

Curriculum Vitae – Prof. Michael N. Leuenberger

Professional Preparation

Undergraduate Institution

University of Basel, Switzerland *Theoretical Physics* Prediploma – 1996

Graduate Institutions

University of Basel, Switzerland *Theoretical Physics* Diploma – 1998

University of Basel, Switzerland *Theoretical Condensed Matter Physics* PhD – 2002

Appointments

University of Central Florida

August 2005 – Current

*Tenure-Track Assistant Professor of Theoretical Physics
at the NanoScience Technology Center and Dept. of Physics*

University of California San Diego

August 2004 – July 2005

Postdoctoral researcher in the group of Prof. Dr. Lu J. Sham

University of Iowa

November 2002 – July 2004

Postdoctoral researcher in the group of Prof. Dr. Michael E. Flatte

University of Basel, Switzerland

May 2002 – October 2002

Postdoctoral researcher in the group of Prof. Dr. Daniel Loss

Selected Publications (including cumulative citations)

Five publications most closely related to proposed the project

1. M. Erementchouk, M. N. Leuenberger, L. J. Sham, *Nonperturbative phenomena in semiconductor four-wave mixing spectra*, Phys. Rev. B **79**, 085307 (2009).
2. H. P. Seigneur, M. N. Leuenberger, W. V. Schoenfeld, *Single-photon Mach-Zehnder interferometer for quantum networks based on the single-photon Faraday effect*, J. Appl. Phys. **104**, 014307 (2008).
3. M. Erementchouk, M. N. Leuenberger, *Rabi oscillations in semiconductor multi-wave mixing response*, Phys. Rev. B **78**, 075206 (2008).
4. M. Erementchouk, M. N. Leuenberger, L. J. Sham, *Many-body interaction in semiconductor probed with 2D Fourier spectroscopy*, Phys. Rev. B **76**, 115307 (2007). 3 citations.
5. M. N. Leuenberger, M. E. Flatté, D. D. Awschalom, *Teleportation of electronic many-qubit states via single photons*, Phys. Rev. Lett. **94**, 107401 (2005). 18 citations.

Five other significant publications

1. M. N. Leuenberger, E. R. Mucciolo, *Berry-Phase Oscillations of the Kondo Effect in Single-Molecule Magnets*, Phys. Rev. Lett. **97**, 126601 (2006). 14 citations.
2. M. N. Leuenberger, *Fault-tolerant quantum computing with spins using the conditional Faraday rotation*, Phys. Rev. B **73**, 075312 (2006). 3 citations.
3. M. N. Leuenberger, D. Loss, M. Poggio, D. D. Awschalom, *Quantum information processing with large nuclear spins in GaAs semiconductors*, Phys. Rev. Lett. **89**, 207601 (2002). 28 citations.
4. M. N. Leuenberger, D. Loss, *Quantum Computing in Molecular Magnets*, Nature **410**, 789-793 (2001). 420 citations.
5. M. N. Leuenberger, D. Loss, *Spin tunneling and phonon-assisted relaxation in Mn₁₂-acetate*, Phys. Rev. B **61**, 1286-1302 (2000). 102 citations.

Synergistic Activities

- 10/2001 Participant at the Kavli Institute of Theoretical Physics for Workshop on Quantum Information, University of California, Santa Barbara (UCSB).
- 03/2001, 04/2002, 05/2003 Visiting scientist, University of California, Santa Barbara (UCSB).
- 03-05/2006 Visiting professor, Kavli Institute of Theoretical Physics (UCSB).
- 11/2006 Organizer of I²Lab Workshop on “frontiers in quantum and biological information processing” in Orlando on November 16 and 17, 2006
- 05-06/2007 Visiting professor, Dept. of Physics, University of Basel, Switzerland.
- 05/2009 Visiting professor, Nanoinstitute, University Pierre et Marie Curie, Paris, France.
- 2006 – Consultant for the Ask-A-Scientist Program (through Florida Academy of Sciences) at the Orlando Science Center.
- 2006 – Member of the Florida Academy of Sciences.

Educational & Professional Activities

Thesis Advisor and Postgraduate-Scholar Sponsor

Postdoctoral researchers – Mikhail Erementchouk and Volodymyr Turkowski
Graduate Researchers (Ph.D.) – 6 total, 3 primary advisor, 3 co-advisor
Thesis Committee Member – currently serving on 8 Ph.D. committees

Teaching

Fall 2005: PHY 2049 – Physics for Scientists and Engineers II
Fall 2006 and Fall 2007: PHY4604 – Wave Mechanics I
Spring 2007 and Spring 2008: PHY4605 – Wave Mechanics II
Spring 2008: PHY6673 – Condensed Matter Quantum Field Theory
Fall 2008: PHY5606 – Quantum Mechanics I

Collaborations

Winston Schoenfeld (UCF, Orlando, FL), Xiaoqin (Elaine) Li (University of Texas at Austin), Lu Sham (UC San Diego, CA), David D. Awschalom (UC Santa Barbara, CA), Michael E. Flatte (University of Iowa, IA), Dennis Deppe (UCF, Orlando, FL), Sudipta Seal (UCF, Orlando, FL), Andre Gesquiere (UCF, Orlando, FL).

Advisors

PhD: Daniel Loss (University of Basel, Switzerland)
Postdoc: Lu Sham (University of California San Diego), Michael Flatte (University of Iowa)

Affiliations

American Physical Society (APS), Florida Academy of Sciences

Professional Service

Journal/Proposal Reviewer/Panelist

US National Science Foundation (NSF), Austrian Science Foundation (ASF), Israel Science Foundation (ISF), Dutch Research Council (NWO)
Manuscript reviewer for Physical Review Letters, Physical Review A and B, Europhysics Letters, European Journal of Physics A and B, Book reviewer for MRS Bulletin

Honors & Awards

AFOSR award entitled “Modeling Quantum Network inside Photonic Crystal (PC) made of Quantum Dots (ODs) in Nanocavities by means of Quantum Field Theory”
NSF ECCS award entitled “Quantum-field theoretical modeling and simulation of many-body entanglement of excitons and photons in semi-conductor structures”
DARPA Young Investigator Award entitled “High-temperature electrically driven Mbps single-photon source at telecom wavelengths”.
NSF ECCS award entitled “Modeling of a Photonic Crystal Hosting a Quantum Network Made of Single Spins in Quantum Dots that Interact via Single Photons”