan and M. Aubert-Frecon
Theoretical study of the electronic structure of the RbCs Molecules.
J. Phys. B 33, 2307 (2000)

29. M. Korek and K. Fakhreddine
A canonical approach for computing the eigenvalues of the Schrödinger equation for double-well potentials.
Can. J. Phys. 78, 969 (2000)

30. M. Korek, A.R.Allouched, K. Fakhreddine, A. Chaalan and M. Aubert-Frecon
Theoretical study of the electronic structure of the Molecules LiCs, KCs and NaCs.
Can. J. Phys. 78, 977 (2000)

2001

31. Mahmoud Korek
A new Approach in the Rayleigh-Schrödinger perturbation theory
Lebanese Science Journal 2, 101 (2001)

32. Mahmoud Korek and Abdul Rahman Allouche
Theoretical study of the low-lying electronic states of the RbCs+ molecular ion
J.Phys.B: AT.Mol.Opt. Phys. 34, 3689 (2001)

2002

33. Mahmoud Korek and S.N. Abdulal
Potential curves and rovibrational calculation of electronic states of the molecular ion KCs^+
Can. J. Phys. 80, 1025 (2002)

34. Hussein Fahs, Mahmoud Korek, and Abdul Rahman Allouche

Theoretical electronic structure of the low-lying states of LaF molecule
J. Chem. Phys. 117, 3715 (2002)

35. Hussein Fahs, Mahmoud Korek, and Abdul Rahman Allouche
The theoretical spin-orbit structure of the RbCs molecules
J. Phys. B: At.Mol.Opt. Phys. 35, 1501 (2002)

2003

36. Mahmoud Korek, Ghassan Younes and Abdul Rahman Allouche
Theoretical study of the low-lying electromic states of the molecular ion KRb^+
Int. J. Quant. Chem., 92, N0 4, 376-380 (2003)

37. Alia Jraij, Abdul Rahman Allouche, Mahmoud Korek and M. Aubert-Frecon
Theoretical electromic structure of the alkali dimmer cation Rb_2^+
Chem. Phys. 290, 129 (2003)

2004

38. Hussein Fahs, Mahmoud Korek, and Abdul Rahman Allouche
Theoretical electronic structure of the low-lying states of Lacl molecule
J. Chem. Phys., 299, 97-103 (2004)

39. Mahmoud Korek and Bassam Hamdoun
A new perturbation theoretic approach to the rovibronic transition Matrix element of Diatomics
Internet Electronic J. Mol. Dsign, 3, 271 (2004)

2005

40. Alia Jraij, Abdul Rahman Allouche, Mahmoud Korek and M. Aubert-Frecon
Theoretical electronic structure of the alkali dimer cation Cs_2^+
Chem. Phys. 310, 145 (2005)

41. Saleh N. Abdul Al, Mahmoud Korek, and Abdul Rahman Allouche
Theoretical electronic structure of the low-lying states of the YI molecule
Chem. Phys. 308, 1 (2005)

42. Mahmoud Korek and Ghassan Younes
electronic transition moment with spin-orbit coupling of the molecular ion KRb^+
Int. J, Quant. Chem., 101, 84 (2005)

43. S. Abdul-Al, M.Korek, A.R.Allouche, and M.Aubert Frécon
Theoretical structure of the low-lying electronic states of the Yttrium fluoride YF.
Chem. Phys. 315, 183 (2005)

2006

44. M.Korek, Y. A. Moghrabi, A.R.Allouche
The theoretical spin-orbit calculation of the molecule KCs including spin-orbit interaction
J. Chem. Phys. 124, 094309 (2006)

45. M. Korek, A. M. Moghrabi, A. R. Allouche, M. Aubert-Frécon
Theoretical electronic structure including spin-orbit effects of the molecular ion $LiCs^+$
Can. J. Phys. 84, 959 (2006)

46. A. Jraij, A.R. Allouche, F. Rabilloud, M. Korek, M. Aubert-Frécon, D. Rayane, I. Compagnon , R. Antoine, M. Broyer, Ph.Dugourd
Electric dipole polarizability and structure of cesium chloride clusters with one excess electron.
J. Chem. Phys. 322, 298 (2006)

47. M. Korek and C. Deeb
A New Formulation for the Herman-Wallis Coefficients for Infrared Transitions of A Diatomic Molecule.
Internet Electronic J. Mol. Design, *5*, 296 (2006)

2007

48. S. Abdul-Al, M. Korek, A. R. Allouche, and M. Aubert Frécon
Theoretical structure of the low-lying electronic states of the Yttrium fluoride YBr.
Int. J. Quant.Chem. 107, 998 (2007)

49. M. Korek, S. Bleik, A. R. Allouche
Theoretical calculation of the excited electronic states of the molecule NaCs with spin-orbit effect.
J. Chem. Phys. 126, 124313 (2007)

2008

50. R. Awad, A. I. Abou-Ali, I. H. Ibrahim, M. Korek, S. Isber, A.Faraj
Superconducting properties of zinc substitution in TI-2223 phase
J. Alloys Compounds (2007) 460, 500 (2008)

51. M. Korek, A. Hamdan
Theoretical electronic structure of the molecule ScBr
Int. J. Quant. Chem. 108, 456 (2008)

52. F. Taher-Mansour, A.R.Allouche, M.Korek
Theoretical electronic states of ScCl molecule below 22500 cm^{-1}
J. Mol. Spectrosc. 248, 61-65 (2008)

53. M. Korek, M. Rida, A. Jbara
Theoretical Calculation of the Low-Lying Electronic States of the Molecular Ion

KH^+
J. Mol. Struct. THEOCHEM 870, 100 (2008)

55. M. Korek, S. Hammoud, A. R. Allouche, and T. Harb
Theoretical calculation of the low-lying electronic states of the molecular ion RbH^+ with spin-orbit effects
J. Chem. Phys. 129**, 204304 (2008)**

56. M. Korek, M; Badreddine, K; Allouche, A R
Theoretical study with spin-orbit effects and electronic transition moment calculation of the ion $NaCs^+$
Can. J. Phys. 86, 1015 (2008)

2009

57. M. Korek, O. Fawwaz, A. R. Allouche
Theoretical calculation of the electronic states with spin-orbit effects of the molecule NaRb.
Int. **J. Quant. Chem. 109, 938 (2009)**

58. M. Korek, S. Kontar, F. Taher-Mansour, A.R.Allouche
Theoretical electronic structure of the molecule ScI.
Int. J. Quant. Chem. 109, 236 (2009)

58. M. Korek, S. Al-Shawa, G. A.Younes
Theoretical Calculation of the Electronic Structure of Molecule LiRb Including the Spin-Orbit Interaction.
J. Mol. Struct. THEOCHEM 899, 25 (2009)

59. M. Korek and S. N. Abdul-Al
Rovibrational Study and Dipole Moment Calculation of the Molecule YF with Spin- Orbit interaction
Chem. Phys. 355, 130 (2009)

60. N. Elkork, D. Houalla, and M. Korek*****
Theoretical Calculation of the Electronic States with Spin-Orbit Effects of the Molecule LiCs
Can. J. Phys. 87, 1079 (2009)

2010

61. M. Korek, S. Hammoud, and T. Harb
Theoretical calculation of the low-lying electronic states of the molecular ion RbH^+
Int. **J. Quant. Chem. 110, 787 (2010)**

62. A. Hamdan, M. Korek
Theoretical calculation of the low-lying sextet electronic states of the CrF molecule
Chem. Phys. (2009) Chem. Phys. 369 (2010) 13–18

63. Bassel Abdel Samad, Marie Françoise Blanc Mignon, Mohamed Roumie, Ali Siblini, Jean Pierre Chatelon, Mahmoud Korek**.**
PHYSICO-CHEMICAL CHARACTERIZATION OF MULTILAYER YIG THIN FILM DEPOSITED BY RF SPUTTERING.
Eur. Phys. J. Appl. Phys. 50, 10502 (2010)

64. M. Korek, M. Rida, A. Jbara
Theoretical Calculation of the Low-Lying Electronic States of the Molecular Ion KH^+ with spin-orbit effects
J. Mol. Struct. **THEOCHEM 949, 70 (2010**)

65. M. Korek, A. Farhat, and S. N. Abdul-Al
Theoretical calculation of the low-lying electronic states of the molecule YS
J. Theo. Comp. Chem., 9, 597 (2010).

2011

66**.** A. Hamdan and M.Korek
Theoretical Calculation of the Low-Lying Quartet States of the CrF Molecule
Can. J. Chem. Vol. 89(10), p. 1304 - 1311 (2011)

67. A. Hamdan, M. Korek
Theoretical calculation of the low-lying quartet electronic states of the CrCl molecule
Int. J. of Quant. Chem., Vol. 111, 2960–2965 (2011)

68. A. Hamdan, M. Korek
Spin–Orbit Electronic Structure of the ScBr Molecule
J. Mod. Phys. 2, 1172-1177 (2011)

69. A. Mawassi, R. Awad, M. Roumie, M. Korek, and I. Hassan
Effect of ZnO monoxide addition on the superconducting properties of the (Bi, Pb) Phase.
Advanced Materials Research 324, 241-244 (2011)

70. Mahmoud Korek, Sara El Atwani, Rasha Abou Arkoub, and Hadeel Razzouk
The low-lying excited electronic states of an alkali-earth compound
Advanced Materials Research 324, 282-285 (2011)

71. F El Haj Hassan, B Al Shafaay, H Meradji, S Ghemid3, H Belkhir and M Korek
Ab initio study of the fundamental properties of HgS_e, HgT_e and their $HgSe_xTe_{1-x}$ alloys

Phys. Scr. 84 (2011) 065601 (7pp)

2012

72. A. Hamdan, M. Korek
Theoretical calculation of the low-lying sextet electronic states of the CrCl molecule
Int. J. Quant. Chem. 112, 1235–1242 (2012)

73. A. Farhat, M. Korek, M. A. L. Marques, S. N. Abdul-Al
Ab initio calculation of the low-lying electronic states of the molecule ZrN
Can. J. Chem. 90, 631–639 (2012)

74. Khalil Badreddine, Nayla El-Kork, and Mahmoud Korek
Electronic structure with rovibrational and dipole moment study of the NiO molecule
J. Mod. Phys. 3, 839-849 (2012)

2013

75. A. Farhat, M. Korek, S.N. Abdul-Al d, M.A.L. Marques
Electronic structure with spin-orbit calculations of the low-lying electronic states of the molecule YS
Chem. Phy. 412, 109–116 (2013)

76. S. N. Tohme, M. Korek
Electronic structure and rovibrational calculation of the low-lying states of the RbYb molecule
Chem. Phys. 410, 37–44 (2013)

77. Khalil Badreddine, Nayla El-Kork, Mahmoud Korek
Theoretical Study with Rovibrational and Dipole Moment Calculation of the SiO Molecule
J. Mod. Phys. 4, 82-93 (2013)

78. Khalil Badreddine, Nayla El-Kork, and Mahmoud Korek
Electronic Structure of the Nanodiatomic Compound CdS
J. Phys. Sci. & Appl. 3, 27-32 (2013)

79. M. Korek and H. Hammour
Electronic structure with rovibrational and dipole moment calculations of the LaS molecule
Phys. Rev. & Res. Int. 3, 176-190 (2013)

80. M. Korek, Nayla El-Kork, A. N. Moussa, and A. Bentiba

Theoretical study with rovibrational and dipole moment calculation of the LaO molecule
Chem. Phys. Lett. 575, 115-121 (2013)

81. M. Korek, H. Abdel Nabi, and N. Elkork
Molecular electronic structure of nanodiatomic metal oxide
IEEE, Ohio State University, COLUMBUS, OHIO (2013)

2014

82. M. Roumie, S. Marhaba, R. Awad, M. Korek, I. Hassan, A. Mawassi
Effect of Fe_2O_3 Nano-Oxide Addition on the Superconducting Properties of the (Bi, Pb)-2223 Phase
Journal of Superconductivity and Novel Magnetism, 27, 143-153 (2014)

83. B. Al Shafaay, F. El Haj Hassan, M. Korek
First-principles investigation of mercury chalcogenides and their HgSxSe1_x and HgSxTe1_x ternary alloys
Computational Materials Science 83 (2014) 107–113

84. H. Jawhari, M. Korek, R. Awad and M. R. Sakr
Theoretical electronic structure of the lowest-lying electronic states of the CaCl molecule
App. Phys. Res. Vol. 6, No. 4; (2014) 97-105

85. H. Jawhari and M. Korek
Theoretical electronic structure of the lowest-lying electronic states of the CaBr molecule
App. Phys. Res. Vol. 6, No. 2; (2014) 69-81

86. M. Korek, J. Srour, and N. Elkork
Molecular electronic structure of nanodiatomic metal oxide
IEEE, Toronto, Canada (2014)

87. F. Jardali, M. Korek, G. Younes
Electronic Structure and Rovibrational Calculation of the Low-Lying Electronic States of the SrF Molecule
Can. J. Phys., 92, 1223 (2014)

88. S. Mahmoud and M. Korek
Theoretical Calculation of the Low-Lying Electronic States of the Molecule LaH
Can. J. Chem., 92 (9) 855 - 861 (2014)

2015

89. Salman Mahmoud, Mikhael Bechelany, Philippe Miele, and Mahmoud Korek
Theoretical calculation of the low-lying electronic states of the molecule BN
J. Quant. Spectrosc. Radiat. Trans. JQSRT, **151**, **58 (2015)**

90. S. N. Tohme and M. Korek and R.awad
Electronic Structure and Rovibrational Calculation of the Low-Lying States of the Molecule LiYb
J. Chem. Physics 142, **114312 (2015)**

91. S. N. Tohme and M. Korek
Theoretical study of the electronic structure with dipole moment calculations of the BaF molecule
J. Quant. Spectrosc. Radiat. Trans. JQSRT, 167 (2015) 82–96.

92. S. Kontar, M. Korek*,
Theoretical calculation of the electronic states below 326000 cm-1 of the NaHe molecule
Can. J. Phys. 2015, 93(12): 1606-1614, 10.1139/cjp-2014-0696

93. S. Elmoussaoui and M. Korek
Theoretical study with dipole moment calculation of the low-lying electronic states of the molecule ZnI
J. Quant. Spectrosc. Radiat. Trans. JQSRT 161 (2015) 131–135

94. Soumaya Elmoussaoui, Mahmoud Korek
Electronic structure with dipole moment calculation of the low-lying electronic states of the ZnBr molecule
Computational and Theoretical Chemistry 1068 (2015) 42–46

95. S. Al Shawa, M. Korek,* and G. Younes
Theoretical calculation of the Low-Lying Electronic States of the Molecule BaS
J. Mod. Phys. (2015) 6, 610-621

96. M. Korek and R. Halabi
Electronic structure with rovibrational and dipole moment calculation of the molecule ScS
J. Mod. Phys. (2015) 6, 546-552

97. Samir N. Tohme, Mahmoud Korek
Electronic structure with vibration–rotation study of the NaYb molecule
Chemical Physics Letters 638 (2015) 216–226

98. Sally El Shawa, Nayla El-kork, M. Korek
Theoretical study with dipole moment calculation of the molecule BF
Nanotechnology Reviews: **Published Online: 08/06/2015**

99. Mahdi Mansour, Nayla El-Kork, and M. Korek
Theoretical Study of the Triplet Electronic States of the BP Molecule
J. Mod. Phys. 6 (2015) 1156-1161

100. Mahdi Mansour, Nayla El-Kork, and M. Korek
Ab initio calculations of 27 Electronic States of the BP^+ Ion-Molecule
J. Mod. Phys. 6 (2015) 1780-1788

101. D. K. Kaeen, M. Korek, S. N. Abdulal, and R. Awad.
Theoretical calculation with rovibrational and dipole moments of the Low-Lying electronic states of the molecule PbO
Journal of Modern Physics 6 (2015) 1171-1183

102. D. K. Kaeen, M. Korek, S. N. Abdulal, and R. Awad.
Electronic structure of the cesium oxide molecule CsO
Journal of Modern Physics 6 (2015) 1889-1894

103. Rawad Halabi and Mahmoud Korek
Theoretical calculation of the low-lying electronic states of the Molecule ScSe
Journal of Modern Physics 6 (2015) 2290-2296

105. Karam Hamdan1, Ghassan Younes1 & Mahmoud Korek1
Dipole Moment and Electronic Structure Calculations of the Electronic States of the molecular ion SiN+
Applied Physics Research; Vol. 8, No. 4; 2016

2016

106. K. Mourad, M. Korek, and S. N. Abdulal
Electronic structure with rovibrational calculation of the low-lying electronic States of the AsCl molecule
Journal of Molecular Modeling (2016) 22: 45

107. Samir N. Tohme**,** Mahmoud Korek
Electronic structure calculation of the KYb molecule with dipole moments, polarizabilities, and ro-vibrational studies
Computational and Theoretical Chemistry 1078 (2016) 65–71

108. Rawad Halabi and Mahmoud Korek
Ab Initio Calculation of the Electronic States of ScTe Molecule below 19,500 cm−1
Journal of Modern Physics 7 (2016), 106-113

109. Soumaya Elmoussaoui, Nayla El-Kork, and Mahmoud Korek
Electronic structure of ZnCl molecule with rovibrational and ionicity studies of the ZnX (X=F, Cl, Br, I) compounds
Computational and Theoretical Chemistry 1090 (2016) 94–104

2017

110. Soumaya Elmoussaoui, Nayla El-Kork, and Mahmoud Korek*
Electronic structure with dipole moment calculation of the low-lying electronic states of ZnF molecule
Can. J. Chem., 95, 22-27 (2017), 10.1139/cjc-2016-0058

111. Khaled A. Mourad, Saleh N. Abdulal, and Mahmoud Korek
Electronic structure with rovibrational and dipole moment calculation of the diatomic molecules AsBr and AsI
Computational and Theoretical Chemistry, Volume 1103, 1 March 2017, 63-70

112. Nayla El-Kork, Nariman Abu el Kher, Farah Korjieh, John Anwar Chtay, Mahmoud Korek
Electronic structure of the polar molecules XF (X: Be, Mg, Ca) with rovibrational and dipole moment calculations
Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy 177 (2017) 170–196

113. Dunia Houalla, Wael Chmaisani, Nayla El-Kork, Mahmoud Korek
Electronic structure calculation of the MgAlk (Alk= K, Rb, Cs) molecules for laser cooling experiments
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114. Wael Chmaisani, Nayla El-Kork, and Mahmoud Korek
Theoretical electronic structure of the NaBe molecule
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115. S. Kontar, M. Korek
Electronic structure with dipole moment calculation of the low-lying electronic states of the KHe molecule
J. Struct. Chem. 58 (1) 23-29 (2017), DOI 10.1134/S0022476617010048

116. Mohamed Khatib, Mahmoud Korek

Electronic structure of SrO molecules with dipole moments and ro-vibrational calculations
Canadian Journal of Physics, 2017, 95(6): 610-620,

117. Khalil Badreddine and Mahmoud Korek
Theoretical Electronic Structure of the Cadmium Monohalide Molecules CdX (X = F, Cl, Br, I)
AIP Advances 7, 105320 (2017)

118. Soumaya Elmoussaoui, Wael Chmaisani, Mahmoud Korek
Theoretical electronic structure with dipole moment and rovibrational calculation of the low-lying electronic states of the HgF molecule
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Student: Rita Chamoun
University Claude Bernard, Lyon, France

2) *l'étude théorique de la structure électronique des molécules AlBr, AlI, LuF et LuCl par les méthodes ab initio*

Student: Yaman Hamade
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Electronic Structure of the Low-Lying Electronic States of Alkaline and Alkaline-Earth Molecule
The 17th International Conference Of the Lebanese Association for the Advancement of Science Beirut – Lebanon, November 2010

229. Hadeel Razzouk and Mahmoud El Korek
Theoretical Calculation of Electronic States of BeH Molecule
The 17th International Conference Of the Lebanese Association for the Advancement of Science Beirut – Lebanon, November 2010

230. Bouchra Younes and Mahmoud El Korek
A Rovibrational Calculation of Low-Lying Electronic States of LiCa Molecule
The 17th International Conference Of the Lebanese Association for the Advancement of Science Beirut – Lebanon, November 2010

231. Juliana Srour and Mahmoud Korek
Electronic structure of low-lying states of the ScO molecule
The 17th International Conference Of the Lebanese Association for the Advancement of Science Beirut – Lebanon, November 2010

232. Rasha Abou Arkoub and Mahmoud El Korek
Theoretical Electronic Structure of the Molecule MgH
The 17th International Conference Of the Lebanese Association for the Advancement of Science Beirut – Lebanon, November 2010

233. Mahmoud Korek, Sara El Atwani, Rasha Abou Arkoub, and Hadeel Razzouk
The low-lying excited Electronic States of an alkali-earth compound
Mediterranean Conference on Innovative Materials and Applications Beirut – Lebanon, March 15-17, 2011

234. Khalil Badreddine and Mahmoud Korek
Electronic structure of the nanodiatomic compound CdS
Mediterranean Conference on Innovative Materials and Applications Beirut – Lebanon, March 15-17, 2011

235. Khalil Badreddine[1,a], Nayla El-Kork[2,b], and Mahmoud Korek[1,c*]
Low-Lying Electronic States of the Nanodiatomic Compound CdS
IEEE NANO 2011 Conference, August 15-18, 2011

236. Borhan Rashid El Shafii, Fouad El Hajj Hassan and Mahmoud Korek
Electronic structure of a metal compound
The 18th International Conference Of the Lebanese Association for the Advancement of Science Beirut – Lebanon, March 22-24, 2012 March

237. Lawand Hantoush and Mahmoud El Korek
Theoretical and Spectroscopic Studies of the Molecule LiF
The 18th International Conference of the Lebanese Association for the

Advancement of Science Beirut – Lebanon, **March 22-24, 2012 March**

238. El-Korjieh Farah and El Korek Mahmoud
Rovibrational study of electronic states of the BeF molecule
The 18th International Conference Of the Lebanese Association for the Advancement of Science Beirut – Lebanon, **March 22-24, 2012 March**

239. Anwar John Shtay and Mahmoud El Korek
Electronic Structure of the Low-Lying Electronic States of CaF Molecule
The 18th International Conference Of the Lebanese Association for the Advancement of Science Beirut – Lebanon, **March 22-24, 2012 March**

240. Tohme Samir and Korek Mahmoud
Ab initio Calculation of Electronic States of YbRb Molecule
The 18th International Conference of the Lebanese Association for the Advancement of Science Beirut – Lebanon, **March 22-24, 2012 March**

241. Mahmoud A. Korek, Amal N. Moussa
Electronic Structure of the Low-lying Quartet Electronic States of the Molecule LaO
WASET 2012 MADRID, SPAIN INTERNATIONAL CONFERENCE PROGRAM March 28-29, 2012.

242. Khalil Badreddine and Mahmoud Korek*
Electronic structure of the nanodiatomic compound CdS
European Seminar on Computing Pilsen, Czech Republic, June 25 - 29, 2012

243. Fatima Jardali and Mahmoud El Korek
Theoretical studies of a diatomic fluoride of alkaline-earth compound
The 19th International Conference Of the Lebanese Association for the Advancement of Science Beirut – Lebanon, **March 5-6, 2013 April**

244. Abir Youssef and Mahmoud El Korek
Electronic structure and rovibrational studies of diatomic Zinc compounds
The 19th International Conference of the Lebanese Association for the Advancement of Science Beirut – Lebanon, **March 5-6, 2013 April**

245. Hussam Jawhari and Mahmoud El Korek
Ab initio calculations and rovibrational studies of the calcium halide diatomic molecules
The 19th International Conference Of the Lebanese Association for the Advancement of Science Beirut – Lebanon, **March 5-6, 2013 April**

246. Sahar Kontar and Mahmoud El Korek
Electronic structure with dipole moment of diatomic helium compounds
The 19th International Conference of the Lebanese Association for the Advancement of Science Beirut – Lebanon, March 5-6, 2013 April

247. Salman Mahmoud and Mahmoud El Korek
Theoretical calculation with rovibrational study of a metal nitrate
The 19th International Conference of the Lebanese Association for the Advancement of Science Beirut – Lebanon, March 5-6, 2013 April

248. Hussam Jawhari and Mahmoud Korek
Ab initio calculations and rovibrational studies of the molecules CaCl
The 20th International Conference Of the Lebanese Association for the Advancement of Science Beirut – Lebanon, March 27-29, 2014

249. Sahar Kontar and Mahmoud Korek
Electronic structure with dipole moment of alkaline helium compounds
The 20th International Conference Of the Lebanese Association for the Advancement of Science Beirut – Lebanon, March 27-29, 2014

250. Sally Al Shawa and Mahmoud Korek
Electronic structure of the molecule BaS
The 20th International Conference Of the Lebanese Association for the Advancement of Science Beirut – Lebanon, March 27-29, 2014

251. Samir N. Tohme and Mahmoud Korek*
Electronic structure and rovibrational calculation of Yb diatomic compound
The 20th International Conference Of the Lebanese Association for the Advancement of Science Beirut – Lebanon, March 27-29, 2014

252. Batoul Helbaoui and Mahmoud Korek
Theoretical calculation of a Lanthanide Monofluoride
The 20th International Conference of the Lebanese Association for the Advancement of Science Beirut – Lebanon, March 27-29, 2014

253. Hani El-korek, Gnassan Younes, Mohamad sakr and Mahmoud Korek
Theoretical calculation of the molecule AlP
The 20th International Conference Of the Lebanese Association for the Advancement of Science Beirut – Lebanon, March 27-29, 2014

254. Boushra Rafai and Mahmoud Korek*
Theoretical calculations of the low-lying electronic states of the Molecule SrCl

Frontiers in Theoretical and Applied Physics Feb.22-25 (2017) - Sharjah, UAE

255. Wael Chmaisani and Mahmoud Korek*
Electronic structure with rovibrational and dipole moment calculations of the MgRb molecule
Frontiers in Theoretical and Applied Physics Feb.22-25 (2017) - Charjah, UAE

256. Sahar Kontar, Mahmoud Korek, Nayla El-Kork
Electronic structure of the KSr molecule with Franck-Condon factor and dipole moment calculations
Frontiers in Theoretical and Applied Physics Feb.22-25 (2017) - Charjah, UAE

Supervision of Thesis

A) The Ph.D Degree

1) Doctorat Nouveau Régime, Université Claude Bernard Lyon 1, France
Title:
Approche théorique de quelques molécules diatomiques composees d'alcalins

Date of defense: July 7, 2000.
Student: Ahmad Chaalan
Publications :
1) A.R.Allouched, M. Korek, M. Dagher, A. Chaalan and M. Aubert-Frecon
Theoretical study of the electronic structure of the RbCs Molecules.
J. Phys. B 33, 2307 (2000).
2) M. Korek, A.R.Allouched, K. Fakhreddine, A. Chaalan and M. Aubert-Frecon
Theoretical study of the electronic structure of the Molecules LiCs, KCs and NaCs.
Can. J. Phys. 78, 977 (2000)

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2) Doctorat Nouveau Régime, Université Claude Bernard Lyon 1, France
Title:
Spectre et propriétés électroniques de petits systèmes

Date of defense: April 23. 2003
Student: Alia Jraij
Publications:
1) A. Jraij, A.R. Allouche, F. Rabilloud, M. Korek, M. Aubert-Frécon, D. Rayane, I. Compagnon , R. Antoine, M. Broyer, Ph.Dugourd
Electric dipole polarizability and structure of cesium chloride clusters with one excess electron.
J. Chem. Phys. 322, 298 (2006)

2) Alia Jraij, Abdul Rahman Allouche, Mahmoud Korek and M. Aubert-Frecon
Theoretical electronic structure of the alkali dimer cation Cs_2^+
Chem. Phys. 310, 145 (2005)
3) Alia Jraij, Abdul Rahman Allouche, Mahmoud Korek and M. Aubert-Frecon
Theoretical electronic structure of the alkali dimer cation Rb_2^+
Chem. Phys. 290, 129 (2003)

---

3) Doctorat Nouveau Régime, Université Claude Bernard Lyon 1, France
Title:
Étude théorique de la structure électronique de molécules diatomiques comportant un atome de l'anthane

Date of defense: September 24. 2005
Student: Hussein Fahs
Publications:
1) Hussein Fahs, Mahmoud Korek, and Abdul Rahman Allouche
Theoretical electronic structure of the low-lying states of LaF molecule
J. Chem. Phys. 117, 3715 (2002)
2) Hussein Fahs, Mahmoud Korek, and Abdul Rahman Allouche
The theoretical spin-orbit structure of the RbCs molecules
J. Phys. B: At.Mol.Opt. Phys. 35, 1501 (2002)
3) Hussein Fahs, Mahmoud Korek, and Abdul Rahman Allouche
Theoretical electronic structure of the low-lying states of the LaCl molecule
J. Chem. Phys., 299, 97-103 (2004)

---

4) Doctorat Nouveau Régime, Université Claude Bernard Lyon 1, France
Title:
Spectre et propriétés électroniques des composés de la molécule Y

Date of defense: September 23, 2005
Student: Saleh N. Abdul Al
Publications:
1) Saleh N. Abdul Al, Mahmoud Korek, and Abdul Rahman Allouche
Theoretical electronic structure of the low-lying states of the YI molecule
Chem. Phys. 308, 1 (2005)
2) S. Abdul-Al, M.Korek, A.R.Allouche, and M.Aubert Frécon
Theoretical structure of the low-lying electronic states of the Yttrium fluoride YF.
Chem. Phys. 315, 183 (2005)
3) S. Abdul-Al, M. Korek, A. R. Allouche, and M. Aubert Frécon
Theoretical structure of the low-lying electronic states of the Ytrium fluoride YBr.
Int. J. Quant.Chem. 107, 998 (2007)

4) M. Korek and S. N. Abdul-Al
Rovibrational Study and Dipole Moment Calculation of the Molecule YF with Spin- Orbit interaction
Chem. Phys. 355, 130 (2009)

---

5) Ph.D in Physics, Beirut Arab University
Title:
Transport properties of new high-temperature superconductor materials

Date of defense: May 2007
Student: Ahmad Faraj.
Publication:
1) R. Awad, A. I. Abou-Ali, I. H. Ibrahim, M. Korek, S. Isber, A.Faraj
Superconducting properties of zinc substitution in TI-2223 phase
J. Alloys Compounds (2007) 460, 500 (2008)

---

6) Doctorat Nouveau Régime, Saint-Étienne University, France
Title:
Élaboration et Caractérisation de couche mince de grenat de fer et d'yttrium, applications dans les domaines de magnéto-optique et hyperfréquence

Date of defense: Sept. 2009
Student: Bassel Abd Elsamad
Publication:
Bassel Abdel Samad, Marie Françoise Blanc Mignon, Mohamed Roumie, Ali Siblini, Jean Pierre Chatelon, Mahmoud Korek**.**
PHYSICO-CHEMICAL CHARACTERIZATION OF MULTILAYER YIG THIN FILM DEPOSITED BY RF SPUTTERING.
Eur. Phys. J. Appl. Phys. 50, 10502 (2010)

---

7) **Ph.D in Physics, Beirut Arab University**
Title:
Theoretical study in Radiation

Date of defense: June 2010
Student: Salam Noureddine

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8) Ph.D in Physics, Beirut Arab University
Title:
Spectroscopic study with spin-orbit effect of diatomic molecules

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Date of defense: Nov. 2010
Student: Alaa Hamdan.
Publications:

1) A. Hamdan, M. Korek
Theoretical calculation of the low-lying sextet electronic states of the CrF molecule
Chem. Phys. (2009) Chem. Phys. 369 (2010) 13–18

2) A. Hamdan and M.Korek
Theoretical Calculation of the Low-Lying Quartet States of the CrF Molecule
Can. J. Chem. Vol. 89(10), p: 1304 - 1311 (2011)

3) A. Hamdan, M. Korek
Theoretical calculation of the low-lying quartet electronic states of the CrCl molecule
Int. J. of Quant. Chem., Vol. 111, 2960–2965 (2011)

4) A. Hamdan, M. Korek
Spin–Orbit Electronic Structure of the ScBr Molecule
J. Mod. Phys. 2, 1172-1177 (2011)

---

9) Doctorat Nouveau Régime, Université Claude Bernard Lyon I, France
Title:
Electronic Structure of Molecules: compounds of Y and N atoms

Date of defense: June 2012
Students: Ayman Farhat
Publications:

1) A. Farhat, M. Korek, M. A. L. Marques, S. N. Abdul-Al
Ab initio calculation of the low-lying electronic states of the molecule ZrN
Can. J. Chem 90, 631–639 (2012)

2) Farhat, M. Korek, S.N. Abdul-Al d, M.A.L. Marques
Electronic structure with spin-orbit calculations of the low-lying electronic states of the molecule YS
Chem. Phy. 412, 109–116 (2013)

---

10) Doctorat Nouveau Régime, Université Claude Bernard Lyon I, France
Title:
Investigation of new Nanomaterials for Photovoltaic and potential device applications

Defense date 16 Jan. 2014
Students: Mohamad Kawwam

---

11) Ph.D in Physics, Beirut Arab University
Title:
Theoretical Electronic structure of nanodiatomic compounds

Date of defense: April 12, 2013
Student: Khalil Badreddine
Publications:

1) Khalil Badreddine, Nayla El-Kork, and Mahmoud Korek
Electronic structure with rovibrational and dipole moment study of the NiO molecule

J. Mod. Phys. 3, 839-849 (2012)

2) Khalil Badreddine, Nayla El-Kork, Mahmoud Korek
Theoretical Study with Rovibrational and Dipole Moment Calculation of the SiO Molecule
J. Mod. Phys. 4, 82-93 (2013)

3) Khalil Badreddine, Nayla El-Kork, and Mahmoud Korek
Electronic Structure of the Nanodiatomic Compounds CdS
J. Phys. Sci. &Appl. 3, 27-32 (2013)

---

12) Ph.D in Physics, Beirut Arab University

Title:

Effect of nano-scale addition on the physical properties of high-temperature superconductors

Date of defense: Nov. 15, 2013
Student: Rafaat Mawassi
Publications:

1) A. Mawassi, R. Awad, M. Roumie, M. Korek, and I. Hassan
Effect of ZnO monoxide addition on the superconducting properties of the (Bi, Pb) Phase.
Advanced Materials Research 324, 241-244 (2011)

2) M. Roumie, S. Marhaba, R. Awad, M. Korek, I. Hassan, A. Mawassi
Effect of Fe_2O_3 Nano-Oxide Addition on the Superconducting Properties of the (Bi, Pb)-2223 Phase
Journal of Superconductivity and Novel Magnetism, 27, 143-153 (2014)

---

13) Ph.D in Physics, Beirut Arab University

Theoretical studies of the fundamental properties of Hg Chalcogenides HgX (X= S, Se, Te) and their alloys

Date of defense: May 13, 2014
Student: Burhan Rashid ElShafai
Publications:

1) B. Al Shafaay, F. El Haj Hassan, M. Korek
First-principles investigation of mercury chalcogenides and their HgSxSe1_x and HgSxTe1_x ternary alloys
Computational Materials Science 83 (2014) 107–113

2) F El Haj Hassan, B Al Shafaay, H Meradji, S Ghemid3, H Belkhir and M Korek
Ab initio study of the fundamental properties of HgS_e, HgT_e and their $HgSe_xTe_{1-x}$ alloys
Phys. Scr. 84 (2011) 065601 (7pp)

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14) Doctorat Nouveau Régime Université de Montpellier, Montpellier, France

Title:

Études théoriques et expérimentales des structures électroniques des molécules diatomiques

Date of defense: December 4, 2014
Student: Salman Mahmoud
Publications:

Salman Mahmoud, Mikhael Bechelany, Philippe Miele, and Mahmoud Korek
Theoretical calculation of the low-lying electronic states of the molecule BN
J. Quant. Spectrosc. Radiat. Trans. JQSRT, **151**, **58 (2015)**

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15) Ph.D in Physics, Beirut Arab University

Electronic structure of transition metal sulfides

Date of defense: August 8, 2014
Student: Sally El Shawa
Publications:

1) S. Al Shawa, M. Korek,* and G. Younes
Theoretical calculation of the Low-Lying Electronic States of the Molecule BaS
J. Mod. Phys. (2015) 6, 610-621
2) Sally El Shawa, Nayla Elkork, M. Korek
Theoretical study with dipole moment calculation of the molecule BF
Nanotechnology Reviews: **Published Online: 08/06/2015**

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16) Ph.D in Physics Beirut Arab University

Ab initio calculation and rovibrational studies of the calcium halides diatomic molecules.

Date of defense: May 15, 2015
Student: Hussam Jawhari
Publications:

1) H. Jawhari and M. Korek
Theoretical electronic structure of the lowest-lying electronic states of the CaBr molecule
App. Phys. Res. Vol. 6, No. 2; (2014) 69-81
2) H. Jawhari, M. Korek, R. Awad and M. R. Sakr
Theoretical electronic structure of the lowest-lying electronic states of the CaCl molecule
App. Phys. Res. Vol. 6, No. 4; (2014) 97-105

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17) Ph.D in Physics, Beirut Arab University

Theoretical calculations and rovibrational studies of the zinc halides diatomic molecules

Date of defense: October 9, 2015.
Student: Soumia Moussaoui

Publications:

1) S. Elmoussaoui and M. Korek
Theoretical study with dipole moment calculation of the low-lying electronic states of the molecule ZnI
J. Quant. Spectrosc. Radiat. Trans. JQSRT 161 (2015) 131–135

2) Soumaya Elmoussaoui, Mahmoud Korek
Electronic structure with dipole moment calculation of the low-lying electronic states of the ZnBr molecule
Computational and Theoretical Chemistry 1068 (2015) 42–46

3) Soumaya Elmoussaoui, Nayla El-Kork, and Mahmoud Korek
Electronic structure of ZnCl molecule with rovibrational and ionicity studies of the ZnX (X=F, Cl, Br, I) compounds
Computational and Theoretical Chemistry 1090 (2016) 94–104

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18) Ph.D in Physics, Beirut Arab University

Electronic structure of polar molecules towards ultracold sources.

Date of defense: October 26, 2015
Student: Mahdi Mansour

Publications:

1) Mahdi Mansour, Nayla El-Kork, and M. Korek
Theoretical Study of the Triplet Electronic States of the BP Molecule
J. Mod. Phys. 6 (2015) 1156-1161

2) Mahdi Mansour, Nayla El-Kork, and M. Korek
Ab initio calculations of 27 Electronic States of the BP^+ Ion-Molecule
J. Mod. Phys. 6 (2015) 1780-1788

---

19) Ph.D in Physics, Beirut Arab University

Theoretical studies of electronic structure for diatomic compounds of Alkali and Alkali earth atoms

.

Date of defense: Nov. 20, 2015
Student: Samir Tohme

Publications:

1) S. N. Tohme and M. Korek and R.awad
Electronic Structure and Rovibrational Calculation of the Low-Lying States of the Molecule LiYb
2) **J. Chem. Physics 142, 114312 (2015)**
S. N. Tohme and M. Korek
Theoretical study of the electronic structure with dipole moment calculations of the BaF molecule
J. Quant. Spectrosc. Radiat. Trans. JQSRT, 167 (2015) 82–96.

3) Samir N. Tohme**,** Mahmoud Korek
Electronic structure calculation of the KYb molecule with dipole moments, polarizabilities, and ro-vibrational studies

Computational and Theoretical Chemistry 1078 (2016) 65–71

---

20) Ph.D in Physics Beirut Arab University

Theoretical studies of diatomic arsenic compounds.

Date of defense: June 14, 2017
Student: Khaled Mourad

Publications:

1) K. Mourad, M. Korek, and S. N. Abdulal
Electronic structure with rovibrational calculation of the low-lying electronic States of the AsCl molecule
Journal of Molecular Modeling (2016) 22: 45

2) Khaled A. Mourad, Saleh N. Abdulal, and Mahmoud Korek
Electronic structure with rovibrational and dipole moment calculation of the diatomic molecules AsBr and AsI
Computational and Theoretical Chemistry, Volume 1103, 1 March 2017, 63-70

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21) Ph.D in Physics, Beirut Arab University

Electronic structure of diatomic helium compounds.

Date of defense: May 5, 2016
Student: Shar Kontar

1) S. Kontar, M. Korek*,
Theoretical calculation of the electronic states below 326000 cm^{-1} of the NaHe molecule
Can. J. Phys. 2015, 93(12): 1606-1614, 10.1139/cjp-2014-0696

2) S. Kontar, M. Korek
Electronic structure with dipole moment calculation of the low-lying electronic states of the KHe molecule
J. Struct. Chem (2017) accepted

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22) Ph.D in Physics, Beirut Arab University

Electronic structure of halides of Alkaline-earth compounds.

In preparation
Student: Dunia Houalla

1) Dunia Houalla, Wael Chmaisani, Nayla El-Kork, Mahmoud Korek
Electronic structure calculation of the MgAlk (Alk= K, Rb, Cs) molecules for laser cooling experiments
Computational and Theoretical Chemistry, 1108 (2017) 103–110

2) Dunia Houalla, Sahar Kassem, Wael Chmaisani, and Mahmoud Korek
Electronic structure with dipole moment and rovibrational calculations of the MgLi and MgNa Molecules
Can. J. Phys. (2017) Accepted

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23) Ph.D in Physics Beirut Arab University

Electronic structure and spectroscopic studies of diatomic compounds of Silicon atom

Date of defense: June. 20, 2016
Student: Karam Hamdan

Publications:

1) Karam Hamdan, Ghassan Younes1 & Mahmoud Korek
Dipole Moment and Electronic Structure Calculations of the Electronic States of the Molecule SiC below 97000cm^{-1}
Modern Applied Science; Vol. 10, No. 11; 2016

2) Karam Hamdan1, Ghassan Younes1 & Mahmoud Korek
Dipole Moment and Electronic Structure Calculations of the Electronic States of the molecular ion SiN+
Applied Physics Research; Vol. 8, No. 4; 2016

---

24) Ph.D in Physics, Beirut Arab University

Electronic Structure of Lead and Cesium Oxides

Date of defense: Jan. 25, 2016
Student: Diana Kaaen

Publications:

1) D. K. Kaeen, M. Korek, S. N. Abdulal, and R. Awad.
Theoretical calculation with rovibrational and dipole moments of the Low-Lying electronic states of the molecule PbO
Journal of Modern Physics 6 (2015) 1171-1183

2) D. K. Kaeen, M. Korek, S. N. Abdulal, and R. Awad.
Electronic structure of the cesium oxide molecule CsO
Journal of Modern Physics 6 (2015) 1889-1894

---

25) Ph.D in Physics, Beirut Arab University

Electronic structure and rovibrational studies of diatomic Zinc compounds

In preparation
Student: Abir Youssef

---

26) Ph.D in Physics, Beirut Arab University

Electronic structure of alkaline earth oxides and their applications in electronic and optoelectronic

Date of defense: Feb. 12 (2018)

Student: Mohamad El Khatib

1) Mohamed Khatib, Mahmoud Korek
Electronic structure of SrO molecules with dipole moments and ro-vibrational calculations
Canadian Journal of Physics, 2017, 95(6): 610-620,
2) Mohamed Khatib and Mahmoud Korek
Electronic Structure of the BaO Molecule with Dipole Moments and Rovibrational Calculations
Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy192 (2018) 401–410

---

27) Ph.D in Physics, Beirut Arab University
Electronic structure and rovibrational studies of scandium chalcogenide

Date of defense: Feb.15, 2016
Student: Rawad Halabi
Publications:
1) Rawad Halabi and Mahmoud Korek
Theoretical calculation of the low-lying electronic states of the Molecule ScSe
Journal of Modern Physics 6 (2015) 2290-2296
2) Rawad Halabi and Mahmoud Korek
Ab Initio Calculation of the Electronic States of ScTe Molecule below 19,500 cm−1
Journal of Modern Physics 7 (2016), 106-113

28) Ph.D. in Physics, Beirut Arab University
An external microbeam setup at LAEC for different applications of ion beam analysis techniques: designing, optimization and validation of results
(LAEC: Lebanese Atomic Energy Commission)

In preparation
Student: Ahmad Reslan

29) Ph.D. in Physics, Beirut Arab University
Theoretical Calculations of Electronic Structure with Vibration-Rotation Studies of Alkaline-Earth Halides

Date of defense: April 4, 2019
Student: Boushra El Rafei

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30) Ph.D. in Physics, Beirut Arab University
Ab initio Calculations with Dipole Moment Studies of Alkaline- Chalcogenide

Date of defense: Feb. 2, 2019
Student: Hanan Hijazi

---

31) Ph.D. in Physics, Beirut Arab University

Theoretical electronic structure studies of Lanthanide mono-halides of diatomic molecules

Date of defense: March 26, 2019
Student: Wael Chmaisni

Publications:

1) Dunia Houalla, **Wael Chmaisani**, Nayla El-Kork, Mahmoud Korek
Electronic structure calculation of the MgAlk (Alk= K, Rb, Cs) molecules for laser cooling experiments
Computational and Theoretical Chemistry, 1108 (2017) 103–110

2) **Wael Chmaisani**, Nayla El-Kork, and Mahmoud Korek
Theoretical electronic structure of the NaBe molecule
Chem. Phys. 491 (2017) 33–41

3) Soumaya Elmoussaoui, **Wael Chmaisani**, Mahmoud Korek
Theoretical electronic structure with dipole moment and rovibrational calculation of the low-lying electronic states of the HgF molecule
Journal of Quantitative Spectroscopy & Radiative Transfer 201 (2017) 64–74

4) Dunia Houalla, Sahar Kassem, **Wael Chmaisani**, and Mahmoud Korek
Electronic structure with dipole moment and rovibrational calculations of the MgLi and MgNa Molecules
Can. J. Phys. (2017) Accepted

5) Israa Zeid, Tanya Atallah, Sahar Kontar, **Wael Chmaisani**, Nayla El-Kork, and Mahmoud Korek
Theoretical electronic structure of the molecules SrX (X=Li, Na, K) toward laser cooling study
Computational and Theoretical Chemistry 1126 (2018) 16–32

---

32) Ph.D. in Physics, Beirut Arab University

Theoretical Studies of the Electronic Structure of Alkali-Alkaline Earth Hydride Anions and Alkali (Lanthanide, Halide) Molecules

Date of defense: Feb. 2, 10- 2020
Student: Israa Zeid

Publications:

1- Israa Zeid, Rania Al Abdallah, Nayla El-Kork, Mahmoud Korek
Ab initio calculations of the electronic structure of the alkaline earth hydride anions XH^- (X = Mg, Ca, Sr and Ba) toward laser cooling experiment
Spectrochimica Acta Part A: Mol. Biomol. Spectrosc. 224 (2020) 117461

2-Israa Zeid, Nayla El-Kork, Mahmoud Korek
Electronic structure with the calculation of the rovibrational and dipole

moments of the electronic states of the NaBr and KBr molecules
Chemical Physics 517 (2019) 36–47

3- Israa Zeid, Nayla El-Kork, Neam Halat, Hawraa Jaber, Mahmoud Korek
Theoretical electronic structure with rovibrational calculations of the alkali chloride molecules XCl (X=Li, Na, K, Rb, Cs)
Phys. Scr 94, 125402 (2019)

4- Israa Zeid, Rania Al Abdallah, Nayla El-Kork, and Mahmoud Korek
Ab initio calculations of the XI molecules (X = Li, Na, K, Rb) with the ionicity and laser cooling analysis
Can. J. Phys. 98: 45–56 (2020)

5- Israa Zeida, Nayla El-Korkb, Sally Al Shawaa, Mahmoud Koreka,
Theoretical study of the alkali hydride anions XH–(X = Li, Na, and K)
Chemical Physics 538 (2020) 110825

6- Israa Zeid, Tanya Atallah, Sahar Kontar, Wael Chmaisani, Nayla El-Kork, Mahmoud Korek
Theoretical electronic structure of the molecules SrX (X = Li, Na, K) toward a laser cooling study
Computational and Theoretical Chemistry 1126 (2018) 16–32

7- Nayla El-Kork, Israa zeid, Hadeel Al Razzouk, Sara Atwani, Racha Abou arkoub and Mahmoud Korek
Electronic structure with dipole moment calculations of the high-lying electronic states of BeH, MgH and SrH molecules
J. Phys. Commun. 2 (2018) 055030

8- Hind El Kasty, Israa Zeid, Nayla El-Kork and Mahmoud Korek
Theoretical electronic structure with rovibrational and dipole moment calculation of the SiS Molecule
OP Conf. Series: Journal of Physics: Conf. Series 1258 (2019) 012033

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33) Ph.D in Physics, Beirut Arab University
Theoretical studies of the electronic structure of alkaline-earth diatomic halides and their ions

Date of defense: 7-10- 2021
Student: Nariman Abu Elkher
Publications:

1-Nayla El-Korka, Nariman Abuelkher, Farah Korjiehb, John Anwar Chtayb, Mahmoud Korek
Electronic structure of the polar molecules XF (X: Be, Mg, Ca) with rovibrational and dipole moment calculations
Spectrochimica Acta Part A: Mol. Biomol. Spectrosc. 177 (2017) 170–196

2-Nariman Abu el Kher, Nayla El-Kork, and Mahmoud Korek
Electronic Structure with Rovibrational Calculations of the Magnesium Monohalides MgX and Their Cations MgX+ (X = Cl, Br, and I)
ACS Omega 2019, 4, 21741−21760

3-Nariman Abu el Kher, Nayla El-Korkb, Mahmoud Koreka,*
Structural investigation for the low-lying electronic states with rovibrational calculations of the alkaline-earth fluoride cations XF+(X =Be, Mg, Ca)
Comput. Theo. Chem. 1203 (2021) 113357

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34) Ph.D in Physics, Beirut Arab University

Theoretical ab initio calculations of alkali and alkaline-earth halides and implications in laser cooling

Date of defense: 24-5- 2024
Student: Amal Madi
Publications

1-Amal Madi, Nayla El-Kork, Israa Zeid & Mahmoud Korek
Theoretical electronic structure with spin–orbit coupling effect of the molecules SrAt and BaAt for laser cooling studies
Scientific Reports | (2024) 14:6289

2.**149**. Amal Madi, Nayla El-Kork, Israa Zeid, and Mahmoud Korek
Laser cooling and electronic structure of Be halide anions BeX− (X = Cl, Br, F, and I)
J. Chem. Phys. 157, 024104 (2022)

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35) Ph.D. in Physics, Beirut Arab University

Theoretical Electronic Structure Calculation of Alkali and Alkaline-Earth Compounds toward Laser Cooling Applications

Date of defense: 4-11-2022
Student: Amal Moussa
Publications

1- Amal Moussa, Nayla El-Kork, Israa Zeid, Ehab Salem, and Mahmoud Korek
Laser Cooling with an Intermediate State and Electronic Structure Studies of the Molecules CaCs and CaNa
ACS Omega 2022, 7, 18577−18596

2- Amal Moussa, Nayla El-Kork, andMahmoud Korek
Laser cooling and electronic structure studies of CaK and its ions $CaK^{\pm}$
New J. Phys. 23 (2021) 013017

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36) Ph.D. in Physics, Beirut Arab University

Date of defense: May 2019
Student: Sahar Kassem

1-Sahar Kassem, Israa Zeid, and Mahmoud Korek. Extensive theoretical studies of the highly *excited electronic states with experimental parameters calculation for the laser cooling of the CaI molecule*
Volume 101, Number 4, April 2023

2-Sahar Kassem, Israa Zeid, and Mahmoud Korek
Theoretical studies of the excited electronic states of the molecule ScLi and its ions $ScLi^{\pm}$ with a feasibility study of laser cooling
Volume 101, Number 1, January 2023

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37) Ph.D. in Physics, Beirut Arab University

PET/CT imaging with a [68Ga] Gallium-labelled PSMA Ligand for the Diagnosis of Prostate Cancer in Nuclear Medicine

Date of defense: 25-2-2021
Student: Zeinab Khansa

1-Zeinab Khansa, Mohamad Haidar, Nemer Neaimeh, Mahmoud Korek
Comparison of PET Imaging with a 68Ga-labelled PSMA Ligand versus 18F-Choline PET/CT for the Diagnosis of Prostate Cancer & Radioprotection for Involved Personnel

January 2019, Health and Technology 9(4)

DOI: 10.1007/s12553-018-00281-5

2-Zeinab Khansa, Nemer Neaimeh, Mahmoud Korek, Mohamad Haidar

Can SUVmax of 68Ga-labeled PSMA Ligand and 18F-choline PET/CT Be Used to Predict the Radiation Dose in Prostate Cancer Patients?

Health Phys. 2021 Jan;120(1):80-85.

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38) Ph.D in Physics, Beirut Arab University

Theoretical study of hydrides of elements of groups III and VII

Date of defense: in Preparation
Student: Hana Abdel Nabi

1- Hana Abdelnabi, Dunia Houalla, Ghassan Younes, Mahmoud Korek
Electronic Structure with rovibrational calculation for the Molecule AlI, including the Spin-Orbit Coupling effect
BAU Journal - Science and Technology, https://digitalcommons.bau.edu.lb/stjournal

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39) Ph.D in Physics, Beirut Arab University

Theoretical ab initio studies of the hydrides of halides and chalcogenides

Date of defense: in Preparation
Student: Khadija Yassine

1. Khadija Yassine, Nayla El-Kork, Nariman Abu El Kher, Ghassan Younes, and Mahmoud Korek
Theoretical Study of Spin-Orbit Coupling and Laser Cooling for HBr Molecule with First-Overtone Spectral Calculations.
Frontier in Phys. 6, 2,025, DOI: 103389, fphy20251635SS9

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40) Ph.D in Physics, Beirut Arab University

Ab initio calculations on aluminum-transition metal (Zn, Cd, Hg) molecules including the spin-orbit coupling effect

Date of defense: In preparation
Student: Farah Rabah

1. Farah Rabah, Wael Chmaisani, Ghassan Younes, Nayla El-Kork, Mahmoud Korek
Theoretical spin-orbit laser cooling for AlZn molecule
J. Chem. Phys. 161, 154305 (2024)

2. Farah Rabah, Wael Chmaisani, Ghassan Younes, Nayla El-Kork, Mahmoud Korek
Electronic Structure and Laser-Cooling Prospects of the AlCd Molecule: A Theoretical Study Including Spin-Orbit Coupling.
***ACS Omega* (2026) 11 (26): 38388–38397**

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41) Ph.D in Physics, Beirut Arab University

Electronic Structure Studies of Mono-Halides of Elements of Group III and IV

Date of defense: 23/3/2026
Student: Ghina Chamieh

1 China Chamieh, Lokman Awad, Nayla El-Kork, Mahmoud Korek
Theoretical Laser Cooling Feasibility Study of ZrH Molecule at the Fine Structure Level.
Front. Chem., 25 July 2025, Sec. Theoretical and Computational Chemistry
Volume 13 - 2025 | https://doi.org/10.3389/fchem.2025.1603873

2. Ghina Chamieh, Lokman Awad, Mahmud Korek
Electronic Structure Studies with Spin-Orbit Coupling Effect of the Molecule TlI
WSEAS TRANSACTIONS on ELECTRONICS DOI: 10.37394/232017.2023.14.15

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42) Ph.D in Physics, Beirut Arab University
Electronic Structure Studies of the Molecules BaI and CdBr

Date of defense: In preparation
Student: Ali Mostafa

1. Ali Mostafa, Nayla El-Kork, Israa Zeid, Mahmoud Korek
Laser cooling and electronic structure studies of BaI molecule
Comput. Theo. Chemistry, 1212, 113717 (2022)

2. Ali Mostafa, Israa Zeid, Nayla El-Kork, Mahmoud Korek
Fine Structure Investigation and Laser Cooling Study of the CdBr Molecule.
Int. J. Mol. Sci. 2026, 27, 184 https://doi.org/10.3390/ijms27010184

B) The Master Degree of Science

17. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
Theoretical Studies of the Electronic Structure of the Molecular Ions KCs+ and $RbCs^+$

Date of defense: July 3, 2001
Student: Saleh Abdel al
Publication: Mahmoud Korek and S.N. Abdulal
Potential curves and rovibrational calculation of electronic states of the molecular ion KCs^+
Can. J. Phys. 80, 1025 (2002)

18**. The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
Theoretical Studies of the Electronic Structure of the alkali dimer cation $LiCs^+$

Date of defense: April 2005
Student: Ahmad Moughrabi
Publication: M. Korek, A. M Moghrabi, A. R. Allouche, M. Aubert-Frécon
Theoretical electronic structure including spin-orbit effects of the molecular ion $LiCs^+$
Can. J. Phys. 84, 959 (2006)

19**. The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Theoretical Studies of the Electronic Structure of the alkali dimer KCs

Date of defense: April 2005
Student: Yahia A Moughrabi
Publication: M.Korek, Y. A. Moughrabi, A.R.Allouche
The theoretical spin-orbit calculation of the molecule KCs including spin-orbit interaction
J. Chem. Phys. 124, 094309 (2006)

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20. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Theoretical Studies of the Electronic Structure of the Molecular Ion $NaCs^+$

Date of defense: May 2005
Student: Khalil Badreddine
Publication: M. Korek, M.; Badreddine, K.; Allouche, A. R
Theoretical study with spin-orbit effects and electronic transition moment calculation of the ion $NaCs^+$
Can. J. Phys. 86, 1015 (2008)

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21. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Theoretical Studies of the Electronic Structure of the Molecule NaCs

Date of defense: June 2005
Student: Sahar Bleik
Publication: M. Korek, S. Bleik, A. R. Allouche
Theoretical calculation of the excited electronic states of the molecule NaCs with spin-orbit effect.
J. Chem. Phys. 126, 124313 (2007)

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22. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Theoretical Studies of the Electronic Structure of the Molecule LiCs

Date of defense: June 2005
Student: Dunia Hwalla
Publication: N. Elkork, D. Houalla, and M. Korek

Theoretical Calculation of the Electronic States with Spin-Orbit Effects of the Molecule LiCs
Can. J. Phys. 87, 1079 (2009)

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23. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
Theoretical Studies of the Electronic Structure of the Molecular Ion $LiRb^+$

Date of defense: June 2005
Student: Amal Madi
Publication: Title of the book: New Quantum Chemistry Research
Title of the chapter: electronic transition moment with spin-orbit coupling of the molecular ion $LiRb^+$
Publisher: Nova Science Publishers, Inc. 400 Oser Avenue, Suite 1600 Hauppauge, NY 11788

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24. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
Theoretical Studies of the Electronic Structure of the Molecule ScI

Date of defense: June 2005
Student: Sahar Kantar
Publication: M. Korek, S. Kontar, F. Taher-Mansour, A.R.Allouche
Theoretical electronic structure of the molecule ScI.
Int. J. Quant. Chem. 109, 236 (2009)

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25. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
Potential energy curves and spectroscopic calculation of the electronic states of the molecule LiRb

Date of defense: June 2005
Student: Sally El Shawa
Publication: M. Korek, S. Al-Shawa, G. A.Younes
Theoretical Calculation of the Electronic Structure of Molecule LiRb Including the Spin-Orbit Interaction.
J. Mol. Struct. THEOCHEM 899, 25 (2009)

----

26. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
A New Formulation for the Herman-Wallis Coefficients for Infrared Transitions of A Diatomic Molecule

Date of defense: June 2007
Student: Claire Deeb
Publication: M. Korek and C. Deeb
A New Formulation for the Herman-Wallis Coefficients for Infrared Transitions of A Diatomic Molecule.
Internet Electronic J. Mol. Design, *5*, 296 (2006)

---

27. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
Excited electronic states and spectroscopic studies of the molecule ScBr (Scandium Bromide)

Date of defense: June 2007
Student: Alaa Hamdan
Publication: M. Korek, A. Hamdan
Theoretical electronic structure of the molecule ScBr
Int. J. Quant. Chem. 108, 456 (2008)

---

28. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
Theoretical Studies of the Electronic Structure of the Molecular Ion RbH^+

Date of defense: July 2007
Student: Sami Hammoud
Publication: M. Korek, S. Hammoud, A. R. Allouche, and T. Harb
Theoretical calculation of the low-lying electronic states of the molecular ion RbH^+ with spin-orbit effects
J. Chem. Phys. 129, 204304 (2008)

---

29. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
An extensive theoretical study for the photon average path length calculation inside parallelepiped gamma-ray detectors

Date of defense July 2007
Student: Abdelhasan Ali Breidy

---

30. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
Theoretical Studies of the Electronic Structure of the Molecular Ion CsH^+

Date of defense Feb 2009

Student: Hussam Jawhari
Publication: Title of the book: Quantum Frontiers of Atoms and Molecules
Title of the chapter: Theoretical calculation of the low-lying electronic states of the molecular ion CsH^+ with spin-orbit effects
Publisher: Hindawi Publisher, New York

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31. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
An ab initio Calculation with Vibration-Rotation Study of the Molecule VO

Date of defense: June 2009
Student: Hana Abdul Anabi
Publication: M. Korek, H. Abdel Nabi, and N. Elkork
Molecular electronic structure of nanodiatomic metal oxide
IEEE, Ohio State University, COLUMBUS, OHIO (2013)

---

32. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
PIXE identification of fine and coarse particles of aerosol samples from Beirut

Date of defense: June 2009
Student: Hadi Basma

---

33. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
Theoretical Calculations with Spin-Orbit Coupling of the Molecule YS

Date of defense June 2009
Student: Ayman Farhat
Publication: 65. M. Korek, A. Farhat, and S. N. Abdul-Al
Theoretical calculation of the low-lying electronic states of the molecule YS
J. Theo. Comp. Chem., 9, 597 (2010).

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34. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
RBS Characterization of Yttrium Iron Garnet (YIG) Thin Films Elaborated by Radio Frequency Sputtering

Date of defense June 2009
Student: Mehdi Mansour

---

35. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Theoretical calculation of the electronic states with spin-orbit effect of the Molecule NaRb

Date of defense Feb 2009
Student: Oussama Fawwaz
Publication: M. Korek, O. Fawwaz, A. R. Allouche
Theoretical calculation of the electronic states with spin-orbit effects of the molecule NaRb.
Int. J. Quant. Chem. 109, 938 (2009)

---

36. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Theoretical studies of the low-lying electronic states of the Molecule LaO

Date of defense: May 2009
Student: Amal Moussa
Publication: M. Korek, Nayla El-Kork, A. N. Moussa, and A. Bentiba
Theoretical study with rovibrational and dipole moment calculation of the LaO molecule
Chem. Phys. Lett. 575, 115-121 (2013)

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37. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

An ab initio Calculation with Vibration-Rotation Study of the Molecule ScS

Date of defense May 2010
Student: Rawad El Halabi
Publication: M. Korek and R. Halabi
Electronic structure with rovibrational and dipole moment calculation of the molecule ScS
J. Mod. Phys. (2015) 6, 546-552

---

38. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Theoretical Calculations of the low-lying electronic states of

the Molecule ScO

Date of defense: Sept. 2010
Student: Juliana Srour

---

39. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Theoretical Calculations with Spin-Orbit Coupling of the Molecule LaS

Date of defense: Nov.2010
Student: Huda Hammour
Publication: M. Korek and H. Hammour
Electronic structure with rovibrational and dipole moment calculations of the LaS molecule
Phys. Rev. & Res. Int. 3, 176-190 (2013)

---

40. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Extensive Theoretical Study for the Photon Path Length Calculation inside Cylindrical Gamma-ray Detectors Using Marinelli Beaker

Date of defense: Jan. 2011
Student: Oussama Abou Ibrahim

---

41. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Electronic structure of a diatomic compound of an alkali and an alkaline earth

Date of defense: May 10, 2011
Student: Rasha Abou Arkoub

---

42. **The Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Theoretical Studies of the Electronic Structure of the Molecular Ion KH^+

Date of defense: May 2011
Student: Amina Jbara
Publications:
1) M. Korek, M. Rida, A. Jbara
Theoretical Calculation of the Low-Lying Electronic States of the Molecular Ion KH^+
J. Mol. Struct. THEOCHEM 870, 100 (2008)

2) M. Korek, M. Rida, A. Jbara
Theoretical Calculation of the Low-Lying Electronic States of the Molecular Ion KH^+ with spin-orbit effects
J. Mol. Struct. **THEOCHEM 949, 70 (2010**)

---

43. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
Theoretical calculation of a compound of an alkaline diatomic molecule

Date of defense: June 2011
Student: Salman Mahmoud
Publication:
S. Mahmoud and M. Korek
Theoretical Calculation of the Low-Lying Electronic States of the Molecule LaH
Can. J. Chem., 92 (9) 855 - 861 (2014)

---

44. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
Electronic structure of an Alkaline and Alkaline Earth diatomic molecule

Date of defense: Nov. 2011
Student: Sara Atwani

---

45. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
Electronic structure of molecular states of a diatomic molecule

Date of defense: Dec. 2011
Student: Baraa Yamout

46. **The Degree of Master of Science, Beirut Arab Universite, Beirut, Lebanon**
Title:
Theoretical calculation of an alkaline-earth compound of Hydrogen atom

Date of defense: Feb. 2012
Student: Hadeel Razzouk

---

47. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**

Title:

Theoretical Study of the Electronic states of alkaline and alkaline-earth molecule

Date of defense: April 2012
Student: Bouchra Younes

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48. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

An ab initio Calculation with Vibration-Rotation Study of the Molecule CaF

Date of defense: May 2012
Student: Anwar Echtay
Publication: Nayla El-Kork, Nariman Abu el kher, Farah Korjieh, **John Anwar Chtay**, Mahmoud Korek
Electronic structure of the polar molecules XF (X: Be, Mg, Ca) with rovibrational and dipole moment calculations
Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy 177 (2017) 170–196

---

49. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Electronic structure and rovibrational calculation of a heavy diatomic compound

Date of defense: June 2012
Student: Samir Tohme
Publication:
S. N. Tohme, M. Korek
Electronic structure and rovibrational calculation of the low-lying states of the RbYb molecule
Chem. Phys. 410, 37–44 (2013)

---

50. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Electronic Structure with rovibrational study of LiF Molecule

Date of defense: Sept. 2012
Student: Lawand Hantoush

---

51. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Electronic Structure of a Compound of an Alkaline Earth Diatomic Molecule

Date of defense: Oct. 2012
Student: Farah Korjieh
Publication: Nayla El-Kork, Nariman Abu el Kher, **Farah Korjieh**, John Anwar Chtay, Mahmoud Korek
Electronic structure of the polar molecules XF (X: Be, Mg, Ca) with rovibrational and dipole moment calculations
Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy 177 (2017) 170–196

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52. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

RBS Characterization of multilayer YIG thin films deposited by radio-frequency reactive magnetron sputtering

Date of defense: Jan. 2013
Student: Zouhair Bitar

---

53. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Theoretical studies of a diatomic compound of mercury

Date of defense: 15 Jan. 2014
Student: Nabil Kazem

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54. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Theoretical studies of a diatomic fluoride of an alkaline-earth compound

Date of defense: Sept. 2013
Student: Fatima Jardali
Publication:
F. Jardali, M. Korek, G. Younes
Electronic Structure and Rovibrational Calculation of the Low-Lying Electronic States of the SrF Molecule
Can. J. Phys., 92, 1223 (2014)

---

55. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Theoretical studies of a Lanthanide Monofluoride compound

Date of defense: May, 16 (2014)
Student: Batoul Helbaoui

---

56. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Theoretical studies of a magnesium mono-halide compound

Date of defense: 11 / 01 / 2016
Student: Nariman Abou El khair
Pulication:
Nayla El-Kork, **Nariman Abu el kher**, Farah Korjieh, John Anwar Chtay, Mahmoud Korek
Electronic structure of the polar molecules XF (X: Be, Mg, Ca) with rovibrational and dipole moment calculations
Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy 177 (2017) 170–196

---

57. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Theoretical studies of an alkaline compound of the Strontium atom

Date of defense: 07 / 11 / 2016
Student: Israa Zeid
Publication:
Israa Zeid, Tanya Atallah, Sahar Kontar, Wael Chmaisani, Nayla El-Kork, and Mahmoud Korek
Theoretical electronic structure of the molecules SrX (X=Li, Na, K) toward laser cooling study
Computational and Theoretical Chemistry 1126 (2018) 16–32

---

58. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:

Electronic structure of a barium-alkaline compound

Date of defense: 1/12/2016
Student: Sahar Kassem
Publication:
Dunia Houalla, **Sahar Kassem**, Wael Chmaisani, and Mahmoud Korek
Electronic structure with dipole moment and rovibrational calculations of the MgLi and MgNa Molecules

Can. J. Phys. (2017) Accepted

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59. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title:
Electronic structure of the NaSr diatomic molecule

Date of defense: 2/12/2016
Student: Tania Atallah

Publication:
Israa Zeid, Tanya Atallah, Sahar Kontar, Wael Chmaisani, Nayla El-Kork, and Mahmoud Korek
Theoretical electronic structure of the molecules SrX (X=Li, Na, K) toward laser cooling study
Computational and Theoretical Chemistry 1126 (2018) 16–32

---

60. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Title: Theoretical calculations for a transition-metal halide molecule

Date of defense: 13/7/2021
Student: Mohamad Souaid

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61. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Electronic structure of an alkaline-earth halide molecule

Date of defense: 11/2/2021
Student: Rahaf Baba

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62. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Theoretical studies of diatomic monohalide molecule candidate for experimental Laser cooling

Date of defense: 9/2/2021
Student: Rahaf Elfares

---

62. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Theoretical studies of diatomic monohalide molecule candidate for experimental Laser cooling

Date of defense: 9/2/2021
Student: Rasha Elfares

---

63. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Electronic structure with rovibrational calculations of RbBr molecule

Date of defense: 8/2/2021
Student: Rashaf Hijjawe

---

64. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Rovibrational and dipole moment calculation of an alkali halide molecule

Date of defense: 13/2/2020
Student: Neam Halat

---

65. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Theoretical Calculations for a Laser Cooling Study of the CaNa Molecule CaNa

Date of defense: 26/6/2019
Student: Ihab Salem

---

66. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Electronic structure of an alkali-alkaline-earth molecule

Date of defense: 26/6/2019
Student: Abdelkarim Omeis

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67. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Electronic structure of the sodium iodide molecule NaI

Date of defense: 24/9/2019
Student: Rania Elabdallah

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68. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Ab initio with rovibrational calculations of the KCl molecule

Date of defense: 19/12/2018
Student: Hawra Jaber

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69. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Theoretical calculations of the molecule silicon sulfide
SiS

Date of defense: 28/5/2019
Student: Hind Elkasti

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70. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**

Theoretical study of the astrophysical molecule Hydrogen Fluoride

Date of defense: 8/3/2025
Student: Maha Shibli

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71. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Theoretical study of the astrophysical molecule Hydrogen Fluoride

Date of defense: In Preparation
Student: Maha Shibli

---

72. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Electronic Structure of the LaS molecule

Date of defense: In Preparation
Student: Mohamad Kanso

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73. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Theoretical electronic structure of the strontium-antimony compound

Date of defense: 2/4/2025
Student: Sara Hajj Shehadeh

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74. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Theoretical Electronic Structure and Laser cooling of the AtH molecule

Date of defense: 22-5-2024
Student: Hiba Abdel Fattah

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76. T**he Degree of Master of Science, Beirut Arab University, Beirut, Lebanon**
Theoretical ab initio Calculation of the Electronic Structure of the Astrophysical Molecule TiH

Date of defense: 18-12-2024
Student: Zeinab Awada
