Curriculum Vitae

Debora Mary Katz United States Naval Academy Physics Department, Stop 9C Annapolis MD 21402 <u>dkatz@usna.edu</u> 410-293-6656

Citizenship: United States

Education:

Doctor of Philosophy in Astrophysics (1995), University of Minnesota. GPA: 3.9/4

Master of Science in Physics (1990), University of California, Irvine. GPA: 3.6/4.

Bachelor of Arts with high honors in Physics (1988), Brandeis University. GPA: 3.5/4.

Myers-Briggs Type: ENTJ (Extraversion, Intuition, Thinking, Judging). "ENTJs typically are logical, analytical, and objectively critical. They like long-range planning and strategic thinking. People can count on them to take charge and make sure things are done competently."

Employment: 1995-Present: US Naval Academy, Physics Department

- 2008-Present: Full Professor
- 2000-2008: Associate Professor
- 1995-2000: Assistant Professor

Service:

- Member of the USNA **Admissions** committee—responsible, along with other members, for evaluating student applications and making recommendations to the Dean of Admissions (Present).
- Senior physics major advisor—responsible for ensuring physics majors register for the courses they need to graduate with a complete physics major, for leading departmental advisors, advising high-achieving students, and monitoring the progress of at-risk students (Present).
- Administrator of physics validation exam—responsible for all aspects of administrating a physics placement examination for roughly 300 plebes who may be eligible to place out of the required physics course (2013-present).
- Member of the physics department **Faculty Performance** committee—responsible, along with three others, for reviewing colleague performance and recommending

pay increases. Several *ad hoc* duties included providing mentorship to individual members of the physics faculty, evaluating and improving our committee's process and providing advice on faculty behavior (2009-2014).

- Division of Math and Science representative to **faculty senate**—attend regular senate meetings, keep division members informed of current events, present sentiments of the division to the senate and vote on motions (Present).
- Chair Senate Finance committee—worked with administration to improve financial matters. Worked on faculty salary pay cap, prepared to report to the Middle States Visiting Accreditation team and met with the Middle States Visiting committee to discuss their concerns and questions. (2015-2016).
- **Representative to Middle States Visiting Team** (2016)
- Chair Michelson Lecture committee—responsible for identifying and inviting a terrific speaker to give the Michelson lecture, for managing the budget, advertising and scheduling the events, hosting a dinner, hosting a reception, purchasing gifts for the lecturer, working with security to ensure the lecturer and his driver are admitted onto the yard, and preparing a report for subsequent committees (2014).
- **Chair Senate Facilities** committee—worked with administration to improve facilities on campus. Primarily worked on improving parking (2009-2012).
- **Physics Core Course Coordinator** for the approximately 1100-youngster physics course—responsible for producing the syllabus, final exam, assessment tools and assessment report. Also responsible for scheduling laboratories and large-scale, lecture demonstrations. Advise and consult with other instructors. Provide EI and advice to any number of the students in the core course (2010-2012, 2013-2015).
- Chair Division II Trident Scholar subcommittee—responsible for approving student applications for a year-long scholarship to pursue research at USNA (2005-2008).
- Chair International Cultural Opportunities subcommittee—responsible for approving student and faculty applications for a USNA study abroad program (2005-2009).
- Chair Faculty-Midshipmen Relations Senate committee—responsible for maintaining an open dialogue between students and faculty (2005-2009).

- Member **Faculty Senate**—main purpose is to provide advice and recommendations to the administration (2000-2012).
- Facilitator **Capstone Character Excellence Seminars**—facilitate discussion among students about matters of moral character (occasional).
- Speaker—give presentations to the general public about physics and astronomy (occasional).
- Physics Capstone Advisor (ongoing as needed).
- Member Mathematics and Science Division Trident Scholar committee (2005-2006).
- Chair SP211 Classroom Demonstration committee—developed small-scale demonstrations of mechanics for our core physics class (2005-2007).
- Chair Middle States Accreditation subcommittee on Faculty Enhancement (2003-2004).
- Colloquium organizer—Invited and hosted Dr. Mario Livio, the Head of the New Institute Science Division at the Hubble Space Telescope Science Institute. His colloquium based on his book *The Golden Ratio* by was open to both the USNA community and the St. John's College community (2004).
- Voting Member of Maryland Space Grant Consortium (2001-2002).
- Educator, Anne Arundel Public Schools (AP) physics laboratories (1998-2001).
- Educator, Anne Arundel Public Schools gifted and talented science program (1998).
- Mentor to local high school students in Physics and Astronomy (1997-2003).
- Keynote speaker for Girl Scout visit to US Naval Academy (1997).
- Consultant—Developed and Implemented project for Banneker Program for underprivileged youth (1997).
- Judge, Stevensville School Science Fair (1997).
- Science Advisor, Maryland Cooperative Learning Project (1995-1996).

Courses Taught at USNA:

- SP211 General Physics I (Mechanics)
- SP212 General Physics II (Electricity and Magnetism)
- SP310 Astronomy
- SP327 Twentieth Century Physics
- SP445 Stellar Astrophysics
- SP446 Astrophysics II
- SP482 Physics in Fiction
- Student Research Projects

As a member of the physics department for over 20 years, I have primarily taught our core courses (SP211 and SP212). I know that not every student is a great test taker, so for all my years teaching this course, I have replaced one of my tests with a term project. The project asks students to write a *case study* in which they apply the physics they learn in my class to their own personal interests, such as sports, movies or military applications.

The core course is typically taken by youngsters, but I have taught the physics core course to plebes, who are typically advanced students, as well as to repeaters: youngsters who failed the core course the previous semester. In addition to teaching the core physics courses, I have taught astronomy, astrophysics and twentieth century physics. So I have had experience with students who have a wide range of prior academic experience and interests. I have used a number of different pedagogies in my classroom to address the diverse student population at USNA.

Nominated by the physics department for the Benac Teaching award (Fall 2016)

Scholarship and Scholarly Activity:

- KATZ, Debora M. *Physics for Scientists and Engineers: Foundations and Connections* (2016) published by Cengage Learning. **1455** pp.
- KATZ, Debora M., Professor, "Physics for Scientists and Engineers: Foundations and Connections—A New Approach in Applying Physics Education Research (PER)." Presentation at 2015 Winter Meeting of the American Association of Physics Teachers, New Orleans, LA, 10JAN16.
- KATZ, Debora M., Professor, "Using Case Studies in a Flipped Classroom." Presentation at 2015 Winter Meeting of the American Association of Physics Teachers, New Orleans, LA, 10JAN16.

- KATZ, Debora M., Professor, "How I Came to Write a Calculus-Based Physics Textbook, and What I Learned about Students' Minds Along the Way." Talk at USNA, Annapolis, MD, 24FEB16.
- KATZ, Debora M., Professor, "How I Came to Write a Calculus-Based Physics Textbook, and What I Learned about Students' Minds Along the Way." Invited talk at the University of Minnesota, Duluth MN, 09NOV15.
- KATZ, Debora M., Professor, "How I Came to Write a Calculus-Based Physics Textbook, and What I Learned about Students' Minds Along the Way." Invited talk at Pennsylvania State University, State College, PA, 26OCT15.
- KATZ, Debora M., Professor, "Create Your New Year's Teaching Resolution: Engaging and Motivating Students in Introductory Physics" 2014 Winter Meeting of the American Association of Physics Teachers, San Diego, CA, 04JAN15.
- KATZ, Debora M., Professor, "Engaging Today's Physics Students" 2015 Engagement Summit of Cengage Learning, San Francisco, CA, 06JAN15.
- KATZ, Debora M., Professor, "How I Came to Write a Calculus-Based Physics Textbook, and What I Learned about Students' Minds Along the Way." Invited talk at Marquette University, Milwaukee, WI, 16FEB15.
- KATZ, Debora M., Professor, "Engaging and Motivating Introductory Physics Students." Invited talk at the University of Wisconsin, Madison, WI, 16FEB15.
- KATZ, Debora M., Professor, "How I Came to Write a Calculus-Based Physics Textbook, and What I Learned about Students' Minds Along the Way." Featured Speaker at Texas Community College Teachers Association's 68th annual meeting, Dallas, TX, 20FEB15.
- KATZ, *Hanging an Airplane: A Case Study in Static Equilibrium* (2009) The Physics Teacher **47** pp.516-519
- Kassim, Lazio, Erickson, Perley, Cotton, Greiesen, Cohen, Hicks, Schmitt and KATZ: *The* 74 MHz *System on the Very Large Array* (2007) The Astrophysical Journal Supplement Series **172** pp. 686-719
- Young, Rudnick, KATZ, DeLaney, Kassim and Mikishima: *Canonical Particle Acceleration in FRI Radio Galaxies* (2005) The Astrophysical Journal **626** pp. 748-766
- Smallwood, KATZ and Richmond: *Near Earth Objects: A brief review and a student project* (2003) American Journal of Physics **72** pp. 264-271

- Hubbard, Kirsten and KATZ, Debora M., *The Physics Toolbox* (2002) **384** pp. published by Thomson
- Young, Rudnick, KATZ-Stone and O'Donoghue: *Electron Population Aging Models for Wide-Angle Tails* (2002) New Astronomy Reviews **46** pp. 105-107
- Biermann, KATZ and Aho: *Wien's Law and the Temperature of the Sun* (2002) The Physics Teacher **40** pp. 398-400
- KATZ-Stone, Kassim, Lazio and O'Donnell: Spatial Variations of the Synchrotron Spectrum within Tycho's Supernova Remnant (3C 10): A Spectral Tomography Analysis of Radio Observations at 20 and 90 Centimeter Wavelengths (2000) The Astrophysics Journal **529** pp. 453-462
- KATZ-Stone, Rudnick, Butenhoff and O'Donoghue: *Coaxial Jets and Sheaths in Wide-Angle-Tailed Radio Galaxies* (1999) The Astrophysics Journal **516** pp. 716-728
- KATZ-Stone and Rudnick: *An Analysis of the Synchrotron Spectrum in the Fanaroff-Riley Type I Galaxy* 3C 449 (1997) The Astrophysics Journal **488** pp. 146-154
- KATZ-Stone and Rudnick: A Spectral Analysis of Two Compact Steep-Spectrum Sources (1997) The Astrophysics Journal **479** pp. 258-267
- KATZ-Stone and Rudnick: *Isolating the Physical Parameters of Synchrotron Sources* (1994) The Astrophysics Journal **426** pp. 116-122
- Rudnick, KATZ-Stone and Anderson: *Do Relativistic Electrons Either Gain or Lose Energy, Outside of Extragalactic Nuclei* (1994) The Astrophysics Journal Supplement Series **90** pp. 955-958
- KATZ-Stone, Rudnick and Anderson: *Determining the Shape of Spectra in Extended Radio Sources* (1993) The Astrophysics Journal **407** pp. 549-555

Professional Development:

- Attend winter and summer meetings of the American Association of Physics when possible.
- Lead workshops at USNA on Teaching with Case Studies in Physics (on a number of occasions since 2000).
- Only member of the physics department to use a Lecture Capture System to record my classroom activities for use by my students and for students in other sections of the same class (ongoing since 2008).

- Worked with colleagues to develop a curriculum for the Astrophysics Track (SP310, SP445, SP446 and SP447) in the Physics Major.
- Attended Workshop in Buffalo, NY (2000) on Teaching Case Studies in Science. Funded by Center for Teaching and Learning.
- Attended Writing Across the Curriculum Workshop. (2000)
- Won a National Science Foundation (NSF) travel award to attend "Conservation Laws First Conference" sponsored by Prof. Eric Mazur at Harvard University. (1998)
- Won CDP grant to develop multimedia peer instruction materials.
- Led military instructors and other civilian professors in developing innovative teaching curriculum.