

# Jennifer Weinberg-Wolf

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## Education:

University of North Carolina at Chapel Hill:

*Chapel Hill, NC*

Ph.D. in Physics, May, 2006

*Optical Characterization of Organic Semiconductors* (Dr. Laurie McNeil, Advisor)

Harvard University:

*Cambridge, MA*

A.B. in Physics and Astronomy & Astrophysics *cum laude* June, 1999

## Professional Experience (Teaching):

July 2013 - present: Teaching Assistant Professor: University of North Carolina at Chapel Hill

*Chapel Hill, NC*

- Full-time since 2017-2018 school year
- Lead instructor for Physics 100 (How Things Work)
  - Responsible for all lectures, assignments, and exams for general education course
  - Work with QEP team on incorporation of MakerSpace final project and assessment
- Lead instructor for Physics 119 (Introductory Electricity, Magnetism, and Quanta)
  - Responsible for all lectures, assignments, and exams for the introductory course
  - Mentor fellow faculty members in research-based physics education pedagogies
- Studio Coordinator for Physics 117 and Physics 119
  - Prepare all Studio materials to facilitate student learning via collaborative group work
  - Develop assessment tools (exams and quizzes) each semester
  - Lead mock Studios weekly to prepare Teaching Assistants to teach their own classes
  - Mentor graduate and undergraduate students teaching studios
  - Handle all administrative details for the large introductory course
- Summer School Instructor for Physics 117 and 119
  - Implement SCALE-UP and Lecture/Studio mode of instruction in the compressed summer school timeline
  - Teach course daily over summer session (3 contact hours a day minimum)
- Summer School Administrator for Physics and Astronomy Department
  - Work with Summer School to coordinate all classes taught in Department of Physics and Astronomy
  - Hire all course instructors and teaching assistants and manage the budget
  - Mentor graduate students serving as lead instructors of record for the first time
  - Coordinate funding requests to supplement lab fees – awarded \$67,500 to date

July 2010 - July 2013: Visiting Faculty: University of North Carolina at Chapel Hill *Chapel Hill, NC*

- Developed activities first for Studio component of Lecture/Studio class and then modified schedule and material as a SCALE-UP version of the traditional course

June 2007 - 2017: DeVry University Online Instructor/Course Development

*Online*

- Intro to Astronomy w/ Lab and Integrated Science – accelerated general education courses
- Revised Integrated Sciences course – general education science course

June 2007-2015: Independent Contractor for Educational Testing Consultants

*Online*

- Taught preparation courses in person and online for LSAT, GRE, GMAT, ACT, and SAT

September 1999 - July 2013: Individual tutoring

*Chapel Hill, NC*

- Tutored over 70 students (undergraduate, high school and special needs) on variety of topics

June 2007 - February 2008: Independent Contractor for Mad Science

*Wake County, NC*

- Customized various science curricula to demystify science and show that science can be fun
  - Taught groups of 20 to 200 students with hands-on experiments and demonstrations
- Spring 2002: Head teaching assistant, Department of Physics and Astronomy *UNC, Chapel Hill, NC*
- Created position to improve teaching assistant (TA) standards in department.
  - Revised training of all TAs for calculus- and algebra-based introductory physics courses.
- Fall 2001: Physics and Astronomy Tutorial Center (PATC) TA *UNC, Chapel Hill, NC*
- Created and evaluated the ongoing and successful zero-cost PATC.
- Spring 2001: Teaching Assistant, Electronics 121 *UNC, Chapel Hill, NC*
- Fall 1999 - Fall 2000: Teaching Assistant, Physics 25 *UNC, Chapel Hill, NC*
- September 1996 - May 1999: Smithsonian Center for Astrophysics *Cambridge, MA*
- Curriculum development for MicroObservatory project
- September 1996 - May 1999: Harvard Bureau of Study Counsel Award Peer Tutor *Cambridge, MA*
- Individual tutoring in math, physics and astronomy. One of 25 tutors for entire college.

### **Professional Experience (Research):**

- June 2000 – May 2006: Research Assistant, McNeil Optics Lab *UNC, Chapel Hill, NC*
- Laboratory techniques/equipment commonly used include Raman and resonant Raman spectroscopy, photoluminescence spectroscopy, absorption spectroscopy, high pressure work with a diamond anvil cell, low-temperature work with a closed-cycle He refrigerator and a Joule-Thompson cell, class IV lasers (Ar+, HeCd, Ti:Sapphire, Dye), vacuum systems, LabView programming for data collection, data analysis with standard software packages and homemade Perl, Visual BASIC, and Origin-C and C programs.
  - Materials studied include organic semiconductors, single- and multi-wall carbon nanotubes, amorphous and microcrystalline hydrogenated Si, and irradiated SiGe.
- June 1998 – Sept 1998: Lucent Technologies *Murray Hill, NJ*
- Supervisor: Dr. Robert Willett, NSF funded REU summer intern
  - Experimented with different chemical etches of MBE grown materials and analyzed the results with both SEM's and AFM's in an effort to fabricate sub-100Å Al wires
- Sept 1996 – Dec 1998: MultiLayer Facility, Smithsonian Center for Astrophysics *Cambridge, MA*
- Supervisor: Dr. Suzanne Romaine, Radcliffe Research Partnership research grant
  - Ran computer simulations of X-ray reflectivity, cleaned all substrates and measured profiles of samples in the clean room.

### **Honors:**

- Tanner Award for Excellence in Undergraduate Teaching, UNC-CH 2018
- Outstanding Teaching Assistant, UNC-CH September 2002 - August 2003
- Board of Governors Fellowship, UNC-CH September 1999 - August 2002

### **Bibliography of Selected Talks/Outreach Presentations/Workshops (since 2014)**

1. "Evaluating learning goals in online lab instruction" Invited Talk, APS April meeting, 2021
2. Gradescope Workshop (transition to online learning – support for colleagues) (Versions presented to faculty and incoming graduate students) Summer 2020
3. Outreach event, March 9, 2020 – Northside Elementary 2<sup>nd</sup> grade field trip (80 students)
4. D. Deardorff, J. Weinberg-Wolf. "Using Google Sheets for Shared Data Collection in Student Labs." Contributed talk presented at the summer meeting of the American Association of Physics Teachers, Provo, UT (July 2019)
5. Outreach event May 12, 2019 – **Science is Awesome Day** (coordinator and presenter) (400 students, 50 teachers and chaperones, 30 volunteers)

6. Outreach event April 2019 – Annual public demonstration show (100 people)
7. Outreach event April 2019 – UNC Science Expo (1000's? of people in attendance)
8. Safe Zone: Gender Identity and Gender Expression Training, March 26, 2019
9. Outreach event March 13, 2019 – Northside Elementary 5<sup>th</sup> grade field trip (100 students)
10. Student Success Conference “Student Success in Times of Challenge and Change” University of North Carolina, February 27, 2019
11. Outreach event Feb, 2019 – Northside Elementary School PTA Read-a-thon (400 people)
12. Outreach event Nov, 2018 – at Smith Middle School (150 students)
13. “Using Google Docs for shared data collection”, J. Weinberg-Wolf, D. Deardorff, Center for Faculty Excellence Faculty Showcase Conference, UNC – November 2, 2018
14. NC State Accessibility in the Classroom Workshop, August 17, 2018
15. Summer Institute, Aug 2018 – participant in week long workshop on active learning and research supported pedagogies – Scientific Teaching Fellow 2018-2019
16. Outreach event May 11, 2018 – **Science is Awesome Day** (coordinator and presenter) (300 students, 40 teachers and chaperones, 30 volunteers)
17. Outreach event April 2018 – Annual public demonstration show (100 people)
18. Outreach event April 2018 – UNC Science Expo (1000's? of people in attendance)
19. Outreach event March 16, 2018 – Northside Elementary 3<sup>rd</sup> grade field trip (100 students)
20. Student Success Conference “Student Centeredness” University of North Carolina, Feb 26, 2018
21. Outreach event April 2017 – Annual public demonstration show (100 people)
22. Outreach event April 2017 – UNC Science Expo (1000's? of people in attendance)
23. Center for Faculty Excellence, Faculty Showcase Conference, March 24, 2017
24. Outreach event March 15, 2017 – Northside Elementary 4<sup>th</sup> grade field trip (100 students)
25. Outreach event March 17, 2017 – Marjorie Lee Brown Math day demonstration (40 students)
26. Student Success Conference “A Coordinated Culture of Care for Student Success” University of North Carolina, March 6, 2017
27. Green Zone Training – February 14, 2017
28. Outreach event Feb 2017 – Carborro Elementary School visit to Phillips Hall (150 people)
29. Mental Health First Aid Training – Dec 20, 2016
30. Safe Zone Training – December 14, 2016
31. Outreach event Nov 18, 2016 – Northside Elementary 3<sup>rd</sup> grade field trip (100 students)
32. Haven Training – October 19, 2016
33. Outreach event May 2016 – Northside Elementary School STEAM day (400 students)
34. Inclusive Teaching Workshop, Center for Faculty Excellence, April 19, 2016
35. Outreach event April 15, 2016 at Frank Porter Graham Biligie Elementary School (100 students) in **Spanish**
36. Outreach event April 2016 – Annual public demonstration show (100 people)
37. Outreach event March 8, 2016 at Northside Elementary School for 2<sup>nd</sup> grade (100 students)
38. Outreach event March 2016 – Northside Elementary School 4<sup>th</sup> grade field trip (80 students)
39. Outreach event March 2016 – Marjorie Lee Brown Math day demonstrations (40 students)
40. Student Success Conference “Growth Mindset” University of North Carolina, Feb 22, 2016
41. Outreach event Feb 15 2016 – Creekside Elementary School (400 students)
42. Outreach event Dec 17, 2015 – Northside Elementary School 3<sup>rd</sup> grade field trip (80 students)
43. Outreach event Dec 16, 2015 – Northside Elementary School 4<sup>th</sup> grade field trip (100 students)
44. Outreach event May, 2015 – Northside Elementary School STEM day (160 students)
45. Outreach event May, 2014 – Northside Elementary School STEM day (160 students)
46. Outreach event May, 2014 – Northside Elementary School 2<sup>nd</sup> grade field trip (80 students)

47. Outreach event May, 2014 – Northside Elementary School kindergarten field trip (90 students)

### **Bibliography of Research Publications and Presentations:**

1. Kannappan, S. J., Stark, D. V., Eckert, K. D., Moffett, A. J., Wei, L. H., Pisano, D. J., Baker, A. J., Vogel, S. N., Fabricant, D. G., Laine, S., Jogee, S., Norris, M. A., Hough, L. E., Lepore, N., & **Weinberg-Wolf, J.** “Connecting Transitions in Galaxy Properties to Refueling” *Astrophysical Journal*, **777** (2013), 42.
2. **J.R. Weinberg-Wolf**, L.E. McNeil, Shubin Liu, and Christian Kloc, “Evidence of low intermolecular coupling in rubrene single crystals by Raman Scattering” *J. Phys. – Cond. Mat.***19**, (2007) 276204.
3. **J.R. Weinberg-Wolf**, L.E. McNeil, “Optical Characterization of Single Crystals of the Semiconductor Rubrene”, APS Meeting, March 2005, Los Angeles, CA.
4. **J.R. Weinberg-Wolf**, L.E. McNeil, “Raman Measurements of an Organic Semiconducting Single Crystal”, SESAPS meeting, November 2004, Oak Ridge, TN.
5. **J.R. Weinberg-Wolf** and L.E. McNeil, “Resonant Raman spectroscopy on alpha-hexathiophene single crystals” *Phys. Rev. B* **69** (2004)125202.
6. **J.R. Weinberg-Wolf**, L.E. McNeil, “Resonance Raman Measurements from 20 K to 50 K of Alpha-Hexathiophene Single Crystals”, APS meeting, March 2004, Montreal, Canada.
7. D. Han, J. D. Lorentzen, **J. Weinberg-Wolf**, L. E. McNeil, and Qi Wang, “Raman study of thin films from amorphous-to-microcrystalline silicon prepared by hot-wire chemical vapor deposition” *Appl. Phys.*, **94**, 5 (2003) 2930-2936.
8. **J.R. Weinberg-Wolf**, L.E. McNeil, “Resonant Raman Spectroscopy on Alpha-hexathiophene Single Crystals”, SESAPS, November 2003, Wilmington, NC.
9. K. Wang, J.M. Owens, **J.R. Weinberg-Wolf**, D. Han, L. Gedvilas, and G. Ganguly, “Optical Properties of i-layers as a Function of Growth Rate in Correlation to the Performance of a-Si:H Solar Cells”, *MRS Symposium Proc.* **715**, edited by J.D. Cohen, H. Matsumura, J.R. Abelson, and J. Robertson (2002) 571-576.
10. K. Wang, H. Zhang, J. Zhang, J. M. Owens, **J.R. Weinberg-Wolf**, D. Han, L. Gedvilas and B. Nelson, “Characterization of Microcrystalline Transition from Amorphous Silicon as a Function of Hydrogen Dilution and Substrate Temperature of Hot-wire CVD”, *MRS Symposium Proc.* **715**, edited by J.D. Cohen, H. Matsumura, J.R. Abelson, and J. Robertson (2002) 147-152.
11. G. Yue, J.M. Owens, **J.R. Weinberg-Wolf**, D. Han, J. Yang, K. Lord, B. Yan, and S. Guha, “Effects of Hydrogen Dilution on a-Si:H and its Solar Cells Studied by Raman and Photoluminescence Spectroscopy”, *MRS Symposium Proc.* **664**, A.9.7.1-A7.9.6 (2001).
12. D. Han, G. Yue, **J.R. Weinberg-Wolf**, J.M. Owens Y. Xu and Qi Wang, “Large Red Shift of PL Peak Energy in High Growth Rate a-Si:H Prepared by Hot-Wire CVD”, *MRS Symposium Proc.* **664**, A7.4.1-A7.4.6 (2001).

### **Teaching Activities (Overall Instructor, Overall Course, Overall Learning, Teaching Award):**

- **Average Instructor Rating of 4.49 for introductory large courses**
- Fall 2020 – Physics 100, 65 students
- Fall 2020 – Physics 119, 89 students
- Summer 2 2020 – Physics 119, 52 students (OI: Not asked, OC: 4.06, OL: 4.48, TA: Not asked)
- Spring 2020 – Physics 119, 107 students (OI: Not asked, OC: 4.10, OL: 4.44, TA: Not asked )
- Fall 2019 – Physics 119, 90 students (OI: 4.36, OC: 3.28, OL: 3.93, TA: 3.88)
- Fall 2019 – Physics 100, 85 students (OI: 4.44, OC: 3.94, OL: 4.10, TA: 4.05)
- Summer 2 2019 – Physics 119, 30 students (OI:4.56, OC: 4.04, OL:4.35, TA: 4.46)

- Spring 2019 – Physics 119, 116 students (OI: 4.70, OC: 3.44, OL: 4.26, TA: 4.30)
- Fall 2018 – Physics 119, 85 students (OI: 3.85, OC: 2.74, OL: 3.49, TA: 3.31)
- Summer 2 2018 – Physics 119, 23 students (OI: 4.65, OC: 4.12, OL: 4.56, TA: 4.39)
- Spring 2018 – Physics 119, 93 students (OI: 4.38, OC: 3.15, OL: 4.13, TA:4.15)
- Fall 2017 – Physics 119, 99 students (OI: 4.44, OC: 3.32, OL:3.99, TA:4.09)
- Summer 2 2017 – Physics 119, 23 students (OI: 4.88, OC: 4.50, OL: 4.75 , TA: 4.75)
- Spring 2017 – Physics 119, 142 students (OI: 4.39, OC: 3.08, OL: 3.84, TA: 4)
- Fall 2016 – Physics 119, 92 students (coordinator with Stefan Jeglinski, no evaluation)
- Summer 2 2016 – Physics 119, 24 students (OI: 4.57, OC: 3.87, OL: 4.30, TA: 3.93)
- Spring 2016 – Physics 119, 150 students (coordinator with Reyco Henning, no evaluation)
- Fall 2015 – Physics 119, 89 students (coordinator with Reyco Henning, no evaluation)
- Summer 2 2015 – Physics 119, 37 students (OI: 4.46, OC: 3.71, OL: 4.08, TA: 4.62)
- Spring 2015 – Physics 119, 132 students (coordinator with Reyco Henning, no evaluation)
- Fall 2014 – Physics 117, 99 students
- Summer 2 2014 – Physics 117, 25 students
- Spring 2014 – Physics 117, 132 students
- Fall 2013 - Physics 117, 41 students (OI: 4.68, OC: 4.5, OL: 4.68, TA: 4.3)
- Summer 2 2013 – Physics 117, 38 students
- Spring 2013 – Physics 117, 38 students
- Fall 2012 – Physics 117, 43 students
- Summer 2 2012 – Physics 117, 30 students
- Spring 2012 – Physics 117, 45 students

### **Grants/Funding (PI or lead-author unless noted otherwise) (Total: \$90,919):**

- Funds awarded to Department by UNC-CH Summer School (for \$5000 call to Summer School Administrators) (Total funding: \$70,044)
  - 2020 - \$2500 (funding call ended, extra funds secured though)
  - 2019 - \$17,810
  - 2018 - \$15,000
  - 2017 - \$17,000
  - 2016 - \$9,684
  - 2015 - \$8,050
- CFE Large Course Redesign Grant and Faculty Learning Community 2020-2021
  - Develop Guided reading questions and at-home labs for fourth credit hour of Phys 100
  - \$5,000 development grant
- KEEN Faculty Learning Community 2019-2020
  - Develop entrepreneurship modules for STEM course (Phys 100)
  - \$5,000 development grant
- Technology in Teaching mini-grant, Summer School (UNC-CH) 2018
  - \$750 for incorporating video learning in Phys 119 Summer 2 2018
- Stirling Foundation grant to support Outreach event – Science is Awesome Day (\$10,375)
  - \$5,525 in 2019
  - \$4,850 in 2018
- Growth Mindset Challenge Grant, UNC-CH Summer School (\$8,000) 2016
  - \$2,000 for introducing Supplemental Instruction for all Summer Courses
  - Co-PI with Duane Deardorff
  - Project so successful that summer school has continued funding for each subsequent year (2017-present)

## **Professional Service:**

- Fall 2020 – present: General Education Oversight Committee (College wide)
- Spring 2020 – Fall 2020: IDEAs in Action course syllabi review committee (Quantitative Reasoning Focus Capacity)
- Fall 2019 – present: Faculty Liaison, Carolina Student Transfer Excellence Program (C-STEP)
  - New college level initiative supported by a Glaxo Smith Kline grant
  - Work with community college advisors to better prepare transfer students to Carolina interested in STEM fields
  - Work with small mentor team of faculty on campus to help with retention and success of STEM transfer students at Carolina
  - Work with College Admissions Staff on events, training and general mentoring
  - Mentor cohort of physical science STEM transfer students
- Fall 2019 – present: Girls Engineering Change (GEC) faculty advisor
- Fall 2018 – present: Teaching Award Committee (Chapman Family Award sub-committee 2018-2019 and 2019-2020, Post-Baccalaureate Award 2020-2021)
- Fall 2016 – present: Faculty Advisor for Visibility in Physics (formerly Women in Physics)
- Fall 2015 – present: Introductory Courses Oversight Committee
- Fall 2015 – present: Diversity Committee
- Spring 2015 - present: Undergraduate Advisor – advisor for nominally one quarter of the department’s majors
  - Meet with approximately 60 students a semester for course, degree and career planning and coaching
- Fall 2014 – present: Outreach Committee (chair from 2018-present)
  - Lead Coordinator and planner for Science is Awesome Day 2019, 2018 - bringing hundreds of local fourth graders from Title IX schools to the department for outreach field-trip tied to NC curriculum standards
  - Frequent presenter at events throughout the year
  - PenPal participant in Letters to a Pre-Scientists, 2018, 2019
- Fall 2014 – present: Summer School Coordinator – Department of Physics and Astronomy
- Spring 2018 – Fall 2019: Quantitative Reasoning (Numeracy) Faculty Learning Community/Task Force
- Fall 2017- Spring 2018 – University wide Curriculum redevelopment Task Force, advising sub group
- Fall 2013 – Spring 2015: Intro Course Redesign Development Committee – curriculum development for Phys 119 to cover both electricity and magnetism but also modern physics
- Fall 2005: Graduate student representative on departmental committee - review of physics education resources to determine best use of NSF funds to revamp intro courses

## **Community Service:**

- Active PTA parent (Book Fair Chair, Read-A-Thon technical advisor, parent volunteer, etc.)
- Outreach Science work – (overlaps with Outreach committee work above) coordinate and run periodic field trips for local Title I elementary schools, presented to over 1000 students to date. Also work with elementary school teachers individually to improve science curricula
- Kehillah Synagogue Board Member, Preschool and Religious School Committee Chair
- Targeted Instructional Support Team Member for Northside Elementary School (state mandated team for Title IX schools with achievement gaps)

- School Improvement Team for Northside Elementary School '13-'17 (Co-Chair for 3 years)
- Site Administrator ('09-'11), [www.TriangleMommies.com](http://www.TriangleMommies.com) 501(c)3 non-profit support network for women. Serving over 2300 mothers, over 1200 events planned and \$26,000 raised for local charities annually
- Harvard University Alumni Interviewer