Thomas A. Collins

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Experience:

Adjunct Associate Professor — August 2014- Present
Hofstra University
Teach undergraduate physics to classes and laboratory sessions consisting mainly of Pre-Med students.

Adjunct Assistant Professor — August 2013- Present
City University of New York
Teach introductory astrophysics courses aimed at non-science majors as well as calculus based physics laboratory. Communicated complex concepts in physics to non-science majors. I was rated "excellent" to "good" in all areas during my annual evaluation.

Technical Writer — September 2014-February 2015
Numerix LLC
Wrote and maintained user documentation for the company's software products.

Private Tutor of Physics and Calculus — August 2012-June 2013
Varsity Tutors, LLC
Worked with struggling students who were studying science and mathematics. Identified and address the personal needs of each student. All my students saw improved grades.

Education

- **Stevens Institute of Technology**

PhD — July 2012
Major: Physics
Thesis Title: "Quantum Control of Ultra Cold Atoms and Molecules via Linearly Chirped Laser Pulses and Optical Frequency Combs."
Major: Physics
My work involved employing a vectorized Schrodinger Equation to model population dynamics within multi-level Quantum Systems interacting with external laser fields. The population dynamics were studied within the context of both a three level quantum system and a four level quantum system. Obtained systems of coupled linear differential equations of the first degree. These systems of equations were numerically solved using both Mathematica and Fortran over different values of laser parameters to study the response of the system.
Awards: Innovation and Entrepreneurship Fellowship

MS — May 2010
Major: Physics

Graduate Program in Financial Engineering — May 2012

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Conferences:
-American Physical Society's Division of Atomic, Molecular and Optical Physics. Atlanta, Georgia. June 2011.
-Gordon Conference: Quantum Control of Light and Matter. Mt. Holyoake College, Massachusetts. August 2011.
-American Physics Society's Division of Atomic Molecular and Optical Physics. Anaheim, California. June 2012

- **New York University**

Intensive BA January 2007
Major: Physics Minor: Mathematics
Extracurricular: Treasurer of the Society of Physics Students.

Skills Possessed

- Extremely proficient in Mathematica and Matlab.
- Wrote and maintained documentation using Oxygen XML editor and LaTeX.
- Mathematica, Matlab, C++, Python, JavaScript, HTML/CSS, XML and experience with R in Windows and Unix environments.
- Conversant In Spanish.
- Over 5 years of teaching experience both as a tutor and in a classroom environment.
- Managed and supervised the undergraduates working in the Quantum Control and Ultrafast Dynamics Research Group at Stevens.

Publications

- G. Liu, V. Zakharov, T. Collins, P. Gould, and S. A. Malinovskaya. (2014). Population inversion in hyperfine states of Rb with a single nanosecond chirped pulse in the framework of a four-level system**, Physical Review A 89, 041803®**
- T.A. Collins, S.A. Malinovskaya. (2013). Robust Control in Ultracold Alkali Metals using a Single Linearly Chirped Pulse**, J. Mod. Optics, 60 28**
- Svetlana A. Malinovskaya, Tom Collins, Vishesha Patel. (2012). Ultrafast manipulation of Raman transitions and prevention of decoherence using chirped pulses and optical frequency combs, **Advanc. Quant. Chem., 64**
- T. A. Collins, S. A. Malinovskaya. (2012). Manipulation of ultracold rubidium atoms using a single linearly chirped laser pulse, **Optics Lett., 37 2298**
- Begliarbekov, M.; Tarnovsky V; Collins, T.; and Kotowich, S. Effects of Microfilaments on DC Plasma Torches and Afterglows**, IEEE Transactions on Plasma Sciences. Volume 38 Issue 4 (2010)**