

Tim Halpin-Healy

Biographical Sketch

Address: Physics Department, Barnard College, Columbia University
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<http://www.phys.barnard.edu/~healy/>

Education: Harvard University (9/82-8/87) Ph.D., Physics.
 Thesis: *Domain Wall Phases and Asymptotic Critical Wetting*
 (Advisors: Bert Halperin, Mehran Kardar, Edouard Brézin)
 Oral Exam Topic: “Critical Wetting in Binary Fluid Mixtures”
 Course Work: statistical mechanics, critical phenomena, phase transitions,
 field theory, renormalization group, solid-state, and astrophysics.

École Normale Supérieure, Paris (9/86-6/87) Predoctoral Fellow,
 Bourse Chateaubriand, French Government Scholarship.

Princeton University (9/77-6/81) A.B. *cum laude*, Physics.
Kusaka Memorial Prize: Excellence & Promise in Independent Research.

Senior Thesis Project:

Are Glueballs Found?- a strong coupling expansion & Monte Carlo
 calculation of the glueball mass in SU(2) lattice gauge theory.

Advisor: David Gross

Junior Theses:

i) *The Road to an Exotic World*- a study of the group theoretical methods
 employed in QCD. Advisor: David Gross

ii) *The Discovery of Quantized Vortex Rings*- an analysis of elementary
 excitations in superfluid helium. Advisor: Keith DeConde

Work: Ann Whitney Olin Professor of Physics, Barnard College (2004-9)
 Full (1998), Assoc. (1994), Asst. (1989) Professor- Barnard, Columbia.
Independent College Fund of New York Teaching Award (1995).
 ITP Postdoctoral Fellow- Physics Department, University of Maryland-
 College Park (9/87-8/89).
 Enseignant d'Informatique- Dept. de Physique, École Normale Supérieure,
 Paris (Spring '87) supervised advanced undergraduate students in
 research level computational physics projects.
 Harvard University Teaching Fellow- Phys 295 (grad SM), 232, 12, 1.
 Harvard Summer School Section Leader- Physics S1 (summers '83-85,87)
Certificate of Distinction in Teaching: awarded by Harvard-Danforth
 Center for excellence in pedagogy & contributions to
 undergraduate education.
 Harvard High Energy Physics Lab- Proton Decay Expt (summer '82).
 Brookhaven National Lab: Solid State Theory Group (summers '80,'81).

Tim Halpin-Healy

Research & Scholarship

I. Publications

[refereed journals]

Papers, prior to Barnard:

1. *Krypton on Graphite and the Striped Helical Potts Model*, THH & M. Kardar, Phys. Rev. B**31**,1664 (1985). #Rapid Communication
2. *Observation of Striped Phases in Adsorbed Helium Monolayers*, THH & M. Kardar, Phys. Rev. B**34**, 318 (1986).
3. *Low-Temperature Phases of Xenon on Graphite*, THH & M. Kardar, Phys. Rev. B**34**, 6557 (1986). #Rapid Communication
4. *Critical Wetting in Three Dimensions: A Ginzburg Criterion*, THH & E. Brézin, Phys. Rev. Lett. **58**, 1220 (1987).
5. *Scaling Functions for 3d Critical Wetting*, E. Brézin & THH, J. de Physique **48**, 757 (1987).
6. *Diverse Manifolds in Random Media*, THH, Phys. Rev. Lett. **62**, 442 (1989).
7. *Growth in a Restricted Solid-on-Solid Model*, THH, Phys. Rev. Lett. **63**, 917C (1989).
8. *Effective Exponents for Critical Wetting- Approach to the Asymptotic Region*, THH, Phys. Rev. B**40**, 772 (1989).

Barnard, pre-tenure:

1. *Disorder-Induced Roughening of Diverse Manifolds*, THH, Phys. Rev. A**42**, 711 (1990).
2. *2d Critical Wetting Revisited*, M. Zapotocky* & THH, Physica A**177**, 453 (1991).
3. *Directed Polymers in Random Media: Probability Distributions*, THH, Phys. Rev. A**44**, 3415 (1991). #Rapid Communication
4. *Depinning by Quenched Randomness*, M. Zapotocky* & THH, Phys. Rev. Lett. **67**, 3463C (1991).
5. *Amplitude Universality for Driven Interfaces & DPRM*, J. Krug, P. Meakin, and THH, Phys. Rev. A**45**, 638 (1992).
6. *On the Kinetic Roughening of Vicinal Surfaces*, THH & A. Assdah,* Phys. Rev. A**46**, 3527 (1992).
7. *Discerning Differences Among Anomalously Wandering Directed Polymers*, N.-N. Pang* & THH, Phys. Rev. E**47**, 784 (1993). #Rapid Communication
8. *Disturbing the Random Energy Landscape*, THH & D. Herbert,** Phys. Rev. E**48**, 1617 (1993). #Rapid Communication
9. *Directed Polymers w/ Columnar Disorder*, J. Krug & THH, J. Phys. I France **3**, 2179 (1993).
10. *Competing Effects of Point vs. Columnar Defects on the Roughening of Directed Polymers*, I. Arsenin,* THH & J. Krug, Phys. Rev. E**49**, 3561 (1994). #RC

& following tenure considerations:

11. *Concise Calculation of the Edwards-Wilkinson Probability Functional*, Y.-K. Yu,* N.-N. Pang,* & THH, Phys. Rev. E**50**, 5111 (1994).
12. *Kinetic Roughening Phenomena, Stochastic Growth, Directed Polymers & all that*, THH & Y.-C. Zhang, Phys. Rep. **254**, 215-415 (1995). >1000 citations
13. *Interfacial Kinetic Roughening w/ Correlated Noise*, N.-N. Pang,* Y.K. Yu* & THH, Phys. Rev. E**52**, 3224 (1995).

14. *Chemical Wave Refraction Phenomena*, S.-C. Hwang** & THH, Phys. Rev. **E54**, 3009 (1996).
 15. *DPRM Ground-State Energy Anisotropy*, J. Krug & THH, J.-Phys. A-Gen. Math. **31**, 5939 (1998).
 16. *Directed Polymers vs. Directed Percolation*, Phys. Rev. **E58**, 4096(1998). #RC
 17. *Tuning the Trip to KPZ Asymptopia*, THH & Rocky Novoseller,** cond-mat/0004251
 18. *Dynamics of Multidimensional Secession: Fixed Points & Ideological Condensation*, A. Soulier* & THH, Phys. Rev. Lett. **90**, 258103 (2003). Cover article, 27 June 2003.
 19. *Divergent Tendencies in Multidimensional Secession*, A. Soulier,* N. Arkus,** and THH, Braz. J. Phys. **33**, 611 (2003).
 20. *2+1 Directed Polymer in a Random Medium: Scaling Phenomena and Universal Distributions*, THH, Phys. Rev. Lett. **109**, 170602 (2012).
 21. *Extremal Paths, Stochastic Heat Equation & the 3d KPZ Universality Class*, THH, Phys. Rev. **E88**, 042118 (2013); **PRE88**, 069903E (2013).
 22. *Universal Aspects of Curved, Flat, and Stationary-State KPZ Statistics*, THH & Luna Lin**, Phys. Rev. **E89**, 010103RC (2014); #Editor's Suggestion; #RC
 23. *Universal Correlators & Distributions as Experimental Signatures of 2+1 KPZ Growth*, THH & G. Palasantzas, EPL **105**, 50001 (2014). #Editor's Choice
 24. *A KPZ Cocktail: Shaken, Not Stirred...*, THH & K. Takeuchi, J. Stat. Phys. **160**, 794 (2015). #Earmarked, Science Citation Index: Highly-Cited Paper
- *CU grad student, **Barnard College undergraduate coauthor

Total Citation Count: >2000 (7/1/17, Web of Science- SCI).

II. Grants

1. NSF DMR-0434500 (\$93K, 2004-09) Nonequilibrium Statistical Mechanics: Fragmentation, Dispersal & Coalescence;
research, undergraduate summer stipends
2. NSF DMR-0083204 (\$78K, 2000-03) Extremal Paths in Complex Systems;
research, undergraduate summer stipends
3. NSF CCLI (\$65K, w/ Les Lessinger, 2000-03) *materials science pedagogy*
4. ITP Scholar- UCSB, Theoretical Physics (\$7K, 1998-2000) *travel, research*
5. NATO Collaborative Research Grant (\$6K, 1997-98) *international research*
6. NSF DMR-9528071 (\$81K, 1995-1999) Diverse Manifolds in Random Media
research; undergraduate summer stipends
7. NSF DMR-9211240 (\$54K, 1992-95) Roughened Manifolds in Ill-Condensed Matter
research, undergraduate summer stipends
8. PRF-AC (\$40K, 1991-92) *research, graduate student support*
9. NSF UCCD (\$48K, 1991-92) The Early Universe: A Means of Securing the Pipeline
departmental mini-computing facility
10. PRF-GB starter grant (\$18K, 1990-91) *research, undergraduate summer stipends*
11. PEW Charitable Trust (\$10K, 1991) *Numerical Recipes course*
12. Research Corporation (\$21K, 1989-92) *undergraduate research*

Plus, heavy involvement in Barnard College grants-

Luce Foundation- *CBL Scholars Program* (\$200K, 2016-18)

NSF DUE-9850035 (\$200K, 1998-2001) *Science Education for Tomorrow*

As contributor to multiple manifestations of the College's Hughes grant, whether it be summer research mentoring, teaching in Barnard-LaGuardia Intercollegiate Program, or organizing a *Mathematical Toolbox* course.

III. Selected Colloquia, Seminars, Talks, etc...

- A KPZ Playbook*, KITP-Santa Barbara, CA, 12 January 2016
- Universal Correlators & Distributions As Signatures of 2+1 KPZ Stochastic Growth*, Tata Institute for Fundamental Research, Bangalore, India, 5 November 2015
- Yukawa Institute for Theoretical Physics, Kyoto Japan, 22 August 2014.
- Rutgers Statistical Mechanics Meeting, 12 May 2014.
- 25 Years of KPZ*, Rutgers Statistical Mechanics Meeting, 9 May 2011.
- The Dynamics of Conformity & Dissent*, Seminar- Center for Studies in Physics & Biology, Rockefeller University, 13 April 2010.
- The Dynamics of Conformity & Dissent*, Dynamics Days- Conference on Chaos & Nonlinear Dynamics, Boston, MA 4 January 2007.
- The Dynamics of Conformity & Dissent*, Séminaire- Département de Physique, Ecole Normale Supérieure, Paris, France, 17 March 2005.
- The Dynamics of Conformity & Dissent*, University of Pennsylvania, Physics Department, MRSEC Seminar, 11 March 2005.
- The Dynamics of Conformity & Dissent*, Collective Dynamics Group- Sociology Department, Columbia University, 4 Feb 2005.
- The Dynamics of Conformity & Dissent*, Brookhaven National Laboratory, Physics Colloquium, 4 January 2005.
- The Dynamics of Conformity & Dissent*, Columbia University, Physics Department Colloquium, 13 December 2004.
- The Dynamics of Conformity & Dissent*, University of Maryland-College Park, Physics Department Seminar, 11 November 2004.
- The Dynamics of Conformity & Dissent*, Service de Physique Théorique, CEA-Saclay, Gif-sur-Yvette (Paris), France, Theory Seminar, 22 June 2004.
- The Dynamics of Conformity & Dissent*, Physics Department Seminar, University of Amsterdam, Netherlands, 17 June 2004.
- Within the Realm of KPZ*, Instituut-Lorentz, University of Leiden, Netherlands, 14 June
Collective Aspects of Stochastic Non-Equilibrium Phenomena at Surfaces & Interfaces; opening conference talk.
- The Dynamics of Conformity & Dissent*, Theory Seminar, Neils Bohr Institute, NORDITA, Copenhagen, Denmark, 9 June 2004.
- The Dynamics of Conformity & Dissent*, Applied Maths Seminar, Imperial College, London, UK, 2 June 2004.
- The Dynamics of Conformity & Dissent*, Complex Adaptive Systems Seminar, Oxford Said Business School, Oxford University, UK 1 June 2004.
- The Dynamics of Conformity & Dissent*, MEMOS Seminar, Sociology Department, University of Groningen, Netherlands, 19 May 2004.
- Within The Realm of KPZ*, Applied Physics Seminar, University of Groningen, Netherlands, 18 May 2004.
- The Dynamics of Conformity & Dissent*, Theoretisch-Physikalisches Kolloquium, Univ. of Cologne, Germany, 23 April 2004.
- The Dynamics of Conformity & Dissent*, Physics Department Colloquium, University of Utrecht, Netherlands, 14 April 2004.
- Nonequilibrium Statistical Mechanics: Consensus & Coarsening Phenomena*, Landelijk Seminarium Statistische Mechanica, Leiden, Netherlands, 20 February 2004.
- The Dynamics of Conformity & Dissent*, Condensed Matter Theory Seminar, Physics Department, Oxford University, 5 February 2004.

The Dynamics of Conformity & Dissent, Journées de Physique Statistique, l'Ecole Supérieure de Physique et Chimie (ESPCI), Paris, France, 30 January 2004.
The Dynamics of Conformity & Dissent, Instituut-Lorentz, University of Leiden, Netherlands, 8 January 2004.
The Dynamics of Conformity & Dissent, Rutgers Statistical Mechanics Winter Meeting, 15 December 2003.
The Dynamics of Conformity & Dissent, Massachusetts Institute of Technology, Chez Pierre- Condensed Matter Theory Seminar, 8 December 2003.
The Dynamics of Conformity & Dissent, Columbia University, Grad Student Seminar, Physics Department, Halloween 2003.
The Dynamics of Conformity & Dissent, Cold Spring Harbor Laboratory, Theoretical Neuroscience Division, Seminar, 29 October 2003.
The Dynamics of Conformity & Dissent, University of Capetown, South Africa, Physics Department Colloquim, 6 August 2003.
Dynamics of Multidimensional Secession, Physics Department, UFF- Rio Janeiro, Brasil 28 Feb 2003; conference talk.
The Dynamics of Dissent, Graduate Student Seminar, Columbia University, 14 Feb 2003.

Selection of prior invitations:

Kinetic Roughening Phenomena, Williams College, Physics Colloquim, 15 Sept 2000.
Fractal River Basins & Deltas, Isaac Newton Mathematical Institute, Cambridge University, UK, 22 March 1999.
Kinetic Roughening, Stochastic Growth, Directed Polymers & all that, Clarendon Laboratory, Physics Seminar, Oxford University, UK, 21 March 1999.
Kinetic Roughening Phenomena, University of Essen, Germany, 17 Dec 1997.
KPZ Universality, Physics Colloquim, University of Rochester, 25 March 1996.
Within the Realm of KPZ: Kinetic Roughening Phenomena & Directed Polymers in Random Media, Physics Seminar, Rockefeller University, NYC, April 1995.
Within the Realm of KPZ: Kinetic Roughening Phenomena & DPRM, Condensed Matter Physics Seminar, Brookhaven National Lab, May 1995.
Optimal Paths in a Random Energy Landscape, Yeshiva University, seminar, Nov 1994.
A KPZ Primer I&II, Isaac Newton Institute, Cambridge University UK, April 1994; 2 conference lectures. Six-month workshop visitor.
Stochastic Growth & Directed Polymers, Isaac Newton Institute for Mathematical Sciences, Cambridge University, UK; January 1994. Insitute Colloquim.
Kinetic Roughening Phenomena, Institute for Advanced Study, Princeton, New Jersey; 5 May 1993.
Directed Polymers in Random Media, Physics Seminar, ATT Bell Laboratories, NJ, USA; Dec 1992.
Statistical Mechanics of Roughened Manifolds, Invited Lecture Series (4x3 hours); Troisième Cycle de Physique en Suisse Romande, Ecole Polytechnique Fédérale de Lausanne, Switzerland; 3-week stay, Oct/Nov 1992. Bound lecture notes.
DPRM Probability Distributions, Les Houches Ecole d'Hiver, *Surfaces Rugeuses*, Les Alps, France, 31 March 1992; invited conference lecture.
Optimal Paths in a Random Energy Landscape, Manhattan College, 10 April 1991.
Impurity-Stricken Magnets, Directed Polymers, Eden Clusters & all that, Condensed Matter Theory Seminar, University of Chicago, IL; 28 April 1990.
Finite Temperature Phase Transition- Directed Polymers, Gordon Conference-Fractals, Plymouth, New Hampshire; 14 August 1990. Invited speaker.

Tim Halpin-Healy: Pedagogy

I. Coursework

New (i.e., Previously Non-Existent) Courses Put On The Books:

1. PHYS BC1205x- *The Early Universe*, 4.5 pts.*
2. PHYS BC 1206x- *Mechanics*, 4.5pts. [renumbered as BC 2001x].
3. PHYS BC 1207y- *Electricity & Magnetism*, 4.5 pts. [2002y].
4. PHYS BC 1208x- *Waves*, 4.5 pts. [3001x, 5.0pts]
5. QUR BC1001x- *The Universe: An Astronomical Perspective*, 3.0 pts.*
6. PHYS BC 3082x,y- *Advanced Physics Lab*, 1.5-3.0 pts.
7. PHYS BC 3086y- *Adv. Quantum Physics Lab*, 3.0 pts.
8. PHYS BC 3088x- *Adv. Electromagnetism Lab*, 3.0 pts.
9. SCPP BC 3334y- *Science & The State*, 4.0 pts.
10. PHYS G8036y- *Adv. Statistical Mechanics*, 3.0pts.
11. ICP BC 1202- *Chaos, Fractals & Dynamics*, 3.0pts.*
(Barnard-LaGuardia Intercollegiate Summer Program)
12. STEM BC 2222- *Coding in the Sciences*, 4.0pts; w/ Brian Morton.

n.b., courses marked w/ an asterix have come & gone, as appropriate to the needs of the college & shifts in departmental focus. As director of the BC *Science & Public Policy Program*, I have helped bring about SCPP BC 3333x- *Genetics, Biodiversity, and Society*, 3.0pts, team-taught by professors in the Biology, Economics, and Political Science Departments; also, provided midwifery services for SCPP BC 3335y- *Environmental Ethics, Leadership, and Action*, 4.0pts.

Other Courses Taught & In My Repertoire:

15. PHYS G6036x- *Graduate Statistical Mechanics*, 3.0 pts.
16. PHYS V3008x- *Electromagnetic Waves & Optics*, 3.0 pts.
- 17-18. PHYS V1201-2 *General Physics I,II* (Pre-med, algebra-based), 3.0 pts.
- 19-20. PHYS V1291-2 *General Physics I,II Lab* (Pre-med lab), 1.0 pt.
21. PHYS BC 1091x- *The Elementary Physics Laboratory I* (Poet's Lab), 1.0pt.
22. PHYS BC 1092y- *The Elementary Physics Laboratory II* (Poet's Lab), 1.0pt.
23. PHYS V3021y- *Quantum Physics*, 3.0 pts. [now PHYS BC 3006y]
24. CTSC BC1889y- *Working with Ideas*, 4.5pts.
25. CTSC BC3597/8- *Senior Presentation Seminar*, 1.0 pt.
26. PHYS G4023- *Statistical & Thermal Physics*, 3.0pts.
27. PHYS G4019- *Mathematical Methods of Physics*, 3.0pts.

In addition, I have taught in the Columbia University *Summer Program for High School Students* for many years:

- i) CUSHP SSI- *Investigations in Theoretical & Experimental Physics* (2001-present)
- ii) CUSHP SSII- *Mathematical BootCamp for Budding String Theorists* (2009-present)

as well as a stint in the CU *Science Honors Program* (for bright, scientifically curious 11th & 12th graders in the metropolitan area) on Saturday mornings during the academic year- <http://www.phys.barnard.edu/~healy/InMotion.jpg>

The CTSC courses above were associated with my responsibilities as co-Director of the Barnard College Centennial Scholars Program (Fall 2004-11), taught over the years w/ Elizabeth Castelli, Religion Department; also Helene Foley (Classics), Lisa Hollibaugh (1st Yr Dean), & Dorothy Denburg (Dean of College).

II. Lab Development

Along with the brand new lecture components to the above courses, I have developed from “soup-to-nuts” a bunch of labs, a task which included designing, shopping, implementing, trouble-shooting, and drafting instructional laboratory handouts for each of the following experiments:

PHYS BC 1206x- *Mechanics*:

1. Kinematic Circus (MacMotion)
2. Viscous Drag & Galileo’s Parabolic Trajectories
3. Stress vs. Strain: Young’s Modulus
4. Energy & Momentum Conservation
5. Guilty or Innocent? Analysis of a Car Collision
6. Geometric Billiards
7. Bending & Buckling
8. Rotational Dynamics
9. Angular Momentum Conservation
10. The Wonderful World of Simple Harmonic Motion

PHYS BC 1207y- *Electricity & Magnetism*:

11. Ben Franklin Electrostatics
12. Millikan Oil-Drop Experiment
13. Electric Field Lines & Equipotentials: Silver Paint & Charcoal Paper
14. FieldPlots (Mac software)
15. e/m Experiment
16. Trochoidal Trajectories in Crossed E & B Fields
17. Oersted & Biot-Savart
18. DC Circuits I: Ohm’s Law- Voltage, Current, & Resistance
19. DC Circuits II: Capacitors, RC Decay, and Determining ϵ_0 .
20. Current Balance- Determination of μ_0 .
21. Faraday’s Law

PHYS BC 1208x- *Classical Waves*:

22. Diverse Pendula (hoops, rulers, & anharmonic Kater)
23. Mechanical Beats (coupled pendula)
24. Transverse Vibrations of Elastic Strings
25. Bending Modes in 1d Bars & 2d Chladni Plates
26. Wilberforce Pendulum: Coupling Translational & Vibrational Modes
27. Damped, Driven Mechanical Oscillator
28. Damped, Driven Electrical Oscillator & Fun w/ Lissajous Figures
29. Longitudinal Standing Waves in a Mini-Slinky
30. Organ Pipes: Standing Waves of Sound
31. Helmholtz Resonators (MacSound & Coke bottle pitch)
32. Auditory Demos: Fun Sounds (pitch salience, binaural beats, etc...)
33. Aural Combination Tones (nonlinear auditory phenomena)
34. Resonant Strings & Impedance Matching (computer lab, beaded string)
34. Torsional Wave Machine
35. Polarization Phenomena (Malus, Brewster, Haidinger, birifrigence, optical activity)
36. Reflection & Refraction (rainbows & caustics)

- 37. Water Waves I: Standing, Gravity Waves (nonlinear dispersion relation)
- 38. Water Waves II: Traveling Capillary Waves
- 39. Mirrors & Thin Lenses
- 40. Microwaves

PHYS BC3082x- *Numerical/Computer Experiments* (original formulation)

- 41. Feigenbaum's Number & The Period-Doubling Route to Chaos
- 42. Monte Carlo Simulation: Specific Heat of the 2d Ising Model
- 43. Brachistochrone: Testing Competing Trajectories
- 44. DLA & Eden Growth: Stochastic Aggregation Phenomena

PHYS BC 3086y- *Adv. Quantum Lab* (complements PHY V3021 lecture)

- 45. Hydrogenic Spectra: Balmer Series & Bohr-Sommerfeld Model
- 46. Determination of Planck's Constant: Photoelectric Effect
- 47. Franck-Hertz Experiment
- 48. Electron Diffraction

PHYS BC 3088x- *Adv. Electromagnetism Lab* (taken w/ PHY V3008 lecture)

- 49. Interferometry: Michelson, Fabry-Perot, & the Pressure-Dependent Refraction Index of Air
- 50. Fraunhofer Diffraction (& a glimpse of Fresnel)
- 51. Hertzian Waves I: Radio Receivers
- 52. Hertzian Waves II: Radio Transmitters

these 3000-levels are pretty beefy, and required plenty of work to develop; each of the labs runs 2-3 weeks and the students are given ample freedom to explore matters on their own. In addition, I organized labs for *The Early Universe* course (some of which found their way into Richard Friedberg's *Poets Lab*), as well as a healthy handful of numerical/computer labs for ICP BC 1202- *Chaos, Fractals, and Dynamics*. Unfortunately, there was no support staff available for the development of these calculus-based and advanced physics labs.

Finally, there are 3-4 experiments for the NSF Materials Science grant that I shared with Professor Les Lessinger in the Chemistry Department, exploring i) High- T_c Superconductivity, ii) Resistivity of Noble Metals vs. Semiconductors, iii) Faraday Effect, and iv) STM=Scanning Tunneling Microscopy.

III. NSF Equipment/Education Grants

1) sole PI: NSF UCCD#9150909- *The Early Universe*, which brought us, among other things, i) a mini-cluster of 6-8 Macs, Altschul 513, for use in our lab introductory sequence PHYS BC 1205-7 and ii) a small minicomputer facility of 3 Sun Sparestations, in Altschul 509, for advanced undergraduate research & thesis projects.

2) co-PI: NSF CCLI#9952296- *New Lab Course in the Chemistry & Physics of Materials* mentioned immediately above; the big ticket item was an X-ray diffractometer, presently in use in the Chemistry Dept.

3) facilitator: NSF DUE#9850035- *Science Education for Tomorrow*, helped develop team-taught, science & public policy courses cutting across disciplines. SCPP BC 3333x- *Genetics, Biodiversity & Society*, and SCPP BC 3334y- *Science & The State*.

<http://www.phys.barnard.edu/~healy/3334c.gif>

IV. Research Mentoring

Since Fall 1989, I have supervised student research projects as follows-

i) BC Undergraduate Summer Research:

Devorah Herbert* BC'92	<i>CU MA in drama; playwright, producer</i>
Bonnie Tamminga% BC'93	<i>CU PhD Physics; FermiLab-distinguished, Lederman Post-Doctoral Fellow, Asst Professor- Yale Physics Dept</i>
Yick Chan BC'93	<i>Harvard PhD Program- Physics</i>
Anna Seto BC'94	<i>NYU-Stern Business School</i>
Nancy Kwak BC'94	
Sheila David BC'95	<i>PhD program: geochemistry</i>
Rocio Patino BC'96	<i>MA: computer science; Hayden Planetarium</i>
Hasmik Diratzouian% BC'96	<i>Physician</i>
Deni Taveras BC'96	<i>MA program: environmental chemistry</i>
Michelle Baird BC'96	<i>social worker, practicing midwife</i>
Sin-Chun Hwang* BC'96	<i>Physician</i>
“Sam” McKinney BC'98	<i>University of Washington: Physics PhD Program</i>
Rocky Novoseller# BC'98	
Mary Pratt BC'01	<i>technical staff, Elsevier</i>
Natalie Arkus* BC'03	<i>Harvard PhD Program- Applied Mathematics</i>
Wing-Ki Wong BC'07	<i>CU 3-2 Program</i>
Whitney Becker BC'07	<i>Centennial Scholar</i>
Camille Avestruz BC'09	<i>Yale PhD Program- Physics</i>
Erin Sperry BC'11	
Yuexia Lin, BC'15	
Marte Saetra, VISP-Norway	<i>MA Program- Computational Physics (Oslo)</i>

ii) CU Graduate Summer Research

Martin Zapotocky	<i>group leader, MPI-Complex Systems, Dresden</i>
Amine Assdah	<i>Rutgers PhD Program- Mathematical Physics</i>
Yi-Kuo Yu	<i>NIH scientist- Biophysics</i>
Igor Arsenin	<i>Wall Street</i>

iii) PhD Students

Ning-Ning Pang CU PhD*96	<i>Associate Professor, NTU-Physics</i>
Arne Soulier CU PhD*03	<i>London Financial World, research analyst</i>
Aylin Cimenser CU PhD*04	<i>Postdoctoral Fellow, CU Neuroscience</i>

V. Barnard College Service

a. Programs

- i) Centennial Scholars (Fall 2004-2011), co-Director w/ Elizabeth Castelli (Religion)
- ii) Science & Public Policy (Fall 1999-present), pro-bono Director.
- iii) Clare Boothe Luce Scholars Program (Nov 2015-present), Grant PI & Director.

b. Committees

- i) On Honors; Pre-Health (AY14-16), FACI (AY15-17); FBPC (AY96-05; 9 yr tour);
- ii) FGP (AY95-97; AY13-15)- Chair, revised elections, divisional trades, revamped

- Academic Code, grievances, new FAAC, Consensual Relationships, etc...
- iii) ACC (1994-97; 3 years)- one of the original apostles, long-term planning, short-term goals; unix email & a host of academic computing issues.
- iv) Facilities Development (1995-6, w/ Herb Sloan & Liz Boylan) bricks & mortar.
- v) Food Services AY94-95, vi) Security AY92-93, & vii) Grants AY90-91 Committees.
- viii) Altschul Renovation AY90-91 Committee.
- ix) Math Department Searches- Pacelli, Magnum, Walter Neumann, Thurston, Knight
- x) misc.: Hughes, SET, Sherman-Fairchild, etc...

c. Departmental

- i) Design & Realization-Alt 514: Physics & Astronomy Common Room
- ii) Chair (Fall 2004-2007) although, in many respects, I shared these responsibilities with Richard Friedberg during my first 12 years at Barnard. Promotions to Full Professor- Laura Kay, Reshmi Mukherjee, Janna Levin.
- iii) Aside from my involvement in 27 courses (13 of them newly on the books...) and the development of >50 new experiments (soup-to-nuts, as they say), there's been plenty of good, old-fashioned elbow-grease expended, involving complete, gratis renovations on the fifth floor of Altschul, in which I gutted the rooms, bought the paint, wielded the brush, decorated, & stocked w/ equipment, salvaged Columbia blackboards, developed the labs & designed the experiments.

AY95-96: Altschul 510B- Advanced E&M/Quantum Physics Lab
Site of PHYS BC 3086 & 3088 advanced labs.

AY96-97: Altschul 510C- Classical Waves Lab Room

All PHYS BC3001 activities, lecture & lab, 5.0 pts, take place here.

AY90-91: Altschul 513- Introductory Physics Lab Room; College paint job...
[PHYS 2001-2 experiments are done in this large, central room]

AY89-90: Altschul 502- Physics Reading Room [photos, blackboard, screen]
Altschul 5th Floor Hallways- 6 4x8 corkboards, 3 picture cases,
2 huge blackboards, 5 astro posters, *Women Physicists* display,
plants, etc.

- iv) Obtained grant funds to establish (AY91-92) Departmental *Mini-Computing Lab* in Alt 513 for use in the introductory physics sequence, as well as the Major/Minor's Workstation Facility in Alt 509 (AY94-96)- couches, SparcStations fully configured w/ Fortran & C compilers, EMACS, grtool, Netscape, etc.

V. Columbia University

- i) Ad Hoc Tenure Committee
- ii) CU Graduate Courses:
 - PHYS G8036y- *Adv. Topics Statistical Mechanics*, 4.5pts. [Spring '95,97,99,01,03,16]
 - PHYS G6036x- *Statistical Physics*, 4.5pts. [Fall '93]
- iii) CU Graduate Students Advised: 3 Full, 4 Part-time.
- iv) CU Undergraduate Courses: PHYS V1201-2, 1291-2, 3021, 3008, 4019, 4023.
- v) CU Summer High School Program-
 - Investigations in Theoretical & Experimental Physics* [Summers '97-'17]
 - Mathematical BootCamp for Budding String Theorists* [Summers '09-'17]
- vi) Columbia Science Honors Program- Saturday Morning Lecture Series.
- vii) CU Physics Department- Undergraduate Curriculum Committee, AY90-99.
- viii) Barnard College Representative: CU SEAS 3-2 Engineering Program [AY94-97].
- ix) Columbia Physics Theory Seminar: full responsibility, AY90-93.