

Chad A. Middleton, Ph.D.

Colorado Mesa University

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Education

Ph.D., *Physics*, UT, Knoxville, December 2005, Advisor: Dr. George Siopsis

B.S., *Physics*; Minor, *Mathematics (cum laude)*, Eastern Illinois University, May 1998

Scholarships and Awards

- CMU Associated Student Government (ASG) *Faculty Member of the Year*, 2017-18
- CMU Exemplary Faculty Award, 2006-07, 2014-15, 2016-17
- Faculty Professional Development Grant, 2007-08, 2009-10, 2011-12, 2016-17, 2018-19
- Faculty Professional Travel Grant, 2005-06
- SPS Outstanding Chapter Award, 06-07, 07-08, 08-09, 10-11, 11-12, 12-13, 13-14, 14-15
- APS Topical Group in Gravitation *Best Student Presentation*, 8th ECGM, SP 05
- 2002 University of Tennessee *Outstanding Graduate Teaching Assistant*
- SARIF Graduate Research Assistant Research Grant, SU 03, SU 05
- DPF Travel Award Recipient, APS April 2004 Meeting, SP 04, SP 05
- Science Alliance Fellowship, FA 99-SP 01
- Glenn Lefler Physics Scholarship, FA 96
- College of Sciences Undergraduate Investigator Award, SP 97
- Certificate of Achievement for Contributions to Undergraduate Research, SP 97
- College of Sciences Dean's List: FA 95, SP 96, SP 97, FA 97, SP 98

Administrative Experience

Assistant Vice President for Faculty Success, Colorado Mesa University

Office of Academic Affairs, 08/21-present

- Oversees the selection and distribution of the Faculty Professional Development Fund
- Plans and coordinates the Faculty Colloquium series
- Academic Affairs leader on Student Showcase planning
- Open Educational Resources (OER) Steering Committee, Co-chair
- Plans and coordinates the Program Review process
- Plans and coordinates faculty development programming
- Bi-weekly Academic Policy/Procedure Group, member
- Academic Policies Committee, ex-officio member

Academic Experience

Professor of Physics, Colorado Mesa University

Department of Physical and Environmental Sciences, 08/15-present

Associate Professor of Physics, Colorado Mesa University

Department of Physical and Environmental Sciences, 08/10-08/15

Assistant Professor of Physics, Colorado Mesa University

Department of Physical and Environmental Sciences, 08/06-08/10

- Granted tenure, FA12
- Faculty Trustee, FA17-SP19
- Faculty Senate, FA13-SP19; *President-elect* FA14-SP15; *President* FA15-SP16
- Strategic Planning Committee, FA15-SP16
- Higher Learning Commission (HLC) Criterion 4 Subcommittee, FA11-FA13
- Working Group to Improve Student Academic Success (WIGISAS 4.0), FA16-SP17
- Physics Program Coordinator, SP17
- Handbook Revision Committee, SP20-SP21
- Academic Policies Committee, FA19-SP21
- Tenure and Promotion Committee, FA13, FA20

- Faculty Advisor for the Society of Physics Students, FA06-SP15
- Chapter Advisor for $\Sigma\Pi\Sigma$, SP08-SP13, SP20-present
- Graduate Curriculum Committee, SP07-FA12
- Tutorial Services Advisory Committee, SP08-FA13
- Distinguished Faculty Award Committee, SP08, SP16
- Degree Distinction/General Education Committee, FA08-SP09
- VPAA Search Committee, FA14-SP15, FA15-SP16
- Library Director Search Committee, SP11-SU11
- Physics Faculty Search Committee, FA18-SP19; *chair*, SP17
- Chemistry Faculty Search Committee, FA08-SP09
- Mechanical Engineering Faculty Search Committee, SP10
- Lecturer of Physics Search Committee, SP10-SU10
- Little Mavericks Learning Center, Board of Trustees, FA09-SU15

Visiting Assistant Professor of Physics, Rhodes College Dept of Physics, 08/05-08/06

- Codesigned four-part lecture series entitled “An Introduction to General Relativity and Differential Geometry” with math department colleague
- Presented one of five mini-lectures collectively entitled “From Atoms to Space-time: The Einsteinian Revolution”, The Paul Barret Jr. Library Dedication Ceremony

Research Assistant, University of Tennessee Dept of Physics and Astronomy, 08/01-08/05

- Theoretical research focusing primarily on general relativistic calculations of a 3-brane embedded in a flat D -dimensional, infinite-volume bulk (DGP Model)
- Collaborative research work involving REU student, SU 2004

Teaching Assistant, University of Tennessee Dept of Physics and Astronomy, 08/99-08/05

- Instructed freshman honors lab/recitation and introductory physics/astronomy labs and recitations
- Guest lectured for Elements of Physics, Honors Fundamentals of Physics and undergraduate and graduate-level Classical Mechanics

Science Alliance Internship, Theoretical Nuclear Physics Group, ORNL, SU 00

- Computational work examining nuclear structure through Mean-Field Theory interactions

Research Experience for Undergraduates, University of Notre Dame, SU 97

- Experimental work examining the 8B solar neutrino spectrum and the alpha decay of 8Be

Courses Taught

- Topics: General Relativity - SP07, SP11, SP17, SP19
- Topics: Middle School Physics - SU08
- Senior Research - FA17, SP18, FA18, SP19
- Physics Seminar - FA08, FA09, FA10, FA11, FA12, FA13, FA14, FA15, FA16, SP20, FA20
- Electromagnetic Theory I - FA12, FA13, FA18
- Advanced Dynamics - SP08, SP09, SP10, SP11, SP12, SP13, SP15, SP20
- Quantum Theory I - FA05, FA09, FA11, SP18, SP20, SP21
- Quantum Theory II - SP10, SP12, SP14, SP16
- Modern Optics - FA06, FA07, FA08, FA09, FA10
- Modern Physics I - FA06, FA07, FA08, SP22
- Modern Physics II - SP06, SP07, SP08, SP09
- Intermediate Dynamics - FA14, FA15, FA16, FA17
- Fundamental Mechanics - FA08, FA09, FA10, FA11, FA17, FA18, FA20
- Fundamental Mechanics Lab - FA08, FA10, FA11, FA12, FA13, FA14, FA16
- Electromagnetism & Optics - SP13, SP14, SP15, SP16, SP17
- Electromagnetism & Optics Lab - SP13, SP15, SP16, SP17
- General Physics I & II - FA05, SP06, FA06, SP07, FA07, SP08, SP09, SP10, SP11, SP18, SP19, SP20, SP21, FA21
- General Physics I & II Lab - FA99 - FA05, SP07, FA07, SP08, SP09, SP11, SP21, FA21
- Concepts of Physics - SP12, FA12, FA13, FA14, FA15, FA16, SP22
- Astronomy Lab - FA99, SP06

Other Experience

Undergraduate Research

- Theoretical cosmological research of the superstring corrected Einstein field equations of

an adiabatically expanding Robertson-Walker universe extended to 10D

- Theoretical plasma research of a uniformly magnetized, homogeneous plasma with species described by drifting bi-Maxwellian distribution functions

Member of Society of Physics Students, Eastern Illinois University, FA95 - SP98,
Elected *vice-president*, SP98

Professional Affiliations

- Member, Sigma Pi Sigma
- Elected associate member of Sigma Xi, Scientific Research Society, 1998

Peer-Reviewed Publications

“Anisotropic evolution of D -dimensional FRW spacetime”, C. Middleton, **B.A. Brouse**¹, **S.D. Jackson**¹, *Eur. Phys. J. C* (2019) 79: 982, arXiv:1902.00130

“Elliptical-like orbits on a warped spandex fabric: A theoretical/experimental undergraduate research project”, C. Middleton and **D. Weller**¹, *Am. J. Phys.* **84** (4), April 2016, gr-qc/1601.03996

“The 2D surfaces that generate Newtonian and general relativistic orbits with small eccentricities”, C. Middleton, *Am. J. Phys.* **83** (7), July 2015, gr-qc/1506.03342

“Circular orbits on a warped spandex fabric”, C. Middleton and **M. Langston**¹, *Am. J. Phys.* **82** (4), April 2014, physics.class-ph/1312.3893

“Anisotropic evolution of 5D Friedmann-Robertson-Walker spacetime”, C. Middleton and **E. Stanley**¹, *Phys. Rev. D* **84**, 085013 (2011), gr-qc/1107.1828

“The High Road/Low Road Demonstration or Birds on a Wire”, **Jacob Cady**¹ and Chad A. Middleton, *J. of Undergraduate Research in Physics*, **22**, (Dec. 2009)

“Kayaking Physics: The Tipping Angle”, **Daniel R. Rottinghaus**¹ and Chad A. Middleton, *J. of Undergraduate Research in Physics*, **22**, (Aug. 2009)

¹Author names listed in bold indicate CMU undergraduate students

“Solutions of Higher Dimensional Gauss-Bonnet FRW Cosmology”, K. Andrew, B. Bolen, and C. Middleton, *Gen. Rel. and Grav.*, Vol. 39, Num. 12 (2007) pps. 2061-2071;
gr-qc/0708.0373

“AdS/CFT Correspondence with Heat Conduction”, J. Alsup, C. Middleton, and G. Siopsis, *Phys. Lett. B*, Vol. 654 (2007) pps. 35-40; hep-th/0607139

“Constrained Perturbative Expansion of the DGP Model”, C. Middleton and G. Siopsis, *Phys. Lett. B*, Vol. 613 (2005) pps. 189-196; hep-th/0502020

“The Schwarzschild Solution in the DGP Model”, C. Middleton and G. Siopsis, *Mod. Phys. Lett. A*, Vol. 19 (2004) pps. 2259-2266; hep-th/0311070

Other Publications

“Using a Brane to Probe the Bulk”, Chad A. Middleton, *Mercury*,
Journal of the Astronomical Society of the Pacific, Vol. 35 (2006) No. 2

Conference Presentations

C. Middleton, “A possible higher-dimensional alternative to scalar-field inflationary theory”,
22nd International Conference on General Relativity and Gravitation, July 7-12, 2019,
Valencia, Spain

C. Middleton, “A possible higher-dimensional alternative to scalar-field inflationary theory”,
35th Jim Isenberg Pacific Coast Gravity Meeting, March 29-30, 2019, Utah State University

C. Middleton, “Elliptical-like orbits on a warped spandex fabric: A theoretical/experimental
undergraduate research project”, Joint Meeting of the Four Corners and Texas Sections of
the APS, October 21-22, 2016, New Mexico State University

C. Middleton, “Newtonian and general relativistic orbits with small eccentricities on 2D
surfaces”, APS Four Corners Section Meeting, October 17-18, 2014, Utah Valley University

C. Middleton, “Circular orbits on a warped spandex fabric”, APS Four Corners Section
Meeting, October 18-19, 2013, University of Denver, CO

C. Middleton, “Anisotropic evolution of 5D Friedmann-Robertson-Walker spacetime”,

- 21st Midwest Relativity Meeting, November 4-5, 2011, UIUC
- C. Middleton, “Anisotropic Evolution of D -Dimensional Spacetime”,
APS Four Corners Section Meeting, October 23-24, 2009, Golden, CO
- C. Middleton, “Anisotropic Evolution of D -Dimensional Spacetime”,
APS April 2009 Meeting, May 2-5, 2009, Denver, CO
- C. Middleton, “Higher Dimensional Gauss-Bonnet FRW Cosmology”,
SPS Zone 14 Regional Meeting, November 10, 2007, Mesa State College
- K. Andrew, B. Bolen, and C. Middleton, “Dynamical Compactification of
 D -Dimensional Gauss-Bonnet FRW Cosmology”, 16th Midwest Relativity Meeting,
November 17-18, 2006, Washington University
- K. Andrew, B. Bolen, and C. Middleton, “Effects of Dynamical Compactification of
 D -Dimensional Gauss-Bonnet FRW Cosmology”, APS Four Corners Section 2006
Fall Meeting, October 6-7, 2006, Utah State University
- C. Middleton and G. Siopsis, “Constrained Perturbative Expansion in the DGP Model”,
APS April 2005 Meeting, April 16-19, 2005, Tampa, FL
- C. Middleton and G. Siopsis, “Constrained Perturbative Expansion in the DGP Model”,
8th East Coast Gravity Meeting, March 19, 2005, Wake Forest University
- C. Middleton and G. Siopsis, “The Schwarzschild Solution in the DGP Model”,
APS April 2004 Meeting, May 1-4, 2004, Denver, CO
- C. Middleton and G. Siopsis, “Fat Branes in Infinite-Volume Extra Space”,
19th Pacific Coast Gravity Meeting, March 1, 2003, University of Utah
- C. Middleton, S. Ness, K. McGlynn, D. Pakey, J. Conwell, K. Andrew, “A Cosmological
Polytropic Equation of State Applied to the First Order Classical Superstring Corrections
to the Einstein Field Equations”, Joint Meeting of The Illinois Section of AAPT and The
Society of Physics Students, April 11, 1997, Illinois State University

Other Presentations

- C. Middleton, “Scientific Cosmology: A Quest to Comprehend the Universe”,
Telluride Council for the Arts, June 25, 2009, Telluride, CO
- C. Middleton, “Gravity, Blackholes, and Cosmology”, Astronomy Camp, June 22, 2009,
Western Colorado Math and Science Center
- C. Middleton, “Using a Brane to Probe the Bulk”, APS World Year of Physics
Speakers Bureau *Invited Speaker*, $\Sigma\Pi\Sigma$ Induction Ceremony, April 22, 2006, Austin Peay
State University
- C. Middleton, “Gravity in Extra Dimensions of Infinite Volume”,
August 1, 2005, Ph.D. Dissertation Defense, University of Tennessee Dept of Physics
- C. Middleton, “Gravity, D-branes, String Theory, and Large Extra Dimensions”,
Tennessee Governor’s School for the Sciences, Summer 2005, University of Tennessee
- C. Middleton, “Gravity, D-branes, and Large Extra Dimensions”,
Department of Energy Grant Review, January 25, 2005, University of Tennessee
- C. Middleton, “Why Branes?”, Physics Department Colloquium Series, March 24, 2003,
Eastern Illinois University

Workshop Attendance

- “13th Workshop for New Physics and Astronomy Faculty”, American Center for Physics,
College Park, MD, June 25-29, 2008