

Curriculum Vitae

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Education

- 1/85: Ph.D. in Physics, Cornell University, Ithaca, NY 14853, USA.
- 5/82: M.S. in Physics, Cornell University, Ithaca, NY 14853, USA.
- 8/78: B.S. in Mathematics (first class honors) University of Colombo, Sri Lanka.

Work Experience

- 9/91-present: Professor of Physics, Univ. of Connecticut, Storrs, CT 06269, USA.
- 10/87-8/91: Associate and Assistant Scientist in the Physics Department at Brookhaven National Laboratory, Upton, NY 11973, USA.
- 10/86-9/87: Research Associate in the Condensed Matter Theory Group at Brookhaven National Laboratory, Upton, NY 11973, USA.
- 10/84-9/86: Post Doctoral Research Associate with Prof. B. R. Cooper, Dept. of Physics, West Virginia University, Morgantown, WV 26506, USA.
- 6/81-9/84: Graduate Research Assistant with Prof. John W. Wilkins at LASSP, Physics Dept., Cornell University, Ithaca, NY 14853, USA.

Summary of Research Activities

- Worked on a wide variety of problems in theoretical condensed matter, developing accurate theoretical and computational techniques and applying them to examine bulk and surface electronic structure, chemisorption, stability of crystal structures, elastic properties, cohesion, alloy phase diagrams, point defects in alloys, spectroscopic and magnetic properties of transition metal systems, self diffusion in simple liquid metals, and spintronics in heterojunctions.

- Currently working on floquet systems, organic materials and related superconductivity. Recent work on exact many body calculations of Hubbard nanoclusters has uncovered numerous exotic properties of strongly correlated clusters that have not been seen before. Combining exact diagonalization with statistical mechanics has paved the way to a better understanding of phase diagrams, pseudogaps, magnetism and condensation (among other things) of some of the inhomogeneous materials such as the high temperature superconductors and materials exhibiting colossal magnetoresistance.
- Have *written* several computer codes for first principles electronic structure, molecular dynamics, Monte Carlo, as well as Embedded Atom Method based studies.

Professional Honors and Other Activities

- Editorial Board, Advances in Condensed Matter Physics
- Published a (single author) book on “Metallic Multilayers and their Applications” (publisher: Elsevier 2008)
- Visiting Professor, Nordita, Stockholm, Sweden (July 2019)
- Visiting Professor, Beijing Computational Science and Research Center (Sep.-Oct. 2018)
- Guest Scientist, Brookhaven National Laboratory, USA (1992 - 2015)
- Visiting Professor, Institute of Fundamental Studies, Kandy, Sri Lanka (1997 - 2007)
- Sri Lankan Presidential Award for research carried out in Sri Lanka (Nov. 2001)
- University of Connecticut Summer Research Fellowship (1993)
- Andrew Mellon Fellowship (1980)
- My student, Min Yu, won a Schlumberger Fellowship (2006)
- Supervised several PhD and MS students and taught mostly graduate courses in Quantum Mechanics, Classical Mechanics, Statistical Mechanics, E&M, Condensed Matter Physics and Mathematical Methods.

Relevant Publications

1. Driven emergent phases in small interacting condensed-matter systems, **Gayanath W. Fernando**, R. Matthias Geilhufe, Adil-Gerai Kussow and W. Wasanthi P. De Silva, European Physics Letters, Volume 134, 37004 (2021).
2. Multi-hole bands and quasitwo-dimensionality in Cr₂Ge₂Te₆ studied by angle-resolved photoemission spectroscopy, Turgut Yilmaz, Matthias Geilhufe, I. Pletikovic, **G. W. Fernando** et al. European Physics Letters, Volume 133, 27002 (2021).
3. Contrasting quantum sensing light source properties, which generate different photocurrent pulse-statistics, Chandra Roychoudhury, **G. W. Fernando** et al. Proc. of SPIE, Quantum sensing, nano-electronics and photonics XVII, 11288-15 (2020), DOI: 10.1117/12.2551090
4. Chemical-Strain Induced Tilted Dirac Nodes in(BEDT-TTF)₂X₃(X = I, Cl, Br, F) Based Charge-Transfer Salts, R. M. Geilhufe, B. Commeau, and **G. W. Fernando**, Physica Status Solidi (Rapid Research Letters), 1800081 (2018). (DOI: 10.1002/pssr.201800081).
5. Structural and electronic properties of α -(BEDT-TTF)₂I₃, β -(BEDT-TTF)₂I₃ and κ -(BEDT-TTF)₂X₃ (X=I,F,Br,Cl) organic charge transfer salts, B. Commeau, R. M. Geilhufe, **G. W. Fernando**, A. V. Balatsky, Physical Review B **96**, 125135 (2017).
6. From a \mathbb{Z}_2 topological insulator to a square ribbon: Tuning quantum spin Hall states and conductivity, Zhiwei Zhang, Yiteng Tang, and **Gayanath Fernando**, Journal of Applied Physics, **121**, Issue 20, 204302 (2017).

Scholarly Books

7. Metallic Multilayers and their Applications, **Gayanath W. Fernando**, ISBN: 978-0-444-51703-6, published by Elsevier, 2008.