

Michael Courtney, PhD

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Education **Massachusetts Institute of Technology**

1995 Ph.D. in experimental Physics. GPA: 4.7/5.0

Louisiana State University (Baton Rouge)

1989 B.S. *summa cum laude* in Physics. GPA: 3.95/4.0

Research Experience **Ballistics Testing Group** **2001-present**
Research in blast injury, wound ballistics, and shooting event reconstruction. Numerical modeling and data analysis of wound data and ballistic events.

Cisco Systems/Aironet Wireless Communications **1995-2002**

Design validation, calibration and testing of microwave devices using standard RF measurement, signal processing, and numerical analysis techniques. Software written in LabVIEW and C.

Department of Physics, MIT **1989-1995**

High-resolution laser spectroscopy of lithium in an electric field. Theoretical and experimental investigations into links between classical and quantum dynamics. Extensive numerical simulations in C and Fortran.

Chemistry Department, Brookhaven National Laboratory **1988-1989**

VUV ionization of calcium and magnesium including 9th harmonic generation of pulsed Nd:YAG laser. Coherent dephasing of quantum beats in OH⁻ and ArOH⁻.

Department of Physics and Astronomy, LSU **1986-1989**

Multiphoton ionization of calcium in an intense laser field. Theoretical work on computation of thermal cyclotron absorption coefficients.

Teaching Experience **Western Carolina University, Cullowhee, NC** **2006**
Director of Forensic Science Program, Assistant Professor of Physics Responsible for originating program including curriculum development, accreditation, administration, recruiting, and maintaining active research program in ballistics and acoustics.

Lorain County Community College, Elyria, OH **2002-2006**

Assistant Professor of Physics Taught introductory courses in Physics, Algebra, Statistics, and Forensic Science. Also taught College 101. Supervised undergraduate research in Physics and Forensic Science. Tutored Calculus.

Department of Physics, Massachusetts Institute of Technology **1993-1994**

Teaching assistant for Quantum Electronics and Laser Spectroscopy for two semesters. Teaching assistant for Atomic, Molecular and Optical Physics for one semester.

PhD Thesis **Rydberg Atoms in Strong Fields: A Testing Ground for Quantum Chaos**

Awards **Finalist for 1995 American Physical Society Award** for Outstanding Doctoral Thesis Research in Atomic, Molecular, or Optical Physics

LSU University Medal (1989) for graduating first in class

Peer Review Panels

2007 American Institute of Biological Sciences panels reviewing Congressionally Directed Medical Research Programs (CDMRP) grant proposals in *Physics of Blast Injury* and *Neuroprotection*.

2008 American Institute of Biological Sciences peer reviewer for Intramural War Supplemental Program (USAMRMC) grants in blast injury.

**Publications
(Wound Ballistics/Blast Injury)**

A thoracic mechanism of mild traumatic brain injury due to blast pressure waves, A Courtney, M Courtney, Medical Hypotheses, [doi:10.1016/j.mehy.2008.08.015](https://doi.org/10.1016/j.mehy.2008.08.015) , also <http://precedings.nature.com/documents/2169/version/1>

Comments on "Ballistics: A Primer for the Surgeon", M Courtney, A Courtney, *Injury*, **39**(8):964-5; DOI: 10.1016/j.injury.2008.03.020 (2008).

Links between traumatic brain injury and ballistic pressure waves originating in the thoracic cavity and extremities, A Courtney, M Courtney, *Brain Injury* **21**, 657 (2007). Also <http://arxiv.org/ftp/arxiv/papers/0808/0808.1443.pdf>

Apparent measurement errors in "Development of biomechanical response corridors in the thorax to blunt ballistic impacts", M Courtney, A Courtney, *Journal of Biomechanics* **41**, 486 (2007).

The ballistic pressure wave theory of handgun bullet incapacitation, M Courtney, A Courtney, (2008) <http://arxiv.org/ftp/arxiv/papers/0803/0803.3053.pdf>

Scientific evidence for hydrostatic shock, M Courtney, A Courtney, (2008) <http://arxiv.org/ftp/arxiv/papers/0803/0803.3051.pdf>

A method for testing handgun bullets in deer, M Courtney, A Courtney, (2007). arxiv.org/ftp/physics/papers/0702/0702107.pdf

Review of criticisms of ballistic pressure wave experiments, the Strasbourg goat tests, and the Marshall and Sanow data, M Courtney, A Courtney, (2007). arxiv.org/ftp/physics/papers/0701/0701268.pdf

Ballistic pressure wave contributions to rapid incapacitation in the Strasbourg goat tests, M Courtney, A Courtney, (2007). arxiv.org/ftp/physics/papers/0701/0701267.pdf

Relative incapacitation contributions of pressure wave and wound channel in the Marshall and Sanow data set, M Courtney, A Courtney, (2007). arxiv.org/ftp/physics/papers/0701/0701266.pdf

- Publications Continued.** *Acoustic methods for measuring bullet velocity*, M Courtney, Applied Acoustics, [Volume 69, Issue 10](#), October 2008, Pages 925-928 (2008).
- (External Ballistics)** *An acoustic method for determining ballistic coefficients*, M Courtney, A Courtney, (2007) <http://arxiv.org/ftp/arxiv/papers/0705/0705.0391.pdf>
- The truth about ballistic coefficients*, M Courtney, A Courtney, (2007) <http://arxiv.org/ftp/arxiv/papers/0705/0705.0389.pdf>
- Using sound of target impact for acoustic reconstructions of shooting events*, M Courtney, A Courtney, (2007) www.ballisticstestinggroup.org/impactsound.pdf
- (Education)** *Epistemological distinctions between science and history*, M Courtney, A Courtney, (2008) <http://arxiv.org/ftp/arxiv/papers/0803/0803.4245.pdf>
- Comments regarding "On the Nature of Science"* M Courtney, A Courtney, Physics in Canada, Vol. 64 No. 3, (2008).
- Sheep Collisions: The Good, The Bad, and the TBI*, M Courtney, A Courtney, (2007) http://arxiv.org/PS_cache/arxiv/pdf/0711/0711.3804v1.pdf
- Acoustic Measurement of Potato Cannon Velocity*, M Courtney, A Courtney, The Physics Teacher, **45** 496-497 (2007). arxiv.org/ftp/physics/papers/0612/0612118.pdf
- Five Frequently Fatal Freshman Physics Fantasies*, M Courtney, N Althausen, A Courtney. Physics Education **42** 116, (2007). arxiv.org/ftp/physics/papers/0605/0605152.pdf
- Who is the Customer in Higher Education?* M Courtney, A Courtney, (2006). arxiv.org/ftp/physics/papers/0612/0612117.pdf
- Teaching Fourier analysis and wave physics with the bass guitar*, M Courtney, N Althausen, (2006) <http://arxiv.org/ftp/physics/papers/0605/0605154.pdf>
- Measuring bullet velocity with a PC Soundcard*, M Courtney, B Edwards, (2006) <http://arxiv.org/ftp/physics/papers/0605/0605154.pdf>
- (Theory, Chaos/Atomic Physics)** *Core-induced chaos in diamagnetic lithium*, M Courtney, D Kleppner, Phys Rev A **53**, 178 (1996).
- Initial conditions of closed classical orbits from quantum spectra*, M Courtney, Chaos **6**, 1 (1996).
- Scaled-energy spectra and closed classical orbits of the hydrogen atom in parallel electric and magnetic fields*, M Courtney, Phys Rev A **51**, 4558 (1995).
- Classical, semiclassical, and quantum dynamics of lithium in an electric field*, M Courtney, N Spellmeyer, H Jiao, D Kleppner, Phys Rev A **51**, 3604 (1995).
- Recurrences associated with a classical orbit in the node of a quantum wave function*, JA Shaw, JB Delos, M Courtney, D Kleppner, Phys Rev A **52**, 3695 (1995).

New Class of Universal Correlations in the Spectra of Hydrogen in a Magnetic Field, BD Simons, A Hashimoto, M Courtney, D Kleppner, BL Altshuler, PRL **71**, 2899 (1993).

**(Theory,
Astrophysics)**

Thermal Cyclotron Absorption Coefficients, G Chanmugam, PE Barrett, K Wu, MW Courtney, Astrophysical Journal Supplement Series **71**, 323 (1989).

**(Experiment,
Chaos/Atomic
Physics)**

Closed Orbit Bifurcations in Continuum Stark Spectra, M Courtney, H Jiao, N Spellmeyer, D Kleppner, J Gao, JB Delos, Phys Rev Let **27**, 1538 (1995).

Quantum Chaos and Rydberg Atoms in Strong Fields, M Courtney, H Jiao, N Spellmeyer, D Kleppner, in the proceedings of the 4th Drexel Symposium on Quantum Nonintegrability (1995).

Long-period Orbits in the Stark Spectrum of Lithium, M Courtney, H Jiao, N Spellmeyer, D Kleppner, Phys Rev Let **73**, 1340 (1994).

Nonresonant multiphoton ionization of calcium atoms in an intense laser field, LF DiMauro, D Kim, MW Courtney, M Anselment, Physical Review A **38**, 2338 (1988).