Talal Ghannam
Ph.D. in Physics

Contact information

Address:
Talal Ghannam,
KAIN Institute
King Saud University
Riyadh, KSA.

Phone: +966-556059280
Email: gtalal@hotmail.com

Education Background

Ph.D. in Physics Graduation: December 2007
Western Michigan University, Kalamazoo, MI, USA
Dissertation title: Quantum Properties of Light Emitted form a Dipole Nano-laser

Master of Arts in Physics Graduation: June 2003
Western Michigan University, Kalamazoo, MI, USA
Thesis Title: Optical Solitons in Three-Level Media: Effects of Different Dipole Moments

Bachelor of Science in Mechanical Engineering Graduation: December 1999
Aleppo University, Aleppo, Syria

Publications

- Optical solitary waves in three-level media: effects of different dipole moments, JOSA B, Vol. 25, Issue 4, pp. 645-650 (2008).
- Properties of Light Emitted form a Dipole Nano-laser, Phys. Rev. A **79**, 043824 (2009).
- Properties of Light Emitted form a Dipole Nano-laser: effect of an External electric Field, J. Phys. B: At. Mol. Opt. Phys. 43 (2010).
- Investigation of photocatalytic activity and UV-shielding properties for silica coated titania nanoparticles by solvothermal coating. Journal of Alloys and Compounds, 508, (2010) L1-L4.
- Coherent light emission from a nanosystem embedded within a polaritonic band-gap medium. Phys. Rev. A 85, 033803 (2012).

Patents

- Nanolaser for generating coherent electromagnetic radiation. Patent number: EP11196020.9. December 29th, 2011.
- Solid State Nano-Based Optical Logic Gate. Patent number: US 13/608,062. September 5th , 2012.

Published Books

The Mystery of Numbers: Revealed Through their Digital Root. Createspace Publications, (2011). ISBN-13: 978-1456463694.

The Mystery of Numbers: Revealed Through their Digital Root (2nd Edition). Createspace Publications, (2012). ISBN-13: 978-1477678411.

Research Interests

1. Nonlinear optics:
I am interested in the non-linear behavior and properties of optical mediums along with optical solitons. I am also interested in studying the properties of photonic crystals.

2. Quantum Optics and Lasers:
In my PhD dissertation I studied the statistical properties of light emitted from a proposed nano-laser such as spectral width, photon statistics, squeezing spectrum and coherences. In quantum optics we work with all the surroundings that affect the system including the noises from the heat bath which allow us to calculate the spectral width, coherence and squeezing of the system.

3. Nano-science:
While in KAIN institute I am working with various nano-particles by imbedding them in the optical mediums I am studying and looking at their behaviors for any novel properties.

Teaching Experience

January 2001- December 2007: I had been a Teaching Assistant at Western Michigan University for seven years where I instructed several undergraduate physics labs.
Spring 2008: Full time teaching at Central Michigan University, Mount Pleasant, MI USA.
I taught two classes; Phy.100: conceptual physics and Phy.131: college physics II.
Summer I 2008: Western Michigan University, Kalamazoo, MI USA.
I taught Phy.1040: Introduction to Sky and the Solar System.
Currently: Starting November 2008**,** I am working as an assistant professor in King Abdullah Institute for Nano Technology at king Saud University in Riyadh, KSA.

Additional Experiences

Computer Skills

- Numerical and algebraic software including MathCAD, MAPLE.
- Microsoft Office Applications; Word, Excel, PPT, etc.

Languages

- English- fluent
- Arabic - mother tongue
- German- two years of study
- French - working knowledge

References

- Prof. Alvin Rosenthal
  Department of Physics, Western Michigan University, Kalamazoo, MI 49008
  Email: alvin.rosenthal@wmich.edu Phone: (+1)-269-387-4952
- Prof. Koblar Alan Jackson
  Department of Physics, Central Michigan University, Mount Pleasant, MI 48858
  Email: jacks1ka@cmich.edu Phone: (+1)-989-774-3321
- Prof. Dean Halderson
  Department of Physics, Western Michigan University, Kalamazoo, MI 49008
  Email: dean.halderson@wmich.edu Phone: (+1)-269-387-4947
- Mr. Robert Scherzer, Labs supervisor
  Department of Physics, Western Michigan University, Kalamazoo, MI 49008
  Email: robert.scherzer@wmich.edu Phone: (+1)-269-387-4959

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