CAREY WITKOV

EDUCATION

Ph.D. Complex Systems and Brain Sciences, Florida Atlantic University (FAU) 2011
Thesis: *Nonlinear Resonance: Maximal Autoresonant Response and Modulation of Otoacoustic Emissions*

M.A. Ind Op: Theoretical Physics University of Illinois – Springfield (UIS) 1978

B.S. Science Engineering Northwestern University (NU) 1977
Awards: Cumnock Debate Prize; Wyman-Hibbs Forensics Scholar (1972-74)

ACADEMIC POSITIONS

Preceptor, Physics Dept., Harvard University, Cambridge, MA 8/1/2012-6/30/2020
Awards: Derek Bok Center Teaching Award of Excellence
2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019

Professor, Physics Dept., Broward College, Coconut Creek, FL 1978-2012
Awards: Endowed Teaching Chair (2001-03, 1993-95)
North Campus Professor of the Year (1990)

Adjunct Professor, Florida Atlantic University 2004-06
Course taught: The Mathematics and Science of Fractals

GRANTS

Elson Family Arts Initiative Fund Course Grant ($5000). *2015 Spring Physics 15a PSI lab*, Harvard University Division of Arts and Humanities. 2015

National Science Foundation (NSF) Division of Undergraduate Education (DUE-9653672) grant ($197,315). Co-P.I., *Cross-Discipline Integration of Science, Math, Engineering, and Technology*. Student experiment payload (GAS-743) flew aboard NASA Space Shuttle Discovery (STS-91, June 1998). 1997-2000

PUBLICATIONS

Books

C. Witkov and K. Zengel. *Chi-squared Data Analysis and Model Testing for Beginners*, Oxford University Press, 2019.

Papers

C. Witkov and L. S. Liebovitch. Predicting optimal drive sweep rates for autoresonance in Duffing-type oscillators: A beat method using Teager-Kaiser instantaneous frequency, *Journal of Sound and Vibration*, 329:8, 1154-1164 (2010).

L. Precedo-Choudhury and **C. Witkov**. Multi-Course Projects as Bridges Between Disciplines, *Innovation Abstracts*, Vol. XXIV, No. 11 (2002).

C. Witkov. The Fastest Transform of All*, Embedded Systems Programming*, 3(10): 30-35 (1990).

C. Witkov. The Laws of Form, *The American Mathematical Association of Two Year Colleges Review*, 3(10): 4-8 (1981).

Other Publications

(Letter) **C. Witkov**. Re: A simple, valid step test for estimating maximal oxygen uptake in epidemiologic studies**,** *American Journal of Epidemiology*, 137: 482-484 (1993).

CONFERENCE TALKS

Higgs Meets Perl: Implementing in Perl *Data Language (PDL) the data fitting method used to detect the Higgs boson*. The Perl Conference, U.S. Patent Office, Alexandria, Virginia, June 18-23, 2017. YouTube URL: https://youtu.be/I7OMJKguseo

Invited Session Chair (Dynamical Systems) and talk, *Autoresonance and Mathieu Stability Boundaries*, 2016 SIAM Annual Conference, Boston, MA, July 14, 2016.

Detection of Single-Trial Event-related Potentials (ERPs) by Nearest Matrix Denoising. Graduate Research Symposium, Division of Research and Graduate Studies, Florida Atlantic University, Boca Raton, FL. April 11, 2003. **Award:** Certificate of Excellence in Research, Div. of Research and Graduate Studies.

Posters and Abstracts

Applications of Gauss' Principle of Least Constraint in Introductory Physics, 7th Annual Harvard Physics Scholar Research Retreat, Red Lion Inn, Cohasset, MA*,* Sept. 11, 2019.

Educating Learners to Read Complex Plane Visualizations for Understanding and Controlling System Behavior, Gordon Research Conference (Physics Research and Education)**,** Visualization in Science and Education, Bates College, Lewiston, ME, July 14-19, 2019.

Bond graphs: graphical cross-disciplinary systems modeling based on power and energy relations, Gordon Research Conference (Physics Research and Education), Novel Research in Energy Topics, and Transformative Methods for Teaching Undergraduate Students About Energy Concepts, Bryant College, Smithfield, R.I. June 10-15, 2018.

IRB-APPROVED RESEARCH STUDY

Co-principal Investigator, *Periodic amplitude and frequency variations in spontaneous otoacoustic emissions*. IRBNet ID 139643-1, Florida Atlantic University. 2010-11.

PUBLIC SOFTWARE RELEASE

Chi-squared data analysis: https://github.com/witkov/chi-squared

ACADEMIC JOURNAL REVIEWER

American Journal of Physics	2016, 2017, 2018, 2019, 2020
Biophysical Chemistry	2019
The Harvard Undergraduate Research Journal	2019
Journal of Shock and Vibration	2010

TEXTBOOK REVIEWER

Special Relativity: For the Enthusiastic Beginner, David Morin.	2017
Probability for the Enthusiastic Beginner, David Morin.	2016
Problems and Solutions in Introductory Mechanics, David Morin.	2014
University Physics for Life Science Students, Kesten & Tauck, W.H. Freeman.	2012
Physics for Scientists and Engineers: A Strategic Approach, Knight, 2nd edition.	2007
Physics by Paul Tippens, 7th edition, McGraw-Hill.	2007

EDUCATIONAL CONSULTANT

Independent Evaluator, NSF's Statewide Systemic Initiative (SSI), Region 5	1995