

## Curriculum Vitae

**Name:** Noha Mohamed Salem

**Home Address:** 18 Str. 73, Apt. # 501  
Maadi Sarayat, Cairo, Egypt  
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**Email Address:** nmsalem@aucegypt.edu

### Personal Information:

Citizenship: Egyptian- Canadian.  
Date and Place of birth: May 11, 1964, Kuwait.  
Marital and Family Status: Married with one daughter.

### Professional Interests:

1. Teaching physics courses to university students, both graduate and undergraduate levels.
2. Due to my strong background in theoretical physics, my previous research work investigated the theory of high temperature superconductivity and strongly correlated systems. Currently I'm working in the fields of molecular dynamics, nanotechnology, and biophysics.

### Education:

- 1992-1997 **Ph.D. degree, Physics Department, Queen's University, Canada.**  
Supervisor: Prof. R. J. Gooding.  
**Category: Theoretical Physics.**  
Thesis Title: *Magnetic Properties of the Bednorz-Müller  $La_{2-x}Sr_xCuO_4$  Compound.* Emphasis on explaining various experimental data by applying theoretical models.
- 1990-1992 **M.Sc. degree, Physics Department, Queen's University, Canada.**  
Supervisor: Prof. R. J. Gooding.  
**Category: Theoretical Physics.**  
Thesis Title: *Nonlinear Spin-Wave Theory of a Potential Chiral Spin Liquid.*
- 1986-1987 **Diploma** of Physics, Engineering Mathematics and Physics Department, Cairo University, Egypt.

1981-1986 **B.Sc.** degree, Electronics and Communications Department, Cairo University, Egypt.  
Ranked in the top 1.25%.  
Graduating Project: Designing, implementing, wiring, and testing of an EPROM programmer for an INTEL 8086 microprocessor on an IBM-PC. This project included hardware and software design.

1981 Egyptian High School Certificate with a score of 95.6 %.

1975-1981 Victoria College, Maadi.

1970-1975 New English School (British curriculum and teachers), Kuwait.

### **Employment History**

2019- present **Professor, Engineering Mathematics and Physics Department, Cairo University, Egypt.**

2007- 2019 **Associate Professor, Engineering Mathematics and Physics Department, Cairo University, Egypt.**

1997- 2007 **Assistant Professor, Engineering Mathematics and Physics Department, Cairo University, Egypt.**

2002-present **Adjunct Faculty Member, American University in Cairo.** My responsibilities involved teaching in the Physics Department and co-supervising graduate students.

2005-2007 Member of the committee to investigate the establishment of a **Center for Nanotechnology, Cairo University.**

2004-2010 **Adjunct Assistant Professor, Institute of Civil Aviation.**

2003-2004 **Adjunct Assistant Professor, Arab Academy for Science and Technology.**

1990-1997 Teaching and Research Assistant, Physics Department, Queen's University, Canada.

1986-1989 Teaching Assistant, Engineering Mathematics and Physics Department, Cairo University, Egypt.

### Awards:

2013 Cairo Univeristy Award for supervising the best MSc. Thesis in Cairo University for the year 2012.  
1995 Queen's Graduate Award, Queen's University.  
1994 Queen's Graduate Award, Queen's University.  
1994 R. Samuel Mclaughlin Fellowship, Queen's University.  
1993 Carl Reinhardt Fellowship, Queen's University.  
1992 Carl Reinhardt Fellowship, Queen's University.  
1991 Queen's Graduate Award, Queen's University.  
1990 Queen's Graduate Award, Queen's University.  
1981-1986 Undergraduate Excellence Award, Cairo Univeristy.

### Publications

1. R. J. Gooding, N. M. Salem and A. Mailhot, *Theory of coexisting transverse-spin freezing and long-ranged antiferromagnetic order in lightly doped  $La_{2-x}Sr_xCuO_4$* , Phys. Rev. B, **49**, 6067, 1994.
2. F. Borsa, P. Carretta, J. H. Cho, F. C. Chou, Q. Hu, D. C. Johnston, A. Lascialfari, D. R. Torgeson, R. J. Gooding, N. M. Salem, and K. J. E. Vos, *Staggered magnetization in  $La_{2-x}Sr_xCuO_4$  from  $^{139}La$  NQR and  $\mu SR$ : Effects of Sr doping in the range  $0 < x < 0.02$* , Phys. Rev. B, **52**, 7334, 1995.
3. N. M. Salem and R. J. Gooding, *The annealed positions of ferromagnetic bonds doped in a 2D antiferromagnet*, Euro. Phys. Lett., **35**, 603, 1996.
4. R. J. Gooding, N. M. Salem, R. J. Birgeneau, and F. C. Chou, *The Effect of Sr Impurity Disorder on the Magnetic and Transport Properties of  $La_{2-x}Sr_xCuO_4$   $0.02 \leq x \leq 0.05$* , in Proceedings of the 10<sup>th</sup> Anniversary HTS Workshop on Physics, Materials and Applications, Houston, Texas, 1996, edited by B. Batlogg, C. W. Chu, W. K. Chu, D. U. Gubser and K. A. Müller, (World Scientific, Singapore) p. 322.
5. D. C. Johnston, F. Borsa, J. H. Cho, L. L. Miller, B. J. Suh, D. R. Torgeson, P. Carretta, M. Corti, A. Lascialfari, R. J. Gooding, N. M. Salem, K. J. E. Vos, and F. C. Chou, *Magnetic and Structural Properties and Phase Diagrams of  $Sr_2CuO_2Cl_2$  and Lightly-Doped  $La_{2-x}Sr_xCuO_{4+\delta}$* , in Proceedings of the 10<sup>th</sup> Anniversary HTS Workshop on Physics, Materials and Applications, Houston, Texas, 1996, edited by B. Batlogg, C. W. Chu, W. K. Chu, D. U. Gubser and K. A. Müller, (World Scientific, Singapore) p. 373.
6. R. J. Gooding, N. M. Salem, R. J. Birgeneau, and F. C. Chou, *Sr impurity effects on the magnetic correlations of  $La_{2-x}Sr_xCuO_4$* , Phys. Rev. B1, 1997.
7. D. C. Johnston, F. Borsa, P. Carretta, J. H. Cho, F. C. Chou, M. Corti, R. J. Gooding, E. Lai, A. Lascialfari, L. L. Miller, N. M. Salem, B. J. Suh, D. R. Torgeson, D. Vaknin, K. J. E. Vos, and J. L. Zarestky, *Magnetic Properties of Single-Layer Cuprates*, in High-Tc Superconductivity 1996: Ten Years After the Discovery, edited

- by E. Kaldis, E. Liarokapis, and K. A. Muller (Kluwer, Amsterdam)1997), pp. 311-348.
8. D. C. Johnston, F. C. Chou, F. Borsa, P. Carretta, A. Lascialfari, R. J. Gooding, N. M. Salem, K. J. E. Vos, J. H. Cho, and D. R. Torgeson, *Phase separation kinetics in  $La_2CuO_{4+\delta}$  and inhomogeneous hole doping in the antiferromagnetic regime ( $0 < x < 0.02$ ) of  $La_{2-x}Sr_xCuO_4$* , Journal of Superconductivity, **9**, 337-342 (1996).
  9. N. M. Salem, *Determination of the Effective Magnetic Exchange Constant in High  $T_c$  Superconductors*, Journal of Engineering and Applied Science, **48**, 44, 2001.
  10. N. M. Salem and M. A. El-Messiery, *Search for Possible Athermal Effects Due to Mode Distribution on a Simple Tissue Subjected to Electromagnetic Induction. (Computer Modeling.)*, Proceedings of the Biological Effects of EMF, 3<sup>rd</sup> International Workshop, Greece, pp. 244-249, 2004.
  11. N. M. Salem, *Thermal Effects of Photon-Phonon Interaction on a Simple Tissue*, Special Issue on the Biological Effects of EMF, *The Environmentalist*, Volume 25, Numbers 2/3, pp. 241-246, (Springer Science+Business Media, Inc.) (2005).
  12. S. M. El-Sheikh, K. Barakat, and N. M. Salem, *Phase transitions of methane using molecular dynamics simulations*, J. Chem. Phys., **124**, 124517, (2006).
  13. S. M. El-Sheikh, K. Barakat, and N. M. Salem, J. and L. Ulivi, *Phase transitions of carbon tetra-fluoride using Raman spectroscopy and molecular dynamics simulations*, High Pressure Research, **26**, no. 4, pp. 383-386. (Proceedings of the 44<sup>th</sup> European High Pressure Research Group (EHPRG) International Conference, Prague, September 4 – 8.)
  14. N. M. Salem, *Electromagnetic Induction Through the Biological Tissue*, Proceedings of the Biological Effects of EMF, 4<sup>th</sup> International Workshop, Greece, pp.715-719 (2006).
  15. N. M. Salem, S. M. El-Sheikh, and K. Barakat, *A proposed phase diagram of solid  $CF_4$  at high pressures using molecular dynamics simulations*, Journal of Engineering and Applied Science, **54**, 1 (2007).
  16. Sherif A.Tawfik, S.M.El-Sheikh, and N.M.Salem, *First principles calculation of field emission from nanostructures using time-dependent density functional theory: A simplified approach*, Physica E, **43**, pp. 1360–1364 (2011).
  17. Sherif A.Tawfik, S.M.El-Sheikh, and N.M.Salem, *First principles calculation of field emission from carbon nanotubes with nitrogen and boron doping*, Physica E, **44**, pp. 111–114 (2011).
  18. Mohamed A. S. Zaghoul, Milva Celli, N. M. Salem, S. M. ElSheikh, and Lorenzo Ulivi, *High pressure synthesis and in situ Raman spectroscopy of H2 and HD clathrate hydrates* J. Chem. Phys., **137**, 164320 (2012).
  19. Ahmed M. Hafez, Noha M. Salem and Nageh K. Allam, *Unravelling the correlated electronic and optical properties of BaTaO2N with perovskite-type structure as a potential candidate for solar energy conversion*, Phys. Chem. Chem. Phys., **16**, 18418-18424 (2014).
  20. Almoatazbellah M. Hegab, Noha M. Salem, Ahmed G. Radwan and Leon Chua, *Neuron Model with Simplified Memristive Ionic Channels*, International Journal of Bifurcation and Chaos, **25**(6), 1530017 (2015).
  21. Ahmed M. Hafez, Abdallah F. Zedan, Siham Y. AlQaradawi, Noha M. Salem, Nageh K. Allam, *Computational study on oxynitride perovskites for CO2 photoreduction*, Energy Conversion and Management, **122**, pp. 207-214 (2016).

22. H. M. Fawzy, N.M. Salem, S. M. ElSheikh, and M. A. ElMessiery, *Stochastic Computer Simulation of the Ionic Diffusion Through Biological Tissues Under the Effect of Direct Electric Field*, in Proceedings of The International Scientific Conference for Mathematical Modeling: MathModel`17, Borovets, Bulgaria, 13-16 Dec, **1(1)**, 174-177 (2017).
23. Noha M. Salem, Manal M. Awad, Amina M. Sakr and Medhat A. ElMessiery, *Biological Diffusion Coefficient for 3D Tumor Growth in Homogeneous Media*, Computer Technology and Application, **8**, pp. 8-17 (2018).
24. Mina Elias, Noha M. Salem, Manal M. Awad, Medhat A. ElMessiery, *Contribution of Branching Order of Dendrites to Morphology of Neural Cells*, Current Science, **116(3)**, pp. 457-462 (2019).

### List of Invited Papers

1. D. C. Johnston *et al.*, *Proceedings of the Third International Workshop on Phase Separation, Electronic Inhomogeneities and Related Mechanisms for High  $T_c$  Superconductors*, Erice, Italy, July 1995; Journal of Superconductivity.
2. D. C. Johnston *et al.*, *Overview of recent magnetic studies of high  $T_c$  cuprate parent compounds and related materials*, *Proceeding of the First Polish-U.S. Conference on High Temperature Superconductivity*, Wroclaw and Duszynki-Zdroj, Poland, September 1995, (Springer, Berlin and Heidelberg) pp. 61-82  
<https://link.springer.com/book/10.1007/BFb0102014>  
<https://link.springer.com/content/pdf/10.1007%2FBFb0102018.pdf>
3. D. C. Johnston *et al.*, *Magnetic properties of single layer cuprates*, Proceedings of a NATO Advanced Study Institute on *Material Aspects of High  $T_c$  Superconductivity: 10 Years After the Discovery*, Delphi, Greece, August 1996 (Kluwer, Dordrecht) pp. 331-348.  
<https://link.springer.com/content/pdf/bfm%3A978-94-011-5554-0%2F1.pdf>
4. D.C. Johnston *et al.*, in *Recent Developments in High Temperature Superconductivity*, edited by J. Klamut, B. W. Veal, B. M. Dabrowski, P. W. Klamut and M. Kazimierski (Springer-Verlag, Berlin and Heidelberg, 1996).

### List of Graduate Students who worked under my supervision.

1. Dr. Khaled H. Barakat, Cairo Univ. (MSc 2006)
2. Nora M. Hassan, AUC (MSc 2008)
3. Dr. Sherif A. Tawfik, AUC (MSc 2010)
4. Mohamed A.S. Zaghloul, Cairo Univ. (MSc 2011)
5. Hagar M. Fawzy, AUC (MSc 2012)
6. Rasha I. AbdulShahid, AUC (MSc 2013)
7. ElMoatazbellah S. Hegab, Cairo Univ. (MSc 2014)
8. Dr. Amina M. Sakr, Cairo Univ. (PhD 2015)
9. Mina Youssef Elias, Cairo Univ (MSc 2015)
10. Ahmed Hafez, Cairo Univ. (MSc 2016)
11. Samar Ahmed (MSc 2019)

12. Mohamed Ashraf Oransa (current MSc student)

**Languages:**

Arabic: Mother tongue.  
English: Fluent.

**Special Achievements and Extracurricular Activities**

1998-2014	Co-founder, and ex. board member of <b>Resala</b> Charity Organization, an organization that emerged to promote volunteer work, especially among the university students. Our activities include the welfare of the orphans, the poor, the blind, and people with special needs. Resala's activities covers millions of the poor and disadvantaged. My duties included managing the orphanage sector.
1999-2002	Among the Editorial Assistance group in <i>Journal of Engineering and Applied Science</i> . Published by Faculty of Engineering, Cairo University.
1982-1986	Vice-president of the Electronics Club in Cairo University.
1984	<b>Exemplary Student</b> over 8000 students of all Engineering Departments of Cairo University. (Special emphasis on academic and non-academic achievements.)
1983	Bronze medal: Cairo University Open Tournament for Fencing.
1982	Gold medal for Cairo University's team in a tournament among all Egyptian universities for fencing.
1978- present	A piano student.

**References:**

1. Prof. Dr. M. El-Messiery, Engineering Physics and Mathematics Department, Cairo University, Egypt.
2. Prof. Dr. S. El-Nahwy, Engineering Physics and Mathematics Department, Cairo University, Egypt.
3. Prof. Dr. A. A. Aboul-Saoud, Engineering Physics and Mathematics Department, Cairo University, Egypt.
4. Prof. Dr. S. M. El-Sheikh, Engineering Physics and Mathematics Department, Cairo, Egypt.