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APPOINTMENTS

- September 2007-present. University of Maine, Orono ME
Associate Professor, Department of Physics and Astronomy
Co-operating Associate Professor, College of Education and Human Development
- January 2001-present. University of Maine, Orono ME
Assistant Professor, Department of Physics and Astronomy
Co-operating Assistant Professor, College of Education and Human Development
- Co-Director, Physics Education Research Laboratory
Project Director, Physics, for the Center for Science and Mathematics Education Research

PROFESSIONAL PREPARATION

University of Maryland, College Park, MD	Physics Education	Postdoc,	1998-2000
University of Maryland, College Park, MD	Physics	Ph.D.	1998
University of Maryland, College Park, MD	Physics	M.S.	1996
Duke University, Durham, North Carolina	Physics	B.S.	1993

PUBLICATIONS

Textbooks/Workbooks (2)

- Wittmann, M.C., Steinberg, R.N., and Redish, E.F. (2005) *Activity-Based Tutorials Vol 2: Modern Physics*. New York: John Wiley & Sons Inc.
- Wittmann, M.C., Steinberg, R.N., and Redish, E.F. (2004) *Activity-Based Tutorials Vol 1: Introductory Physics*. New York: John Wiley & Sons Inc.

Peer-reviewed papers (9, 2 accepted and unpublished, 3 submitted, 1 in preparation)

- Black, K.E. and Wittmann, M.C. (2007) "Using Consistency Plots to Follow Student Reasoning About Solutions to Separable Differential Equations in Intermediate Mechanics" *in preparation*.
- Springuel, R.P., Thompson, J.R., and Wittmann, M.C. (2007) "Applying clustering to statistical analysis of student reasoning about two-dimensional kinematics," submitted to *Physical Review Special Topics Physics Education Research*.
- Wittmann, M.C. (2007) "Differentiation of resource graphs as one element for understanding wave-particle duality," submitted to *Physical Review Special Topics Physics Education Research*.
- Sayre, E.C. and Wittmann, M.C. (2007) "The plasticity of intermediate mechanics students' coordinate system choice," submitted to *Physical Review Special Topics Physics Education Research*.
- Wittmann, M.C., and Thompson, J.R. (2007) "Integrated approaches in physics education: A graduate level course in physics, pedagogy, and education research," to be published in the *American Journal of Physics*. Draft version available online at <http://www.arxiv.org/abs/physics/0608240>.
- Smith, T.I. and Wittmann, M.C. (2007) "Comparing three methods of teaching Newton's Third Law," to be published in *Physical Review Special Topics Physics Education Research*.
- Wittmann, M.C. (2006) "Using resource graphs to represent conceptual change," *Physical Review Special Topics Physics Education Research* 2, 020105. Available online at <http://prst-per.aps.org/abstract/PRSTPER/v2/i2/e020105>.

- Wittmann, M.C., Morgan, J.T., and Feeley, R.E. (2006) "Laboratory-Tutorial activities for teaching probability," *Physical Review Special Topics Physics Education Research* 2, 020104. Available online at <http://prst-per.aps.org/abstract/PRSTPER/v2/i2/e020104>.
- Wittmann, M.C. (2006) "Lab-Tutorials für den Quantenphysik Unterricht," *Praxis der Naturwissenschaften – Physik*, 55:4, 16-21. Available online at <http://www.arxiv.org/abs/physics/0604112>
- Wittmann, M.C., Morgan, J.T., and Bao, L. (2005) "Addressing student models of energy loss in quantum tunneling," *European Journal of Physics* 26, 939–950. Selected for *European Journal of Physics* 'Highlights of 2005,' for articles which received the highest praise from international referees and the highest number of downloads from the journal's website (announced 2006 Apr 19). Available online at <http://www.arxiv.org/abs/physics/0502053>.
- Owen, J.C., Norton, S.A., Maash, K., and Wittmann, M.C. (2004) "Design, Implementation, and Assessment of an Earth Systems Science Course for Secondary Teachers," *Journal of Geoscience Education*, 52:4.
- Wittmann, M.C., Steinberg, R.N., and Redish, E.F. (2003) "Understanding and Addressing Student Reasoning about Sound," *International Journal of Science Education*, 25:8, 991-1013. Available online at <http://www.arxiv.org/abs/physics/0207031>.
- Wittmann, M.C., Steinberg, R.N., and Redish, E.F. (2002) "Investigating student understanding of quantum physics: Spontaneous models of conductivity," *American Journal of Physics*, 70:3, 218-226. Available online at <http://www.arxiv.org/abs/physics/0207029>.
- Wittmann, M.C. (2002) "The Object Coordination Class Applied to Wavepulses: Analysing Student Reasoning in Wave Physics," *International Journal of Science Education*, 24:1, 97-118. Available online at <http://www.arxiv.org/abs/physics/0207042>.
- Wittmann, M.C., Steinberg, R.N., and Redish, E.F. (1999) "Making Sense of How Students Make Sense of Mechanical Waves," *The Physics Teacher* 37, 15-21. Available online at <http://www.arxiv.org/abs/physics/0207092>.

Peer-reviewed conference proceedings (9, 3 submitted)

- Black, K.E. and Wittmann, M.C. (2008) "Epistemic Games in Integration: Modeling Resource Choice," submitted to the *Physics Education Research Conference Proceedings 2007*.
- McCann, K. and Wittmann, M.C. (2008) "Students Creating Mathematical Meaning in Mechanics: Signs in Scalar Equations," submitted to the *Physics Education Research Conference Proceedings 2007*.
- Van Deventer, J. and Wittmann, M.C. (2008) "Comparing Student Use of Mathematical and Physical Vector Representations," submitted to the *Physics Education Research Conference Proceedings 2007*.
- Sayre, E.C., Wittmann, M.C., and Donovan, J.E. (2007) "Resource Plasticity: Detailing a Common Chain of Reasoning with Damped Harmonic Motion," in P. Heron, L. McCullough, J. Marx (Eds.) *Physics Education Research Conference Proceedings 2006*, AIP Conference Proceedings 883, 85.
- Morgan, J.T. and Wittmann, M.C. (2006) "Examining the Evolution of Student Ideas About Quantum Tunneling," in P. Heron, L. McCullough, J. Marx (Eds.) *Physics Education Research Conference Proceedings 2005*, AIP Conference Proceedings 818, 73-76.
- Redish, E.F. and Wittmann, M.C. (2005) "Twenty Questions for PER: How Does It All Fit Together?" in J. Marx, S. Franklin, and P. Heron (Eds.) *Physics Education Research Conference Proceedings, 2004*, AIP Conference Proceedings 790, 11-14.
- Sayre, E.C., Wittmann, M.C., and Thompson, J.R. (2004) "Resource Selection in Nearly-Novel Situations," in S. Franklin, K. Cummings, J. Marx (Eds.) *Physics Education Research Conference Proceedings 2003*, AIP Conference Proceedings 720, 101-104.

- Morgan, J.T., Wittmann, M.C., and Thompson, J.R. (2004) "Student Understanding of Tunneling in Quantum Mechanics: Examining Interview and Survey Results for Clues to Student Reasoning," in S. Franklin, K. Cummings, J. Marx (Eds.) *Physics Education Research Conference Proceedings 2003*, AIP Conference Proceedings 720, 97-100.
- Wittmann, M.C. and Morgan, J.T. (2004) "Understanding Data Analysis from Multiple Viewpoints: An Example from Quantum Tunneling," in S. Franklin, K. Cummings, J. Marx (Eds.) *Physics Education Research Conference Proceedings 2003*, AIP Conference Proceedings 720, 3-6.
- Wittmann, M.C. (2003) "Limitations in predicting student performance on standardized tests," in S. Franklin, K. Cummings, J. Marx (Eds.) *Physics Education Research Conference Proceedings 2002*.
- Wittmann, M.C. and Scherr, R.E. (2003) "Student epistemological stance constraining researcher access to student thinking: An example from an interview on charge flow," in S. Franklin, K. Cummings, J. Marx (Eds.) *Physics Education Research Conference Proceedings 2002*.
- Scherr, R.E. and Wittmann, M.C. (2003) "The challenge of listening: The effect of research agenda on data collection and interpretation," in S. Franklin, K. Cummings, J. Marx (Eds.) *Physics Education Research Conference Proceedings 2002*.

Non-peer-reviewed publications (6)

- Sayre, E.C. and Wittmann, M.C. (2007) "Intermediate mechanics students' coordinate system choice," Conference on Research in Undergraduate Mathematics Education, from <http://cresmet.asu.edu/crume2007/eproc.html>.
- Wittmann, M.C. and Thompson, J.R. (2006) "A course on integrated approaches in physics education," *APS Forum on Education*, Spring 2006 newsletter.
- Wittmann, M.C., Heron, P.L. and Scherr, R.E. (2005) "Overview of the Foundations and Frontiers in Physics Education Research Conference," *APS Forum on Education*, Fall 2005 Newsletter, 7.
- Wittmann, M.C. (2001) "Investigating Student Understanding of Quantum Mechanics: An Example from Conductivity," In A. Hodari (Ed.) *Newsletter of the American Society of Black Physicists, special issue on physics education research*, March.
- Steinberg, R.N., Wittmann, M.C., Bao, L., and Redish, E.F. (1999) "The influence of student understanding of classical physics when learning quantum mechanics," Research on the Teaching and Learning of Quantum Sciences, NARST Annual Meeting, Boston, March.
- Steinberg, R.N., Wittmann, M.C., and Redish, E.F. (1997) "Mathematical Tutorials In Introductory Physics," Sample class, in *The Changing Role Of Physics Departments In Modern University*, AIP Conference Proceedings 399 (pp. 1075-1092). College Park: AIP.