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**Department
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TABLE OF CONTENTS

I.	FOREWORD	- 2 -
II.	ORGANIZATION	- 3 -
	A. Staff.....	- 3 -
	B. Departmental Committees for 2007-2008	- 3 -
III.	FACULTY	- 4 -
	A. Areas of Specialization	- 4 -
	B. Honors and Awards.....	- 4 -
	C. Grants and Gifts (awarded 2007-2008).....	- 4 -
	D. Proposal Submissions (2007-2008)	- 5 -
	E. Publications.....	- 5 -
	F. Professional Talks Presented and Meetings Attended	- 6 -
	G. Service.....	- 8 -
IV.	ACADEMIC ENRICHMENT & SUPPORT PROGRAMS	- 10 -
	A. Course Offerings and Enrollments.....	- 10 -
	B. Innovative Curricular Initiatives	- 11 -
	C. Research Opportunities for Undergraduates.....	- 11 -
	D. Physics Department Colloquia.....	- 12 -
	E. SPS/ΣΠΣ Activities.....	- 13 -
V.	STUDENTS	- 13 -
	A. Enrollment Statistics	- 13 -
	B. Degrees Awarded.....	- 14 -
	C. Honors, Awards, and Scholarships	- 14 -

I. FOREWORD

With six physics graduates in 2007-08, and nearly three dozen current physics majors, the outlook for the department is bright, and improving each year. In many instances, the number of students populating our advanced undergraduate physics classes in 2007-08 stood at an all-time high, a most welcome change from just a few years ago. The challenge ahead will be to maintain this level of interest – or even grow these numbers further – while strengthening the breadth and depth of our academic offerings.

Involving undergraduates in faculty research continues to be a major emphasis area for the Department, as is promoting other, diverse opportunities for academic enrichment. This year physics majors, supervised by UNCW physics faculty, participated in cutting-edge research at the National Institute of Standards and Technology, and the Thomas Jefferson National Laboratory. Moreover, the UNCW Summer Physics Program in Germany (in cooperation with the Universität Ulm) again saw continued (albeit modest) participation by UNCW physics majors for summer 2008. Faculty scholarship also continued at a respectable level for 2007-08; for the period, physics faculty published six papers in refereed journals, made seventeen presentations to professional audiences, wrote eight grant proposals, and secured more than \$320,000 in new funding.

Again this year there were several noteworthy personnel/status changes within the Department. The search for a physical oceanographer came to a successful conclusion with the hiring of new Assistant Professor Dylan McNamara. Dr. McNamara received the Ph.D. in Oceanography from the Scripps Institution of Oceanography at UCSD, where he studied complex systems, coastal fluid dynamics, and human-environmental interactions. He was most recently employed as a Postdoctoral Research Scientist with the Nicholas School of the Environment and Earth Sciences at Duke University, and joins the UNCW faculty effective August, 2008. We look forward to the arrival of Dr. McNamara and the unique talents he brings to the physics program.

Another personnel highlight was the promotion of Dr. Frederick Bingham to the rank of full Professor, effective August 1, 2008. Dr. Bingham has been an Associate Professor with the Department since being granted tenure in 1999. Aside from maintaining an active research program in physical oceanography, Dr. Bingham has been a classroom innovator, and holds the distinction of being the first department member to teach a physics class as part of a broader Learning Community, an arrangement that has continued unabated since it began in 2003.

Finally, I am pleased to note that Dr. Marvin Moss, who retired last year after fifteen years of service to UNCW, has been designated Professor Emeritus of Physics & Physical Oceanography effective July 1, 2007. This honor is well-deserved, as Dr. Moss has played a central and exceptional role over the years in the advancement of the University, and especially its programs in the area of Marine Science. On behalf of the physics faculty, I offer to Dr. Moss my sincere congratulations on having reached this significant career milestone.



Curt A. Moyer
July, 2008

II. ORGANIZATION

A. Staff

Yvonne Marsan, Laboratories Manager
Bonnie L. Mattis, Department Secretary

Faculty Emeriti

Hildelisa C. Hernandez Associate professor emerita of physics
Marvin K. Moss Professor emeritus of physics & physical oceanography

Professors

Moorad Alexanian Ph.D. Indiana University, 1964
Brian F. Davis Ph.D. North Carolina State University, 1982
John M. Morrison Ph.D. Texas A&M University, 1977
Curt A. Moyer Ph.D. State University of New York at Stony Brook, 1971
Edward A. Olszewski, Jr. Ph.D. University of North Carolina at Chapel Hill, 1976

Associate Professors

Frederick M. Bingham Ph.D. University of California, San Diego, 1990
Timothy C. Black Ph.D. University of North Carolina at Chapel Hill, 1995
Liping Gan Ph.D. University of Manitoba, Winnipeg, Canada, 1998

B. Departmental Committees for 2007-2008

Lab Development Committee

E. Olszewski, chairperson
F. Bingham
T. Black
L. Gan

Undergraduate Committee

C. Moyer, chairperson
B. Davis
J. Morrison

Colloquium Coordinator

M. Alexanian

Library Representative

F. Bingham

SPS | Sigma Pi Sigma Advisor

B. Davis
C. Moyer

Computing Resources Coordinator

E. Olszewski

Faculty Senate Representative

T. Black

CTE Liaison

F. Bingham

Academic Advising

M. Alexanian
L. Gan

III. FACULTY

A. Areas of Specialization

1. Atomic Physics

Charge exchange in atomic collisions; response of atoms to intense electromagnetic fields; atomic structure studies; autoionization.

Professors Alexanian, Davis, Moyer

2. Marine Sciences

Physical oceanography; general ocean circulation; air-sea interaction and climate; global distributions of sea surface salinity; ocean observing systems.

Professors Bingham, Morrison, Moss

3. Nuclear and Particle Physics

Low energy few-nucleon systems; hypernuclear physics; quantum chromodynamics; string theory.

Professors Black, Gan, Olszewski

4. Physics Education

Multimedia-based techniques for teaching introductory physics; general physics pedagogy.

Professors Black, Moyer

B. Honors and Awards

1. **Professor Liping Gan** and her research collaborators at the Thomas Jefferson National Laboratory were cited in several national publications (*APS News*, *Physics News Update*) for their groundbreaking new precision measurement of the neutral pion lifetime. Because the pion lifetime is one of the few quantities that can be directly calculated in quantum chromodynamics (QCD), the measurement provides a good test of that fundamental theory.
2. **Professor John Morrison** currently chairs the Duke/UNC Oceanographic Consortium Policy Board.

C. Grants and Gifts (awarded 2007-2008)

Agency and Investigators	Title / Subject	Amount
National Science Foundation Timothy Black	<i>“Collaborative Research: Neutron Interferometry Experiments for Nuclear Physics”</i>	\$16,155 (supplement)
National Science Foundation Liping Gan	<i>“RUI: Test of Chiral Symmetry via the Primakoff Effect”</i>	\$62,485 (supplement)
National Science Foundation John Morrison (with 3 project co-PI’s)	<i>“Benthic Dinoflagellate Migration (BenDiM): Occurrence and Processes”</i>	\$243,000

D. Proposal Submissions (2007-2008)

1. **Bingham, F.** “*Development of ‘Methods in Marine Physics’ Course*”, curriculum development proposal submitted to UNCW Center for Teaching Excellence; (approved for \$1500 but subsequently withdrawn).
2. **Gan, L.** (with others) “*Collaborative Research on Fundamental Properties of Matter via Precision Methods*”, to NSF; amount requested \$4,427,210 (declined).
3. **Morrison, J.** (with L. Leonard and A. Shephard) “*MRI Acquisition of Autonomous Underwater Vehicles for the Study of the Effects of Episodic Forcing and Severe Storms in the South Atlantic Bight*”, to NSF; amount requested: \$1,975,278 (pending).
4. **Morrison, J.** (with L. Xie) “*The Dynamics of Multi-Scale Ocean Circulation in the Galápagos Marine Reserve Simulated by the Hybrid Coordinate Ocean Model (HYCOM)*”, to NSF; amount requested \$230,000 (pending).
5. **Morrison, J.** (with others) “*Biogeochemistry of the Cape Fear River Plume*”, CMS Pilot Project; amount requested \$44,024 (declined).
6. **Morrison, J.** (with others) “*Biogeochemical Processes in Water and Sediments of Estuarine Plumes, Southeastern United States*”, DUNCOC Cruise Proposal; amount requested ~\$60,000 (pending).
7. **Moyer, C.** (with J. Reeves, M. Posey, R. Shew, and J. Taggart) “*Response to 21st Century Initiative – Graduate Science Courses for Teachers*”, to North Carolina Department of Education; amount requested \$296,271 (declined).

E. Publications

1. **Alexanian, M.** (with S. Bose) “*Voigt spectral profiles in two-photon resonance fluorescence*”, Phys. Rev. **A76**: 055401 (2007).
2. **Gan, L.** (with F. Dohrmann, et. al.), “*Quasifree Λ , Σ^0 , and Σ^- electroproduction from $^{1,2}H$, $^{3,4}He$, and carbon*”, Phys. Rev. **C76**: 054004 (2007).
3. **Gan, L.** (with H. Mkrtychyan, et. al.), “*Transverse momentum dependence of semi-inclusive pion production*”, e-print arXiv:0709.3020 (Sep. 2007).
4. **Gan, L.** (with M.M. Dalton, et. al.), “*Electroproduction of η Mesons in the $S_{11}(1535)$ Resonance Region at High Momentum Transfer*”, e-print arXiv:0804.3509 (Apr. 2008).
5. **Morrison, J.** (with W.V. Sweet, et. al.) “*Water Mass Seasonal Variability in the Galápagos Archipelago*”, Deep-Sea Research I **54**(12), 2023 (2007).
6. **Morrison, J.** (with B. Subrahmanyam and K. Ueyoshi) “*Sensitivity of the Indian Ocean Circulation to Phytoplankton Forcing using an Ocean Model*”, Remote Sensing of Environment **112**(4), 1488 (2008).

F. Professional Talks Presented and Meetings Attended

Contributed Talks (including Poster Presentations as noted)

1. **Bingham, F.** “*Physical response of the coastal ocean to Hurricane Isabel near landfall*”, presentation to SABPOM 2007, Miami, FL, May 13-14, 2007 (not reported previously).
2. **Bingham, F.** “*Teaching Physics and History in a College Learning Community*” (with P. Townend and K. Moore), presentation to the National AAPT Meeting, UNC Greensboro, Jul. 27-Aug. 1, 2007.
3. **Bingham, F.** “*Physical response of the coastal ocean to Hurricanes Isabel and Ophelia*”, presentation to the 21st Annual Duke/UNC Oceanographic Consortium Symposium, Duke University Marine Laboratory, Durham, NC, Nov. 16-17, 2007.
4. **Bingham, F.** “*Seasonal Cycles of Mixed-layer Salinity in the North Pacific from Argo Data*”, poster presentation to the Ocean Sciences meeting, Orlando, FL, Mar. 3-7, 2008.
5. **Bingham, F.** “*M2 Barotropic Tidal Analysis of Onslow Bay, NC*” (with C. Canady, R. Herman, and H. Seim), presentation to SECOM 2008, Columbia, SC, May 12-13, 2008.
6. **Black, T.** “*Precision measurement of the n -³He spin dependent scattering length using neutron interferometry*” (with M.G. Huber, F.E. Wietfeldt, W.C. Chen, D. Hussey, M. Arif, D.A. Pushin, and L. Yang), presentation to the International Workshop on Particle Physics with Slow Neutrons, Institut Laue Langevin, Grenoble, France, May 29-31, 2008.
7. **Morrison, J.** “*Connectivity and Upwelling Dynamics*”, presentation to the NASA Environmental Forecasting and Biodiversity Symposium, University of Maryland, College Park, MD, May 2, 2008.
8. **Morrison, J.** “*Effects of Tropical Instability Waves on the Productivity of the Galápagos Marine Reserve*” (with others), poster presentation to the NASA Environmental Forecasting and Biodiversity Symposium, University of Maryland, College Park, MD, May 2, 2008.
9. **Morrison, J.** “*Water Mass Seasonal Variability in the Galápagos Archipelago*” (with others), poster presentation to the NASA Environmental Forecasting and Biodiversity Symposium, University of Maryland, College Park, MD, May 2, 2008.
10. **Morrison, J.** “*Simulation of the Ocean Circulation around the Galápagos Archipelago using a Hybrid Coordinate Ocean Model (HYCOM)*” (with Y. Liu and L. Xie), poster presentation to the NASA Environmental Forecasting and Biodiversity Symposium, University of Maryland, College Park, MD, May 2, 2008.

Invited Presentations

11. **Bingham, F.** “*Physical response of the coastal ocean to Hurricane Isabel near landfall*”, seminar presented to the Department of Marine, Earth and Atmospheric Sciences, North Carolina State University, Raleigh, NC, Jul. 2, 2007.
12. **Gan, L.** “*Test of Chiral Symmetries via Precision Measurements of Light Pseudoscalar Mesons*”, seminar presented at Peking University, Oct. 8, 2007, Beijing, China.
13. **Gan, L.** “*Test of Chiral Symmetries via Precision Measurements of Light Pseudoscalar Mesons*”, seminar presented at the Institute of High Energy Physics, Oct. 10, 2007, Beijing, China.
14. **Gan, L.** “*Test of Chiral Symmetries via Precision Measurements of Light Pseudoscalar Mesons*”, seminar presented at the China Institute of Atomic Energy, Oct. 12, 2007, Beijing, China.
15. **Gan, L.** “*Search for New Physics via η Rare Decay*”, presentation to the international workshop ‘Photon-Hadron Physics with the GlueX Detector’, Mar. 6-8, 2008, Newport News, VA.
16. **Gan, L.** “*Test QCD symmetries via precision measurement of the neutral pion lifetime*”, presentation to the APS Meeting in St. Louis, MO, Apr. 12-15, 2008.
17. **Morrison, J.** “*The Galápagos Ocean Lab*”, seminar presented to the Marine Science Program, University of South Carolina, Columbia, SC, Sep. 7, 2007.

Other Meetings Attended (Professional Development)

1. **Bingham, F.** attended the Duke-UNC Oceanography (D/UNCOC) Symposium, Nov. 17-18, 2006.
2. **Bingham, F.** attended CTE Workshops “*Working with Disruptive Students*”, Sep. 26, 2007; “*Teaching with Technology Tools – Smart Board*”, Oct. 12, 2007.
3. **Gan, L.** attended the “*New Faculty Workshop Reunion*”, at the American Center for Physics, College Park, MD, Jun. 25-27, 2007 [not reported previously].
4. **Gan, L.** attended the “*Professional Skills Development Workshop*”, preceding the APS Meeting in St. Louis, MO, Apr. 11, 2008.
5. **Morrison, J.** attended the meeting of the Council of Oceanographic Research and Education and Joint Oceanographic Institutes, Washington, NC, May 31-Jun. 1, 2007.
6. **Morrison, J.** attended the Southeast Coastal Ocean Observing Regional Association Meeting, Jacksonville, FL, Jun. 4-5, 2007.
7. **Morrison, J.** attended the Ocean Carbon and Biogeochemistry Symposium, Woods Hole Oceanographic Institution, Woods Hole, MA, Jul. 22-26, 2007.
8. **Morrison, J.** chaired the Duke/UNC Oceanographic Consortium Annual Meeting held in Beaufort, NC, Nov. 16-17, 2007.

9. **Morrison, J.** attended meetings of the Carolinas Marine Sciences Cooperative Institute in St. Petersburg, FL (Jan. 18, 2008), and in Beaufort, NC (Feb. 11, 2008).
10. **Morrison, J.** attended the NASA Carbon Cycles and Ecosystems Symposium, University of Maryland, College Park, MD, Apr. 27-29, 2008.
11. **Morrison, J.** was a participant on an NSF Sponsored Research Cruise, Gulf of Mexico, May 12-23, 2008.

G. Service

Especially noteworthy examples of service to the profession and the community for the 2007-2008 academic year include:

1. Professor **Moorad Alexanian** has reviewed manuscripts for the journals *Physical Review* (7), and *Physical Review Letters* (2), and serves on the UNCW Investigating Panel as a standby member on call by the Chancellor.
2. Professor **Fred Bingham** is graduate advisor to Marine Science Masters student Chris Canady, who successfully defended his thesis Oct. 19, 2007.
3. Professor **Fred Bingham** was a panel participant for “*Global Warming: What Do We Know? What Can We Do?*” held at the UNCW Warwick Center, June 9, 2007. He also serves on the UNCW Faculty Senate Budget Committee, the Synergy (UNCW Common Reading) Committee, the Center for Marine Science (CMS) Education Committee, and the CMS Postdoctoral Search Committee.
4. Professor **Fred Bingham** continues as Executive Committee member and webmaster for the American Geophysical Union Ocean Sciences Section (www.agu.org/sections/oceans/).
5. Professor **Fred Bingham** has reviewed proposals for NSF (1), Massachusetts Sea Grant (3), and the NOPP (National Oceanographic Partnership Program) Review Panel (6); he also reviewed manuscripts for the *Journal of Geophysical Research-Oceans* (1), *Geophysical Research Letters* (2), and *Journal of Physical Oceanography* (1).
6. Professor **Timothy Black** continues as coordinator for the *UNCW Summer Physics Program in Germany*, a study-abroad opportunity in cooperation with the University of Ulm. Due to financial limitations and other commitments, only one UNCW undergraduate participated in this year’s program.
7. Professor **Timothy Black**, along with Dr. C. Moyer, developed a rubric (*PHY 495 Assessment Tool*) for assessing student performance in the *PHY 495 Senior Seminar*.
8. Professor **Brian Davis** again represented the Physics Department at the College of Arts and Science’s 6th Annual College Day event (Oct. 27, 2007), where he presented a lecture titled “*The Principia*”.

9. Professor **Brian Davis** gave two presentations to the UNCW Lifelong Learning Society: “*The Stonehenge-area Prehistoric Landscape*” on Sep. 30, 2007; and “*The Avebury Tour*”, Nov. 19, 2007. He also participated in their Mid-Winter Weekend Feb. 15-17, 2008 at Sea Trail Resort, Sunset Beach, NC, where he answered questions and lectured on the topic “*On the Shoulders of Giants*”.
10. Professor **Liping Gan** serves as co-supervisor for the Ph. D. thesis research of Mr. XinJiao Li (Jun-Dec 2007), a visiting student from the China Institute of High Energy Physics, and Mr. Liyang Jiang (Mar. 2007- present), a visiting student from the China Institute of Atomic Energy.
11. Professor **Liping Gan** is a member of the Advisory Board to CSURF (Center for the Support of Undergraduate Research and Fellowship), and is involved in building an overseas Asian Studies program at UNCW.
12. Professor **Liping Gan** is a designated Spokesperson and chairs the Data Analysis Review Committee for the PrimEx Collaboration, Jefferson National Laboratory.
13. Professor **Liping Gan** assisted in Physics Department recruiting activities held on three separate occasions throughout the year: the *UNCW Majors Fair* (Oct. 3, 2007), *UNCW Seahawk Saturday* (Oct. 20, 2007), and *Spring Admission Visit Day* (Apr. 5, 2008).
14. Professor **John Morrison** is primary or co-advisor to numerous graduate students, including five doctoral candidates from NCSU and UNCW MS candidates Ned Durant (with M. Mallin), Michael Taylor (with F. Bingham), and Ebenezer Nyadjro. He also supports/mentors three postdoctoral students, two at NCSU and Wendy Woods at UNCW. Mr. Durant successfully defended his thesis in May, 2008.
15. Professor **John Morrison** chaired the Physics Faculty Search Committee that produced the hire of new assistant professor Dylan McNamara; he also serves on the UNCW Marine Science Strategic Planning Committee, and is a member of the UNCW Athletic Council.
16. Professor **John Morrison** is a member of various national and regional research organizations, including the Ocean Color Research Team, the NASA Biodiversity Research Team, the Pan Ocean Remote Sensing Conferences (PORSEC) Scientific Organizing Committee, and UNOLS Regional Class Advisory Committee. He serves on the Executive Committees of PORSEC, the Southeast Coastal Ocean Observing System (SE-COOS) Planning Committee, and SURA’s Southeastern Coastal Ocean Observing Program (SCOOP). He is also the UNCW representative to the Duke/UNC Oceanographic Consortium Program Committee, the Consortium for Ocean Research and Education, the Joint Oceanographic Institutions, Inc., the Consortium for Ocean Leadership, the Southeast Coastal Ocean Observing Regional Association, and the Planning Committee for Carolinas Marine Sciences Cooperative Institute (CMSCI).
17. Professor **John Morrison** is an active participant in the Southeast Center for Excellence in Ocean Science Education (<http://www.scseagrant.org/se-cosee/>), an effort to enhance ocean-learning opportunities for all age levels by incorporating the work of researchers into high-quality educational products.

18. Professor **Curt Moyer** prepared and presented “*Program Assessment, Physics & Physical Oceanography*” to CTE workshop on assessment, October 18, 2007. He also authored, with Dr. Timothy Black, a rubric for assessing student performance in the *PHY 495 Senior Seminar*.
19. Professor **Curt Moyer** served as a judge for the Science Fair held at the MCS Noble Middle School, Jan. 24, 2008.
20. Professor **Curt Moyer** serves on several university committees: the Center for Marine Science (CMS) Internal Advisory Committee, the J. Marshall Crews Scholarship Selection Committee, the Engineering Program Task Force, and the newly-constituted Export Control Advisory Committee.

IV. ACADEMIC ENRICHMENT & SUPPORT PROGRAMS

A. Course Offerings and Enrollments

Summer 2007	Instructor	Enrollment
PHY 101 Elementary College Physics	Herman, R.	73
PHY 102 Elementary College Physics	Olszewski, E.	58
PHY 201 General Physics	Olszewski, E.	53
PHY 202 General Physics	Black, T.	34
Fall 2007		
PHY 101 Elementary College Physics	Olszewski, E.	79
PHY 101 Elementary College Physics	Olszewski, E.	94
PHY 101 Elementary College Physics	Moyer, C.	71
PHY 103 Great Ideas in Physics	Morrison, J.	23
PHY 105 Introductory Physics	Bingham, F.	18
PHY 201 General Physics	Gan, L.	24
PHY 201 General Physics	Davis, B.	45
PHY 201 General Physics-Honors	Black, T.	6
PHY 260 Introduction to Astronomy	Davis, B.	30
PHY 292 Understanding the Universe	Black, T.	25
PHY 311 Mathematical Physics	Alexanian, M.	16
PHY 321 Classical Dynamics	Herman, R.	19
PHY 335 Modern Physics	Black, T.	20
PHY 400 Advanced Lab	Black, T.	3
PHY 411 Electricity & Magnetism	Alexanian, M	5
PHY 444 Quantum Theory	Gan, L.	6
PHY 499 Honors Work in Physics	Gan, L.	1
PHY 576 CHM & PHY Analysis of Seawater	Bingham/Kieber	2
PHY 599 Thesis	Morrison, J.	1
Spring 2008		
PHY 102 Elementary College Physics	Olszewski, E.	82
PHY 102 Elementary College Physics	Olszewski, E.	86
PHY 102 Elementary College Physics	Moyer, C.	36
PHY 105 Introductory Physics	Bingham, F.	33
PHY 111 Archaeoastronomy	Davis, B.	22
PHY 202 General Physics	Gan, L.	13
PHY 202 General Physics	Black, T.	28
PHY 260 Introduction to Astronomy	Davis, B.	44

PHY 300 Analog Circuits	Black, T.	15
PHY 322 Classical Dynamics II	Alexanian, M.	11
PHY 412 Electricity & Magnetism II	Alexanian, M.	6
PHY 420 Global Climate Change	Bingham/Tobias	1
PHY 455 Thermal Physics	Gan, L.	7
PHY 475 Physical Oceanography	Morrison, J	5
PHY 490 Special Topics – Relativity	Herman, R.	6
PHY 495 Physics Seminar	Herman, R.	1
PHY 495 Physics Seminar	Davis, B.	1
PHY 495 Physics Seminar	Gan, L.	1
PHY 499 Honors Work in Physics	Gan, L.	1
PHY 499 Honors Work in Physics	Black, T.	1
PHY 575 Physical Oceanography	Morrison, J	7
PHY 592 Advanced Physics	Moyer, C.	6
PHY 599 Thesis	Morrison, J.	1

B. Innovative Curricular Initiatives

Professor **Timothy Black** developed a Learning Community Course “*Understanding the Universe*”, which he taught as PHY 292 in the Fall ’07 term. A radical departure from the usual survey course, *Understanding the Universe* portrays physics as the queen of the sciences, and goes on to show how physics concepts underpin the related disciplines of chemistry and biology. One hopes that through offerings such as this, students might gain an appreciation for physics that both enlightens their world view and kindles their interest in the field. Basic Studies Physical Science credit was awarded to those successfully completing this course.

Professor **Edward Olszewski** continues to refine the laboratory exercises for the introductory algebra-based physics sequence, PHY 101-102, and introduced one new experiment on simple harmonic motion for Fall ‘07.

Professor **Curt Moyer** developed the first physics offering in the SCI Course Development Initiative, a collaborative effort between the Watson School and CAS to offer graduate level survey science courses targeted to middle and high school science teachers. In Spring ’08 with the able assistance of Master Teacher Mr. Gary Cavender, he taught *Advanced General Physics* to six graduate students: of these, two were practicing teachers while the remainder are enrolled in the Watson School’s Master of Arts in Teaching (M.A.T.) program.

C. Research Opportunities for Undergraduates

The following undergraduate research projects were active during the 2007-2008 academic year:

1. During June and July 2007, UNCW physics majors *Matthew Reece* and *Dustin Woolford* assisted Professor Liping Gan with her research at Jefferson National Laboratory (JLab), developing a low energy recoil detector for experiments testing predictions of Quantum Chromodynamics. The students were supported by research grants from NSF and Jefferson Lab. The JLab summer experience is a unique research opportunity for undergraduates that has involved fifteen UNCW students since 2001.

2. Physics major *Robert Sizemore* spent several weeks during Summer 2007 at the National Institute of Standards and Technology (NIST) assisting Professor Timothy Black on a project to measure with high precision the spin-dependent scattering lengths of the $n+{}^3\text{He}$ system using neutron interferometry. Heretofore inconsistent experimental results that lie outside the bounds predicted by theory make this and related systems especially interesting for further study. The work is supported by NSF.

D. Physics Department Colloquia

Date	Speaker/Affiliation	Title
August 24	Dr. Rene Lopez, UNC Chapel Hill	<i>Metal-semiconductor phase transition in nanoscale VO₂</i>
September 7	Dr. Steffan Bass, Duke University	<i>The Quest for the Quark-Gluon-Plasma</i>
September 28	Dr. Reyco Henning, UNC Chapel Hill	<i>Quest for the nature of the neutrino</i>
October 19	Dr. David Brown, NC State University	<i>Challenges and Progress in Numerical Relativity</i>
November 9	Dr. S. P. Reynolds, NC State University	<i>Supernova Remnants, Cosmic Rays, and Cosmology</i>
November 30	Dr. Thomas C. Mehen, Duke University	<i>Effective Field Theories for Strongly Interacting Particles from Charmed Hadrons to Cold Atoms</i>
February 22	Dr. Brett Altschul, University of South Carolina	<i>Do Photons Have a Mass or Charge?</i>
March 14	Dr. Paul Huffman, NC State University	<i>The Neutron's 15 Minutes of Fame</i>
April 10	Dr. Dylan McNamara, Duke University	<i>Complexity at the Coastline</i>
April 11	Dr. Albert Young, NC State University	<i>Neutrinoless Double Beta-Decay: The Majorana Project</i>
April 17	Dr. John E. Thomas	<i>Bowls made of Laser Light to Corral Ultracold Atoms</i>
April 18	Dr. John E. Thomas	<i>Is a Strongly Interacting Fermi Gas a Perfect Fluid?</i>
April 22	Dr. Francisco Beron-Vera, University of Miami	<i>Zonal jets as transport barriers in geophysical flows</i>
April 24	Dr. Renato Castelao, Rutgers University	<i>Cross-isobath transport in the coastal ocean</i>

E. SPS/ΣΠΣ Activities

On April 17, 2008, the UNCW chapter of Sigma Pi Sigma, the national physics honor society, admitted to membership six undergraduate students: *Adam Kyle Barefoot, Kenneth Daniel Ells, Graham Lucas Medlin, Erik Hall Minges, Thomas Rodney Shafer, and Robert Kelly Sizemore*. The induction ceremony followed a public lecture by Dr. John Thomas, Fritz London Distinguished Professor of Physics at Duke University, who spoke about “*Bowls made of Laser Light to Corral Ultracold Atoms*”. Refreshments (pizza and soda) were served during a social hour following the ceremony.

Under the leadership of chapter president *David Bracey*, the UNCW chapter of the Society of Physics Students (SPS) was very active during Fall '07, with frequent meetings and special activities (T-shirt orders, tutoring, DeLoach cleanup). Unfortunately, this burst of exuberance was not sustained into the Spring '08 term.

V. STUDENTS**A. Enrollment Statistics****Undergraduate Physics Majors**

Year	Freshman (Fall)	Sophomores (Fall)	Juniors (Fall)	Seniors (Fall)	Second Majors (Fall)	Fall Total	Annual Graduates	
							B.A. Degrees	B.S. Degrees
1994-1995	0	4	9	12	N/A	25	1	4
1995-1996	1	4	7	8	N/A	20	3	3
1996-1997	0	12	5	10	N/A	27	5	6
1997-1998	0	7	11	11	1	29	5	3
1998-1999	0	3	5	15	2	23	6	3
1999-2000	0	4	1	12	1	17	3	5
2000-2001	0	4	3	6	1	13	3	2
2001-2002	0	5	2	5	2	12	2	2
2002-2003	0	2	10	4	4	16	3	1
2003-2004	0	9	5	9	1	23	3	4
2004-2005	0	6	8	8	2	22	0	4

2005-2006	1	1	4	11	1	16	1	6
2006-2007	0	8	7	7	1	22	1	5
2007-2008	1	6	15	10	6	32	3	3

B. Degrees Awarded

December, 2007

Bachelor of Arts:

Julie Lynn Padgett

May, 2008

Bachelor of Science:

John Jacob Burkhardt
Colin Wright Kreutzer
Matthew Adam Reece

Bachelor of Arts

Adam Rockwell Pflaumer
Dustin Cole Woolford

C. Honors, Awards, and Scholarships

Hildelisa Hernandez Departmental Award in Physics: *Thomas Rodney Shafer*

The Hernandez award, named for retired Professor Emeritus Hildelisa Hernandez, recognizes outstanding academic achievement of a rising senior who is seeking the B.S. degree in physics. The award carries a stipend of \$500 to help defray educational expenses incurred at UNCW.

Tom compiled an overall GPA = 3.987 and a perfect physics GPA = 4.000. He is also one of six undergraduates inducted into Sigma Pi Sigma for 2008. Tom is expected to graduate in May, 2008 with a B.S. degree in Physics.

Marvin K. Moss Scholarships: *Matthew Adam Reece and Kenneth Daniel Ells*

Newly-established for 2007-08, this annual scholarship is named for retiring Professor Marvin Moss (now Professor Emeritus) and is open to students in the physical sciences (Chemistry, Mathematics, and Physics), with preference given to qualifying physics majors. Selection criteria are financial need followed by strong and demonstrated academic performance.

Both outstanding students, physics majors Matt Reece and Ken Ells are highly deserving of this recognition.

Walter Schmid Award: *Colin Wright Kreutzer*

The Schmid Award is presented to a graduating senior who, in the opinion of the physics faculty, shows great potential for contributing to the fields of theoretical or applied physics. The award consists of a plaque inscribed with the winner's name, and a cash prize.

Colin compiled an overall GPA = 3.661 and a physics GPA = 3.607, enabling him to graduate with the distinction *cum laude*. He also completed a minor in Mathematics with a 3.923 grade point average, and is a previous Hernandez Award winner.

Jefferson Lab Summer Fellowships: *Erik Hall Minges*

Erik was selected by faculty member Professor Liping Gan to assist this summer at the Thomas Jefferson National Laboratory, Newport News, VA, in developing a low energy recoil detector for experiments testing predictions of QCD (Quantum Chromodynamics). Students in the program are supported by research grants from NSF and Jefferson Lab.

Bookstore Scholarship Award Winners: *award information was not available at press time*