CURRICULUM VITAE

Carlos L. Trallero-Giner
DATE OF BIRTH: 26/11/1947

EDUCATION

1970 - Graduate in Physics, Havana University/Havana

1974 - Master in Sciences, Havana University/Havana

1977-80 -Ph.D. in Theoretical Physics and Mathematics, Ioffe Institute/Leningrad, Academy of Sciences of Soviet Union

1990 -Doctor in Sciences in Physics and Mathematics, Ioffe Institute/Leningrad, Academy of Sciences of Soviet Union

SCIENTIFIC EMPLOYMENT AND ACADEMIC RESPONSIBILITIES

1985,89,90 -Visiting researcher at the Ioffe Institute/Leningrad, Academy of Sciences of Soviet Union

1980-82 -Head of the Theoretical Physics Section of the Physical Cuban Society

1982 -Full Professor/Department of Theoretical Physical/Havana University

1984-93 *Associate Member* of the International Centre for Theoretical Physics/Trieste

1987-89 -Grant of the Alexander von Humboldt Foundation, F. R. Germany

1990-91 -Researcher at the Max-Planck-Institute für FKF/Stuttgart

1991-96 -Dean of the Faculty of Physics/Havana University

1992-94 - Visiting researcher at the Max-Planck-Institute für FKF/Stuttgart

l994 - Elected as *Senior Associate* of the International Centre for Theoretical Physics

1994,95 -Visiting researcher at the CINVESTAV/Merida

1996 -Visiting researcher at the Humboldt University/Berlin

1997, 2002 - Invited researcher at the CCNY/New York

1998, 2001,11 - Visiting researcher at the Universidad Federal de San Carlos/San Paulo

2000 -Visiting researcher at University of Atlanta/USA

2001-2007 -President of the Cuban National Committee of the Degree in Physics

2006 -Visiting researcher at CCNY/New York

2007, 2009 -Visiting researcher at the Max-Planck-Institute for Complex System/Dresden.

2011 -Visiting researcher at the Institute of Physics, Academia Sinica, Taiwan

2012-2016 -Director of Centro Latinoamericano de Física (CLAF); - Member of the Mediterranean Institute of Fundamental Physics

2013 -Investigador invitado Instituto de Fisica, UNAM/Mexico: Ctedra Elena Aizen de Moshinsky,

2014 -Visiting researcher at the Physical Department, Universidad Federal de San Carlos/San Paulo

2015 -Visiting Full Professor A at the Mathematical Department and Mathematical Institute/ Universidade Federal de Rio de Janeiro/Brazil

2016 -Director of Latin American Center of Physics (CLAF), Rio de Janeiro, Brazil

2017 -Visiting researcher at the MPI-MPKS/Dresden (August-September)

- **Adviser of**
  -Graduation Theses: 13 (Degree in Physics/Havana University); 1 (Degree in Physics/Universidad de Valencia/Spain)

  -Master Theses: 6 (Havana University); 1 (Universidad de Oriente, Cuba); 1 (Universidad Federal de San Carlos/Brasil)

  -Ph.D. Theses: 5 (Havana University): 1 (Universidad de Sancti Spiritus "Jose Marti Perez" , Cuba); 1 (Universidad de Valencia/Spain); 2 (Universidad Federal de San Carlos/Sao Paulo)

  SEMINARS, SUMMER SCHOOLS AND CONFERENCES

1989 - Workshop of Theoretical Physics/Bogota (**invited speaker**)

1990 - 10th International Conference on the Physics of Semiconductors/Thessaloniki (**invited speaker**)

1992 -10th International Conference on Raman Spectroscopy/Germany; Course of Semiconductor Spectroscopy/Universitat de Valencia/Valencia (**lecturer**).

l994 -22th General Conference of the Condensed Matter Division of the European Physical Society/Madrid. (**invited speaker**); 8th Latin American Congress on Surface Science and Its Applications /Cancun /Mexico. (**invited speaker**).

1995 -Brazilian School of Semiconductors/Rio Janeiro; Course of Optical Properties in Solid State Physics/CINVESTAV/Merida (**lecture**).

1996 -23th International Conference on the Physics of Semiconductors /Berlin (**speaker**)

1997 -Nanostructures/Havana (**invited speaker**); International Congress on Materials Research Cancun '97/Cancun/ (**speaker**).

1998 - Second Symposium on Optoelectronic and Applications/Havana (**invited speaker**).

2001 -Pan-American Advances Studies Institute: Physics and Technology at the Nanometer Scale /Costa Rica (**invited speaker**).

2003 -11th International Conference on II-VI Compounds/Niagara Falls/ New York (**invited speaker**)

2005 -Complex behaviors in electronic systems/Braga (**invited speaker**)

2006 - Latin-American Symposium of Solid State Physics, SLAFES-2006/Puebla (**invited speaker**)

2010 -10th PLMCN/Mexico (**speaker**).

2011 -Primer Taller de Propiedades Electronicas, Opticas y Magneticas de Fisica, Zacateca/June-2011 (**invited speaker**); Humboldt Kolleg: "Argentina – Alemania: 100 años de cooperación científica en Física."/March-2011 (**invited speaker**).

2013 -6to Taller de Fisica de la Materia Condensada y Molecular, Cuernavaca, Mexico, January 7-10, 2013 (**invited speaker**); International Workshop on the Physics of Exciton, Varadero, Cuba, March 30, April 6, 2013 (**invited speaker**); XXV Congreso Nacional de Fisica, Armenia, Bogota, agosto 25-29, 2013 (**invited speaker**); Reunion de Redes Cientficas Latinoamericanas, Santiago de Chile, septiembre 25 y 26, (**invited speaker**); Encuentro de Fisica 2013/Quito/October (**invited speaker**); The 13th Conference on Optics of Excitons in Confined Systems 9th to 13th September/Rome, Italy.

2014 -International Workshop on Interaction of Light with Materials conversion of solar energy into chemical energy on October 16th and 17th/Mexico (**invited speaker**)

2016 -International Workshop on the Physics of 2D Crystals/Sicily, Italy, 29 May - 4 June

2017 -X TALLER DE FISICA DE LA MATERIA CONDENSADA Y MOLECULAR/Cuernava, Mexico, January 9-11 (**invited speaker**).

- **Seminars and conference in different universities and scientific institutions**
- **As professor had lecture the following subjects:**

  - Mathematical Analysis, Differential Equations, Linear Algebra, Integral Equations, Analytic Geometry, Method Mathematics of Physics, Complex Analysis, Quantum Mechanic, Solid State Physics, Statistic Physics, Physics of Semiconductors, Theoretical Mechanic and Electrodynamic.

  POSTGRADUATE LECTURES:-Integral Equations, Raman Scattering in Solid State Physics, Optical Properties of Solid, Advance Solid State Physics, Advanced Quantum Mechanics

HONORS AND AWARDS

1981 - Prize for the "Relevant Scientific Work"A.F. Ioffe Institute, Academy of Sciences, Leningrad

1983 -Prize for the "Most Original and Relevant Scientific Work of the Year", awarded by the Scientific Council of Havana University

1988 - Medal for a "Distinguished Activity in Cuban Education", awarded by the Cuban Ministry of Higher Education

1986-90 - Alexander von Humboldt awarded by the Alexander von Humboldt Foundation of Germany

1991,92,2000 - Prize for the "Most Original and Relevant Scientific Work in Theoretical Physics", awarded by the awarded by the Cuban Ministry of Higher Education.

1992,2002 - "Pin of Honor" on the 30th Anniversary of the Academy of Sciences of Cuba

l994 - "Carlos J. Finlay", Medal, awarded by the State Council of the Republic of Cuba

2003 -Fellow of the American Physical Society

2010 -"Premio Nacional de Física" Sociedad Cubana de Fisica

2013 -Ctedra Elena Aizen de Moshinsky, Instituto de Fisica, UNAM/Mexico

- Several grants and research projects: Havana University/Cuba (4), CONACIT/Mexico (3), Alexander von Humboldt (4)/Germany, etc.

BOOKS

1. Quantum Mechanical Problems. C. Trallero-Giner and M. de Dios. Pueblo y Educación (Havana, 1986).

2. Long wave polar modes in semiconductor heterostructures. C. Trallero-Giner, R. Pérez-Alvarez, and F. García-Moliner. Pergamos (UK, 1998).

3. Book: Fingerprints in the Optical and Transport Properties of Quantum Dots. Chapter: Exciton States in Free-Standing and Embedded Semiconductor Nanocrystals Autores:Yuriel Núñez Fernández, Mikhail I. Vasilevskiy, Erick M. Larramendi and Carlos Trallero-Giner. Editor: Dr. Ameenah Al-Ahmadi, Ed.: InTech - Open Access Publisher ISBN: 978-953-51-0648-7;DOI: 10.5772/36679

4. Book: The History of Physic in Cuba, Chapter: Accomplishment in Cuban Physics (up to 1995) Authors: Carlos R. Handy and C. Trallero-Giner Editors: Angelo Baracca, J. Renn, and H. Wendt, Boston Studies in the Philosophy and History of Science, Springer, Volume 304, p. 235-245 (2014). ISBN 978-94-017-8041-4; DOI: 10.1007/978-94-017-8041-4.

5. Book: Cuba e Brasil no Sculo XXI Chapter: A CONSTRUC?A?O DO CONHECIMENTO "Financiamiento de las Investigaciones y Polticas Nacionales de Desarrollo", p. 41-46 . In: . So Paulo: Blucher, 2015. Author: C. Trallero-Giner Editors: Vasconcellos, Csar Augusto Zen; Coelho, Helio Teixeira; Rojas, ?Hugo Prez; Medeiros, Isac Almeida De; Tonholo, Josealdo; Estrzulas, e Mnica Baptista Pereira.

   ISSN 2318-695X, ISBN: 978-85-8039-091-9 DOI 10.5151/edupro-cbs21-005

- **CURRENT RESEARCH ACTIVITIES**

  Solid State Physics, Raman and electronic light scattering, Phonons in low-dimensional systems, Bose Einstein Condensation in Atomic Physics and microcavities

- Author of more than 250 research papers.

LIST OF PUBLICATIONS (last 5 years)

1. Bose-Einstein condensates in optical lattices: mathematical analysis and analytical approximate formulae"

   R. Cipolatti, J. Lopez Gondar, C. Trallero-Giner

   Physica D-Nonlinear phenomena **241**, 755 (2012).

2. Temperature-dependent Raman study of thermal expansion coefficient in CdS quantum dots.

   E. S. Freitas Neto, N. O. Dantas, S. W. da Silva, P. C. Morais, M. A. Pereira-da-Silva, A. J. D. Moreno, V. Lopez-Richard, G. E . Marques, and C. Trallero-Giner.

   Nanotechnology **23**, 125701 (2012).

3. "*Exciton states in free-standing and embedded semiconductor nanocrystals",* In: Fingerprints in the Optical and Transport Properties of Quantum Dots, ed. Ameenah Al-Ahmadi, InTech - Open Access Publisher, Rijeka, Croatia, 2012 (ISBN 978-953-51-0648-7), pp. 199-218.

   Yuriel Núñez Fernández, Mikhail I. Vasilevskiy, Erick M. Larramendi, and Carlos Trallero-Giner

4. Superfluidity and collective oscillations of trapped Bose-Einstein condensates in a periodical potential

   C. Trallero-Giner, V. Lopez-Richard, Y. Nunez-Fernandez, M. Oliva, G. E. Marques, and M.-C. Chung

   Eur. Phys. J. D **66**, 177 (2012). DOI: 10.1140/epjd/e2012-30179-0.

5. Voltage-driven ring confinement in a graphene sheet: assessing conditions for bound state solutions

   L. Villegas-Lelovsky, C. Trallero-Giner, V. Lopez-Richard, G. E. Marques, C. E. P. Villegas, and M. R. S. Tavares

   Nanotechnology **23**, 385201(2012).

6. Uncoupled optical phonons in core/shell GaAs/GaP nanowires: Strain effects

Dario G. Santiago-Perez, C. Trallero-Giner, R. Perez-Alvarez, L. Chico, R. Baquero, and G. E. Marques

Journal of Applied Physics **112**, 084322 (2012). Doi: 10.1063/1.4761975.

7. Condensed exciton-polaritons in a 2D trap: elementary excitations and shaping by Gaussian pump beam

   Y. Núñez Fernández, M. I. Vasilevskiy, C.Trallero-Giner, and A. Kavokin

   Phys. Rev. B **87**, 195441 (2013). DOI: 10.1103/PhysRevB.87.195441.

8. One-dimensional cubic-quintic Gross-Pitaevskii equation in Bose- Einstein condensates in a trap potential

   C. Trallero-Giner , R. Cipolatti and T. C. H. Liew

   Eur. Phys. J. D, **67: 143** (2013). DOI: 10.1140/epjd/e2013-40163-9.

9. Polar optical phonons in core-shell semiconductor nanowires

   Dario G. Santiago-Perez, C. Trallero-Giner, R. Perez-Avarez, and Leonor Chico

   Physica E: Low-dimensional Systems and nano structures, **56**, 151 (2014).

   DOI: 10.1016/j.physe.2013.08.013.

10. Free wave modes in elliptic cylindrical containers

    M. Oliva-Leyva, J. Fernández de Cossío, C. Trallero-Giner

    European Journal of Mechanics - B/Fluids **43**, 185 (2014).

11. Excited states of exciton-polariton condensates in 2D and 1D harmonic traps

    C. Trallero-Giner, M. V. Durnev, Y. Núñez Fern´andez, M. I. Vasilevskiy, V. Lopez-Richard, and A. Kavokin

    Phys. Rev. B, **89**, 205317 (2014).

12. First Order Raman Scattering in Bulk Bi2S3 and Quantum Dots: Reconsidering Controversial Interpretations

    Inti Zumeta-Dub, Jos-Luis Ortiz-Quionez, David Daz, Carlos Trallero-Giner, and Vctor-Fabin Ruiz-Ruiz

    The Journal of Physical Chemistry C, **118** , 30244 (2014).

13. Electron-phonon deformation potential interaction in core-shell Ge-Si and Si-Ge nanowires

    Daro G. Santiago-Prez, C. Trallero-Giner, R. Prez-lvarez, Leonor Chico, and G. E. Marques

    Phys. Rev. B, **91**, 075312 (2015).

14. Exciton polaritons in two-dimensional dichalcogenide layers placed in a planar microcavity: Tunable interaction between two Bose-Einstein condensates

    Mikhail I. Vasilevskiy, Daro G. Santiago-Prez, Carlos Trallero-Giner, Nuno M. R. Peres, and Alexey Kavokin

    Phys. Rev. B **92**, 245435 (2015).

15. Damping of confined excitation modes of one-dimensional condensates in an optical lattice

    C. Trallero-Giner, Daro G. Santiago-Prez, Ming-Chiang Chung, G. E. Marques, and R. Cipolatti

    Phys. Rev. A, **92**, 042502 (2015).

16. Two-species Bose-Einstein condensate in an optical lattice: analytical approximate formulae.

    R Cipolatti, L Villegas-Lelovsky, M C Chung and C Trallero-Giner

    Journal of Physics A: Mathematical and Theoretical, **49**, 145201 (2016)

17. Electro-acoustic-phonon interaction in core/shell Ge/Si and Si/Ge nanowires.

    Darío G. Santiago-Pérez, C. Trallero-Giner, and G. E. Marques

    Phys. Rev. B, **95**, 155317 (2017).

    DOI: 10.1103/PhysRevB.95.155317.

18. Quantum well electronic states in a tilted magnetic eld

    C. Trallero-Giner, J. X. Padilha, V Lopez-Richard, G. E. Marques and L. K. Castelano

    J. Phys.: Condens. Matter **29**, 325503 (2017).

19. Collective modes of trapped spinor Bose Einstein condensates

    C. Trallero-Giner, Daro G. Santiago-Prez, V. Romero-Rochin and G. E. Marques

    J. Phys. B: At. Mol. Opt. Phys. **50**, 215303 (2017).

20. Nonlinear Schrdinger equations with single power nonlinearity and harmonic potential
    R. Cipolatti, Y. de Macedo Lira and C. Trallero-Giner
    J. Phys. A: Math. Theor. **51**, 115201 (2018).
    DOI: org/10.1088/1751-8121/aaabd9.