CURRICULUM VITAE

NABIL YOUSEF AYOUB

1. Address:

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2. Personal Data:

- Date of Birth: 9 January 1949
- Place of Birth: Beirut, Lebanon
- Nationality: Jordanian
- Marital Status: Married.
- Children: Three.

3. Education:

1968-1973: License in Physics, June 1973 from the Lebanese University. Area of Specialization: Physics. Language of Instruction: English.

1973-1976: M.Sc. Physics, June 1976 from the American University of Beirut. Area of Specialization: Theoretical Nuclear Physics (Nuclear Structure. Shell Model Theory). Language of Instruction: English.

1976-1978: Ph.D. in Physics, October 1978 from the American University of Beirut. Area of Specialization: Theoretical Nuclear Physics. (Nuclear Structure, Shell Model Theory). Language of Instruction: English .

Languages: I speak, read and write the following languages:

-Arabic reading, listening, writing: very good (C level)
-English reading, listening, writing: very good (C level)
-French reading, listening (B1 level) writing (A2 level)
-German reading, listening (B1 level) writing (A2 level)
-Italian reading, listening (B1 level) writing (A2 level)
-Hebrew reading, listening, writing: Weak (A0 level)

-Japanese reading, listening, writing: Weak (A0 level)

4. <u>Title of Theses</u>:

(i) 'Three Particle-Three Hole and Four Particle-Four Hole Goldstone Graph Components`. M.Sc. Thesis.

(ii) `Various Contributions to the Ground State and Some Excited O+ Energy Levels of Closed Shell Nuclei`. Ph.D.Thesis.

5. <u>Teaching Experience</u>:

1973-1976: Instructing students in Physics Laboratories at the American University of Beirut.

1976-1977: Half-time Faculty Member of the Physics Dept., American University of Beirut.

Summer 1977: Full-time Faculty Member of the Physics Dept., American University of Beirut.

1977-1978: Instructor of Physics at the American University of Beirut.

1978-1987: Assistant Professor at the Physics Dept. of Yarmouk University, Irbid, Jordan.

1987-1989: Associate Professor at the Physics Department of Yarmouk University, Irbid, Jordan.

1989-1990: Visiting Scholar at the Institute for Pure and Applied Physical Sciences, University of California - San Diego.

1990-1992: Associate Professor at the Physics Dept. of Yarmouk University, Irbid, Jordan.

1992-: Professor of Physics at the Physics Department of Yarmouk University, Irbid, Jordan.

1992-1996: Chairman, Department of Physics, Yarmouk University, Irbid, Jordan. (Two Terms, each two years)

1996-1997: Visiting Professor, Department of Physics, University of Texas at Austin, USA.

1996: Vice-Dean of Graduate Studies and Scientific Research, Yarmouk University, Irbid, Jordan.

1997-: Professor of Physics at the Physics Department of Yarmouk University, Irbid, Jordan.

2003-2004: Professor of Physics at the Physics Department of Jordan University of Science and Technology (JUST), Irbid, Jordan.

2006-Jan 2010: Dean of School of Applied Natural Sciences- German Jordanian University - Amman, Jordan. (Two terms, each two years). During my assumption of the Deanship, I was responsible for all the duties that a vice president should carry out. Duties like: 1) Chairperson of the University Study Plan Committee (I have set the University required courses and the School required courses as well as the fields of knowledge for 17 study programs), 2) Chairperson of the Central Tenders Committee, 3) Chair of GJU Health Insurance Committee, etc…

2010-2011: Sabbatical from Yarmouk University to GJU.

2010-2011: Consultant to the President of AUM (at the time University of Madaba). I was involved in laying the foundations of the University requirements, seven faculties requirements (In total 32 study programs in 7 Faculties). Also I was involved in determining the various fields of knowledge in 16 study plans for the purposes of accreditation, later it was raised to 18 (another two were accredited). I was involved in writing down the various regulations of AUM including the salary scale. In addition, I was involved in the recruitment of faculty members and some of the administrative employees. In addition, I devised my own Excel program for the prediction of the revenues and expenditures of AUM over a period of 7 years.

2011-2013: Dean of Graduate Studies and Scientific Research, GJU. (Where I wrote the Regulations for the Deanship Graduate Studies and Scientific Research. The articles of these regulations were reflected in 36 executive forms for students and faculty members.) During this period, I introduced a Graduate Studies program in Renewable energy, the environment and climate change, which was funded by TEMPUS – MAPEC. I have filed for accrediting the program and it is now running with an enrolment of over 60 graduate students.

2013-2014: Full professor, Physics Department, Yarmouk University.

Sept. 2014-: Tenured Professor of Physics/GJU.

Oct. 2014- Feb 2015: Acting Dean of school of Languages.

Feb. 2015- Feb. 2017: Dean of School of Basic Sciences and Humanities/GJU. (This School was not there, and I had to establish it from scratch, be it the courses or faculty members. I was able to assemble courses and faculty from four different Schools in a record time. Now it is running smooth where I institutionalized the system in the School. If I leave the School my Vice-Deans will be able to takeover without any disruption).

Feb. 2017- Feb. 2021: On secondment from GJU to AUM as President of AUM.

Feb. 2021-: Professor of Physics. School of Basic Sciences and Humanities (SBSH). German Jordanian University.

I have taught most of the undergraduate courses and six graduate level courses. The courses I have taught were:

1) Introduction to Newtonian Mechanics (freshman)
2) Introduction to Electricity and Magnetism (freshman)
3) Introduction to Thermodynamics, Waves and Optics (freshman).
4) Three Freshman Lab. courses that accompany the above three courses.
5) Introduction to Mathematical Physics (sophomore).
6) Special Theory of Relativity (sophomore)
7) Modern Physics (sophomore).
8) Thermodynamics (sophomore).
9) Electronics (I) (sophomore).
10) Theory of Special Functions (Junior).
11) Classical Mechanics (I) (Junior).
12) Classical Mechanics (II) (Junior).
13) Electromagnetic Theory (I) (Junior).
14) Electromagnetic Theory (II) (Junior).
15) Junior Physics Laboratory (Junior).
16) Senior Physics Laboratory (Senior) .
17) Quantum Mechanics (I) (Junior).
18) Quantum Mechanics (II) (Senior).
19) Nuclear Physics (Senior).
20) Statistical Mechanics (Senior).
21) Mathematical Physics (Senior).
22) Solid State Physics (Senior).
23) Classical Mechanics (Graduate).

24) Electrodynamics (Graduate).
25) Statistical Mechanics (Graduate).
26) Fine Particle Magnetism (Graduate).
27) Superconductivity (Graduate).
28) Solid State Physics (Graduate).
29) Nuclear Physics (Graduate).
30) Mathematical Physics (Graduate).

6. Research Interests:

My interests now are mainly in the magnetic properties of High-T_c Superconductors, theory of Superconducting levitation and in Systems of Nano magnetic particles, both theory and experiment. In addition, I am interested in theoretical Nuclear Physics (Nuclear Structure, Shell Model Theory). I have interest in Fractional Differential Equations and its Applications.

7. Graduate Studies:

I have supervised over 30 M.Sc.theses to mention few:

(1) Mr. Mohammad Mustafa El-Hilo (Graduated lst Semester of 85/86). Thesis Title: The effect of various distributions on the initial susceptibility of a textured fine particle system.

(2) Mr.Basel Abu-Aisheh (Graduated lst Semester of 87/88). Thesis Title: The effect of concentration on the magnetic initial susceptibility of magnetite ferrofluid.

(3) Mr.Ribhi Abdelal (Graduated Summer Semester of 87/88). Thesis Title: Spin Glass Type Behaviour in a Non-Interacting Fine Particle System.

(4) Mr.lmad Al-Khalil (Graduated Second Semester of 90/91).Thesis Title: Magnetic Properties of the Perovskite -Like $GdBa_2Cu_3O_7$ Fine Particle Systems in a Solid Matrix.

(5) Mr. Ahmad Shamoun (Graduated Second Semester of 90/91). Thesis Title: A Theoretical Study of the Effect of Interparticle Interactions on the Magnetic Properties of Ferrofluids.

(6) Mr. Mohammad Rezeq (Graduated Summer Semester of 91/92).Thesis Title: The magnetic susceptibilities of the Perovskite-like Compounds $RBa_2Cu_3O_7$.

(7) Mr. Muhammad S. Bawa`aneh (Graduated First Semester of 92/93). Thesis Title: Curie-Weiss Behaviour in the Compounds $REBa_2Cu_3O_7$ (RE = Rare Earth) and $Bi_{1.7}Pb_{0.3}Sr_2Ca_2Cu_3O_{10}$.

(8) Miss Khadijeh Hamasha (Graduated Summer Semester of 92/93). Thesis Title: Hysteresis Effects in Hole-Doped High-Temperature Superconductors.

(9) Mr. Ziad Khattari (Graduated Second Semester of 93/94). Thesis Title: Interaction Effects in a Fine Particle System.

(10) Mr. Heider Ereifej (Graduated First Semester of 94/95). Thesis Title: The Effect of the Freezing Field on the Spin-Glass Type Behaviour of Frozen Ferrofluids.

(11) Mr. Abdallah Obeidat (Graduated First Semester of 94/95). Thesis Title: Comparison Between Experimental and Theoretical Studies on an Interacting Fine Particle System.

(12) Miss Safeia Hamasha (Graduated First Semester of 95/96). Thesis Title: Magnetic Properties of Ba-Fe Fine Particles System.

(13) Mr. Anas Ababneh (Graduated Second Semester of 95/96). Thesis Title: A Statistical Model for Magnetic Fine Particle Systems.

(14) Mr. Adnan Jaradat (Graduated Summer Semester of 95/96). Thesis Title: Some Physical Properties of Fe_3O_4 and Ba-Fe Fine Particle Systems.

(15) Mr. Khalid Eid (Graduated Summer Semester of 95/96). Thesis Title: Comparison Between Various Properties of Fe_3O_4 and Ba-Fe Ferrofluids.

(16) Mr. Nagy El-Dahoudy (Graduated Summer Semester of 95/96). Thesis Title: Experimental and Theoretical Studies of Ba-Fe and Fe_3O_4 Ferrofluids.

In addition, I was member on the examining committees of over 60 M.Sc. and Ph.D. theses to mention few:

(1) Mr. lmad Barghouthi (Graduated lst Semester 87/88, University of Jordan). Thesis Title: Diffraction Model Analysis of Cluster Stripping Reactions.

(2) Mr. lmaddin Al-Omari (Graduated Summer Semester of 87/88). Thesis Title: Mossbauer Study of the Ternary Systems FeAl1-x Mnx .

(3) Mr. Ahmad Al-Khateeb (Graduated Summer Semester of 91/92).Thesis Title: The Effect of Wave Bandwidth on Raman Scattering.

(4) Mr. Husam A.Aref (Graduated First Semester of 92/93). Thesis Title: Fe_3O_4 Ferrofluid Stability Studies.

(5) Mr. Ziad Abdul-Jawad (Graduated Second Semester of 93/94). Thesis Title: Radon Gas Detection Indoors and Outdoors in Ramtha Region.

(6) Mr. Rateb M. K. Al-Rjob (Graduated First Semester of 94/95, University of Jordan). Thesis Title: Studies of the Nuclear Reaction $^{16}O(d,\alpha)^{14}N$.

8. <u>Grants and Contracts</u>:

(1) I have been awarded six research grants supported by the Deanship of Research at Yarmouk University to work in Fine Particle Magnetism.

(2) I have been awarded two research grants supported by the "Higher Council for Science and Technology" in Jordan, to work on various phenomena in ferrofluids and high-Tc Superconductivity.

(3) Starting January 1995 I was awarded a research grant by the German Research Foundation (DFG) for two years (amount of 61,000 DM for Yarmouk University) in collaboration with IPHT in Jena, Germany to work on the magnetic properties of fine particles of Barium Hexaferrite systems. Grant number: DFG: Schu 1023/2

(4) Starting September 1997 I was awarded a research grant by the German Research Foundation (DFG) for one year (amount of 47,670 DM for Yarmouk University) in collaboration with IPHT in Jena, Germany to work on the magnetic properties of fine particles of Barium Hexaferrite systems. Grant number: GTZ: 93.2157.1-06.100.

(5) Development and utilization of solar driven water pumping and desalination units for applications in the remote areas of Jordan. Jordanian Scientific Research Fund (Amman, Jordan). Grant number: 2008/30/2/E.

(6) MAPEC-MAster Program in Environmental engineering and Climate change. European Commission (Brussels, Belgium).

Co-investigator.(Project coordinator: Prof. Ahmad Salaymeh from Jordan University).
Grant number: 2011-2697/001-001

9. <u>Honours and Awards</u>:

1) E.E.C. Scientific Award for research. University of Wales, Bangor, U.K. Summer 1987.

2) Fulbright Award for the years 1989 and 1990. University of California, San Diego, U.S.A.

3) Associate member at the International Centre for Theoretical Physics for the period 1/Jan./1991 to 31/Dec./1996. Trieste, ltaly.

4) DAAD Award for the summer of 1991. Kernforschungszentrum Karlsruhe, Germany.

5) SCOPUS Award for excellence in research. April 2009. The Award was given during a ceremony in Four Seasons Hotel, by her Royal Highness Princess Sumaya Bint Al-Hassan and the Mininster of Higher Education his excellency Dr. Walid Al-Maani.

10. Community Service:

1- I am involved with a panel of around 20 judges (Full Professors from all over Jordanian Universities in the full spectrum of specializations) that evaluate high school students' projects since 2005 and until now. First category successful projects will be sent to the International Science and Engineering Fair (ISEF), which is convened annually. All expenses are bourne by the INTEL Company of Mr. Bill Gates. Some of our students have achieved first, second and third places in their own categories and they won prizes plus university scholarships after they graduate from high school. Second category successful projects will be sent to regional competitions in the Arab World as well as Turkey and Europe; again, our students had oustanding achievements.

2- I supervised a group of GJU students (team of three students) to enter an international competition organized by the United Nations for Outer Space Affairs (UNOOSA) and we were the winning project that was involved in outer space research. We went to the University of Bremen in Germany where we carried out our experiment in the Microgravity tower ZARM of the university. The team stayed in Bremen University from 16 Nov. to 30 Nov. 2015. The director of ZARM was so impressed by the teamwork that he offered them training paid positions while on their German year as required by all GJU students.

11. <u>Committees</u>:

-International:

- Member of the Organizing Committee for the Symposium on Magnetism and Magnetic Materials. Held at Yarmouk University, 22 Nov. to 24 Nov. 1993.

- Member of the International Scientific Committee for the Conference "TMP Teaching Physics for Students not majoring in Physics". Held in St. Catherine, Sinai, Egypt, from 23 to 28 July 1994. Sponsors: ARAPEN, ROSTAS, ICTP, IUPAP, ICPE.

- Member of the Organizing Committee for the Third Symposium on Magnetics. Held at Yarmouk University, 2 Nov. to 4 Nov. 1998.

- Member of the editorial board of Physics B Journal for the publications of the proceedings of MSM-01 convened at Yarmouk University, Irbid – Jordan.

- National:

- Member of the Accreditation Committee to accredit the private university : "University of Applied Sciences". Committee formed by the Minister of Higher Education.

- Member of the Supervisory and Advisory Committee to supervise the writing up of Physics books to the Secondary level (Scientific section, Industrial section, nursing section). Fifteen books in total. Committee formed by the Minister of Education.

- Member of the Director Board of the Jordanian Nuclear Energy Commission. The Board is formed by His Excellency the Prime Minister of Jordan. Four years term: 2001-2005, renewed until 2008.

- Member of the Board of Trustees of Zaytouna University since July 2006 until July 2010.

- Member of the Higher Education Council, appointed by a Royal Decree by His Majesty King Abdullah II since June 27 2015. It is the highest governing body involved with all aspects of higher education in the

Hashemite Kingdom of Jordan (i.e. Universities, Community colleges, Scientific Research, etc…)

- Member of the Board of the Jordanian-American Commission for Educational Exchange (JACEE) (aka The Binational Fulbright Commission in Jordan) February 15 2019- Feb. 14 2023.

- Chair of the Board of the Jordanian-American Commission for Educational Exchange (JACEE) Jan. 10, 2021-Jan. 9, 2023.

-**University:** - Chairman of the Committee that prepared the Yarmouk University Academic Catalogue in the English Language .Published 1995 (Yarmouk University).

- Member of the Yarmouk University Housing Fund.

- Member of the consulting committee for the official cultural magazine of Yarmouk University:"Yarmouk Magazine ".

- Member of the board of "The Center for Theoretical and Applied Physics" (CTAP) at Yarmouk University.

- I mentioned above in my teaching experience section the vatious committees that I was involved in while at GJU, as well at AUM as a consultant. For the sake of not being redundant, please refer to the teaching experience section above.

- **College:** I was a representative of the Physics Department on the College Council during the academic year 1980-1981. I participated in the Curriculum Committee.
Also starting September 1992, as a Chairman of the Physics Department, I am a member of the following Committees:
(a) Graduate Studies
(b) Budget
(c) Library.

- **Department:** I participated in all the Department committees such as:
(a) Graduate Studies

(b) Computer
(c) Library
(d) Curriculum.

12. <u>Professional and Scientific Meetings</u>:

1. Third International Conference on Magnetic Fluids, Bangor, U.K. June, 1983.

2. First Conference on Physics of Condensed Matter. Amman, Jordan. October 1986.

3. 31st Annual Conference on Magnetism and Magnetic Materials, Baltimore, U.S.A., November 1986. Presented a paper entitled: "The Initial Susceptibility of a Textured Fine Particle System". N.Y.Ayoub, N. Laham, J. Popplewell and R.W.Chantrell.

4. lst, 2nd, 3rd and 4th Petra School of Physics, Jordan .

5. INTERMAG`89 Conference, Washington D.C., U.S.A., March 1989. Presented a paper entitled:"The Effect of Texture on Curie-Weiss Behaviour in a Frozen Ferrofluid". N.Y. Ayoub, B. Abu-Aisheh, M. Dababneh, N.Laham and J.Popplewell.

6. "Spring College on Superconductivity". 23 April to 19 June 1992 .ICTP, Trieste, ltaly.

7. "Experimental Workshop on High Temperature Superconductors and Related Materials", (Advanced Activities). 11January to 29 January 1993. Invited Participant. Bariloche, Argentina.

8. Invitation by the German Research Society (DFG), in March 1993, to discuss a research proposal that I have applied to DFG in collaboration with IPHT in Jena , Germany.

9. While I was involved with the research funded by DFG I travelled at least six times to Germany for all kinds of scientifiuc meetings and research.

10. While involved with GJU in my capacity as Dean of many schools, I travelled to Germany where I was involved in making many MoUs that resulted in finding places for our students in the various German Applied Universities.

11. Finally while involved with the TEMPUS funded MAPEC program I travelled to Austria and Germany where many seminars were convened in which I

presented the Master Program that I have devised on renewable energy, environment and climate change.

12. Invited talk to United Nations/Costa Rica Workshop on Human Space Technology, 7-11 March 2016.

13. Invited to the Cross Innovation-Industry Summit Nov. 2-4 2019, NASA-Houston, USA.

14. Invited to UNOOSA Conference Dec. 2019, UN, Vienna, Austria.

13. Publications:

Books:

(1) Introduction to Mathematical Physics. (English Version).
Authors: N.M.Laham, N.Y.Ayoub.
Published by Dar Al-Amal, lrbid, Jordan, 1986.

(2) Introduction to Classical Mechanics (Arabic Version).
Authors: N.M.Laham, M. Dababneh, and N.Y.Ayoub.
Published by Yarmouk University Press, 1987. First, second, third and fourth editions (1998).

Journals:

Please note that you can get the full texts of all these publications from the international source: Researchgate with the website: https://www.researchgate.net/profile/Nabil_Ayoub/publications

At least 48 of the publications are SCI, the rest are either SCIE, or ISI or SCOPUS. Ten are published in national journals.

(1) Title: Sum Rules Involving Coefficients of Fractional Parentage.
Authors: N.Y.Ayoub and H.A.Mavromatis.
Published in: Nucl. Phys.**A282** (1977)153.

(2) Title: Fourth Order High Lying Contributions to the Ground State Energies of Some Closed-Shell Nuclei.
Authors: N.Y.Ayoub and H.A. Mavromatis.
Published in: Nucl.Phys. **A323** (1979) 125-146.

(3) Title: Magnetic and Mossbauer Studies of Finely Dispersed Iron Particles.
Authors: N.Y.Ayoub, R. W. Chantrell. K.O`Grady, M.A. Kobeissi and J.Popplewell.
Published in J.of Phys. F: Metal Phys. **15**, (1985) 2229.

(4) Title: The Low Field Susceptibility of a textured Superparamagnetic System.
Authors: R.W. Chantrell, N.Y.Ayoub and J. Popplewell.
Published in: J.of Mag. and Mag. Mat.**53**, (1985)199.

(5) Title: Effect of High-Lying States on the Ground State and Few Low-Lying Excited O+ Energy Levels of Some Closed-Shell Nuclei.
Author: N.Y.Ayoub.
Published in J. of Phys. G: Nucl. Phys.**12**,(1986)859.

(6) Title: A `Pair Orientation` Model of the Magnetoelectric Anisotropy in ferrofluids.
Authors: N.Ayoub, A.Bradbury, R.W.Chantrell and J. Popplewell.
Published in: J.of Mag.and Mag. Mat.**65**, (1987)185.

(7) Title: The Initial Susceptibility of a textured Fine Particle System.
Authors: N Ayoub, N.Laham, J.Popplewell and R.W. Chantrell.
Published in J.of Appl.Phys. **61(8)**, (1987)3305.

(8) Title: The Effect of Particle Size on the Magnetic Initial Susceptibility of a Textured Fine Particle System.
Authors: N.Y.Ayoub, M. El-Hilo, N.Laham, M. Dababneh and J. Popplewell.
Published in: Dirasat **14(1)**, (1987)225. A Refereed Scientific Journal, (Jordan).

(9) Title: The Effect of Various Particle Size Distributions on the Initial Susceptibility of a Textured Fine Particle System.
Authors: N.Y. Ayoub, M. El-Hilo, N. Laham, R.W. Chantrell and J. Popplewell.
Published in: J. Phys. D: Appl.Phys. **21**, (1988) 129.

(10) Title: Particle Interaction Effects in Ferrofluids.
Authors: N.Y.Ayoub, B. Abu-Aisheh, N.Laham, M. Dababneh, J. Popplewell and k.O`Grady.
Published in: J. de Phys. Colloq. **C8, 49** (1988)1841.

(11) Title: Susceptibility Peaks in a Fine Particle System.
Authors: M. El-Hilo, K. O`Grady, J. Popplewell, R.W.

Chantrell and N.Y. Ayoub.
Published in: J.de Phys. Colloq. **C8, 49** (1988)1835.

(12) Title: The Effect of Particle Interactions on Curie-Weiss Behaviour in Ferrofluids.
Authors: J.Popplewell, B.Abu-Aisheh and N.Y.Ayoub.
Published in: J. of Appl. Phys. **64 (10)**, (1988) 5852.

(13) Title: Susceptibility Peaks in a Non-Interacting Fine Particle System.
Authors: N.Y. Ayoub, R.Y. Abdelal, R.W. Chantrell, J. Popplewell and K. O`Grady.
Puplished in: J.of Mag.and Mag. Mat.**79**, (1989)81.

(14) Title: The Effect of Texture on Curie-Weiss Behaviour in a Frozen Ferrofluid.
Authors: N.Y.Ayoub, B.Abu-Aisheh, M.Dababneh, N. Laham and J. Popplewell.
Published in: IEEE Trans. on Mag.**25** (1989) 3860.

(15) Title: Magnetic and Superconducting Properties of the Electron-Doped Compounds $Ln_{2-x}M_xCuO_{4-\delta}$ (Ln = Pr, Nd, Sm, Eu, Gd: M = Ce,Th).
Authors: C.L. Seaman, N.Y.Ayoub, T.Bjornholm, E.A. Early, S. Ghamaty, B. W. Lee, J. T. Markert, J. J. Neumeier, P. K. Tsai and M. B. Maple.
Published in: Physica C **160** (1989) 391.

(16) Title: $Sm_{1.85}Th_{0.15}CuO_{4-y}$: A New Electron -Doped Copper Oxide Superconductor.
Authors: E. A . Early, N.Y. Ayoub, J. Beille, J.T. Markert and M.B. Maple.
Published in: Physica C **160,** (1989) 320.

(17) Title: Magnetism, Specific Heat, and Pressure-Dependent Resistivity of the Electron-Doped Compounds $Ln_{2-x}M_xCuO_{4-y}$. (Ln= Pr, Nd, Sm, Eu,Gd; M = Ce,Th).
Authors: M. B. Maple, N. Y. Ayoub, T.Bjornholm, E. A. Early, S. Ghamaty, B. W. Lee, J.T. Markert, J.J. Neumeier and C.L. Seaman.
Published in: Physica C **162-164** (1989) 296.

(18) Title: Processing and Superconducting Properties of the Electron-Doped Compounds $Ln_{2-x}M_xCuO_{4-y}$

(Ln = Pr, Nd, Sm, Eu, Gd; M= Ce, Th).
Authors: J.T.Markert, N. Y. Ayoub, T.Bjornholm, E. A.Early, C.L. Seaman, P.K.Tsai and M. B. Maple.
Published in: Physica C **162-164** (1989) 957.

(19) Title: A Comparative Compositional Study of $Ln_{2-x}M_xCuO_{4-y}$ Electron-Doped Superconductors.
Authors: N.Y.Ayoub, J.T.Markert, E.A.Early, C.L. Seaman, and M. B. Maple.
Published in Physica C **165** (1990) 469.

(20) Title: The Effect of Indium Substitution for Copper on the Superconductivity of the Electron-Doped system: Nd-Ce-Cu-O.
Authors: N. Y. Ayoub, C. C. Almasan, E. A. Elarly, J.T. Markert, C. L. Seaman, and M.B. Maple.
Published in: Physica C **170** (1990) 211.

(21) Title: Experiments on Electron- and Hole -Doped High T_C Copper Oxide Superconductors.
Authors: M .B. Maple, N. Y. Ayoub, J. Beille, T. Bjornholm, Y. Dalichaouch, E. A. Early, S. Ghamaty, B. W. Lee, J. T. Markert, J. J. Neumeier, G. Nieva, L. M. Paulius, l.K.Schuller, C.L. Seaman, and P.K.Tsai.
Advances in High Temperature Supercinductivity Series, Vol **25**, Transport properties of Superconductors. Puplished by World Scientific, Singapore, 1990.P.536.

(22) Title: The Effect of Dipolar Interactions on the Susceptibility Peaks in a Solidified Ferrofluid.
Author: N .Y. Ayoub.
Published in: Jpn. Jour. of Appl. Phys. **30**, (1991).

(23) Title: Dependence of Susceptibility on Low Magnetic Fields for the Electron-Doped Superconductors $Ln_{2-x}M_xCuO_{4-y}$(Ln=Pr,Nd,Sm;M= Ce, Th).
Author: N .Y. Ayoub.
Published in: J.Magn. Magn. Mat., **99** (1991)239-242.

(24) Title: The Effect of Annealing Temperature on Superconductivity in the Electron-Doped Compounds $Nd_{1.85}\ Ce_{0.15}\ Cu_{1-z}\ Zn_zO_{4-y}$.

Authors: N .Y. Ayoub.
Published in:"Dirasat"**19B (3)** (1992) 279-290. A refereed scientific journal, (Jordan).

(25) Title: The Effect of Concentration on Some Superconducting Properties of Small Grain Systems of $GdBa_2Cu_3O_7$ Embedded in Solid Epoxy.
Authors: N. Y. Ayoub, I. Khalil, M.S. Dababneh, A.K. Adballah, I. Odeh, and M.B. Maple.
Published in: J. Phys. Cond. Matter **3**(1991)9467-9474.

(26) Title: Comparison between Magnetization Obtained from Faraday Balance and VSM or SQUID .
Authors: M. Dababneh, I. Odeh, A.El-Ali, N.Y.Ayoub.
Published in: IEEE Trans. on Mag. **28** (1992) 2453

(27) Title: Study of Ca Autoionization Levels Using Multiphoton Techniques.
Authors: N. M .Laham, J.B. Kim, X.Xiong, T.J.Mcllarth, T.B. Lucatorto, and N.Y. Ayoub.
Published in: "Dirasat"**21B** (1994) 27. A refereed scientific journal, (Jordan).

(28) Title: Convective Amplification of Stimulated Raman Backscattering in Inhomogeneous Plasmas.
Authors: N. M. Laham, A.M. Khateeb, and N.Y.Ayoub.
Published in: AJSE, **19** (1994) 175-181. A Refereed Scientific Journal, (Dhahran) Saudi Arabia.

(29) Title: Finite Bandwidth Effects on Raman Backscattering in an lnhomogeneous Plasma.
Authors: N .M. Laham, A.M. Khateeb, A.K. Abdallah, I. M. Odeh, and M.S. Dababneh.
Published in: Jpn. Jour. of Appl. Phys. **34**, (1995) 297-301.

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