George Siopsis

Education and Training:

Undergraduate education
Sussex University, England, Mathematical Physics, B.Sc., 1982

Graduate education
California Institute of Technology, Physics, M.S., 1983
California Institute of Technology, Physics, Ph.D., 1987

Postdoctoral training
Research Associate, Physics Department, Texas A&M University (1987 – 1991)

Research and Professional Experience:

Department of Physics and Astronomy, University of Tennessee, Knoxville, Tennessee.

- Research Assistant Professor (1991 – 1992)
- Assistant Professor (1993 – 2000)
- Associate Professor (2000 – 2005)
- Professor (2005 – Present)

Selected Publications:

1. K. Marshall, R. Pooser, G. Siopsis, and C. Weedbrook, *"Repeat-until-success cubic phase gate for universal continuous-variable quantum computation,"* Phys. Rev. A **91**, 032321 (2015).
2. K. Marshall, R. Pooser, G. Siopsis, and C. Weedbrook, *"Quantum simulation of quantum field theory using continuous variables,"* Phys. Rev. A **92**, 063825 (2015).
3. K. Yeter-Aydeniz and G. Siopsis, *"Quantum Computation of Scattering Amplitudes in Scalar Quantum Electrodynamics,"* Phys. Rev. D **97**, 036004 (2018).
4. H.-K. Lau, R. Pooser, G. Siopsis, and C. Weedbrook, *"Quantum Machine Learning over Infinite Dimensions,"* Phys. Rev. Lett. **118**, 080501 (2017).
5. S. Das, G. Siopsis, and C. Weedbrook, *"Continuous-variable quantum Gaussian process regression and quantum singular value decomposition of non-sparse low rank matrices,"* Phys. Rev. A **97**, 022315 (2018).
6. R. Balu, D. Castillo, and G. Siopsis, *"Physical realization of topological quantum walks on IBM-Q and beyond,"* Quantum Science and Technology **3**, 035001 (2018).
7. N. Solmeyer, N. M. Linke, C. Figgatt, K. A. Landsman, R. Balu, G. Siopsis, and C. Monroe, *"Demonstration of Bayesian quantum game on an ion trap quantum computer,"* Quantum Science and Technology **3**, 045002 (2018).
8. G. Siopsis, N. Solmeyer, and R. Balu, *"Quantum Prisoners' Dilemma under Enhanced Interrogation,"* Quantum Information Processing **17**, 144 (2018).
9. S. Das, S. Khatri, G. Siopsis, and M. M. Wilde, *"Fundamental limits on quantum dynamics based on entropy change,"* J. Math. Phys. **59**, 012205 (2018).

10. E. Moschandreou, J. I. Garcia, B. J. Rollick, B. Qi, R. Pooser, and G. Siopsis, *"Experimental study of Hong-Ou-Mandel interference using independent phase randomized weak coherent states,"* Journal of Lightwave Technology **36**, 3752 (2018).

11. K. Yeter-Aydeniz, E. F. Dumitrescu, A. J. McCaskey, R. S. Bennink, R. C. Pooser, and G. Siopsis, *"Scalar quantum field theories as a benchmark for near-term quantum computers,"* Phys. Rev. A **99**, 032306 (2019).

Synergistic Activities:

1. Organizer of Workshops *"Quantum stochastic differential equations for the quantum simulation of physical systems"* in Washington, DC (2016) and *"Higher Category Approach to Certifiably Correct Quantum Information Processing Systems"* in Washington, DC (2019) both by invitation only and funded by ARO.

2. Editor of *Advances in High Energy Physics* and *Journal of Modern Physics and Applications*.

3. Referee of several Journals (*PRL, PRD, JHEP, Class. Quant. Grav., PLB*, etc.)

4. Was instrumental in the signing of a CRADA between the University of Tennessee and ARL that establishes commitment to a long-term collaboration between the two Institutions in quantum networks.

5. Ongoing collaboration in quantum cryptography with Bing Qi, quantum computing with Raphael Pooser at Oak Ridge National Laboratory, and quantum networks with Radhakrishnan Balu at the Army Research Laboratory.

Collaborators:

R. Balu (Army Research Laboratory), K. Bradler (Univ. of Ottawa), E. Chitambar (Southern Illinois Univ.), P. G. Evans (Oak Ridge National Laboratory), K. V. Garapati (Univ. of South Florida), W. Grice (Oak Ridge National Laboratory), S. Kouchekian (Univ. of South Florida), H.-K. Lau (Ulm Univ.), C. C. W. Lim (National Univ. of Singapore), N. M. Linke (Univ. of Maryland), H.-K. Lo (Univ. of Toronto), K. Marshall (Univ. of Toronto), C. Monroe (Univ. of Maryland), E. Papantonopoulos (National Tech. Univ. of Athens, Greece), A. Passian (Oak Ridge National Laboratory), R. Pooser (Oak Ridge National Laboratory), B. Qi (Oak Ridge National Laboratory), N. Solmeyer (MITRE Corporation), C. Weedbrook (Xanadu, Canada), M. M. Wilde (Louisiana State Univ.), A. Wozniakowski (Harvard Univ.), F. Xu (MIT).

Graduate and Postdoctoral Advisors:

Ph.D. Thesis: John P. Preskill, California Institute of Technology

Postdoctoral: Richard Arnowitt, Texas A&M University

Thesis Advisees:

Linda Arvin (M.S., 1998), Marina Shmakova (Ph.D., 1999), Suphot Musiri (Ph.D., 2003), Chad Middleton (Ph.D., 2005), Scott Ness (Ph.D., 2005), James Alsup (Ph.D., 2010), Alaska Subedi (Ph.D., 2010), Usama Al-Binni (Ph.D., 2011), Jason Therrien (Ph.D., 2012), Suman Ganguli (Ph.D., 2013), Savan Kharel (Ph.D., 2014), Kubra Yeter (Ph.D., 2015), Marouane Salhi (Ph.D., 2016), Eleftherios Moschandreou (Ph.D., 2019 (expected)), Mostafa Hussein (Ph.D., 2019 (expected)), Daniel Castillo (Ph.D., 2019 (expected)), Jeffrey Garcia (M.S., 2018), Jason Schaake (Ph.D., 2019 (expected)), Elias Kokkas (Ph.D., 2020 (expected)), Brian Rollick (Ph.D., 2021 (expected)), Chinmay Mishra (Ph.D., 2022 (expected)), Shane Thompson (Ph.D., 2022 (expected)).