

Charles A. Hagedorn

charlie@hagedorn.xyz
http://www.charliehagedorn.com
(206)-940-6931

1835 NE 58th Street
Seattle, WA 98105

Education:

University of Washington, Seattle WA, PhD. Physics, August 2015, M.S. Physics, June 2006.

Cornell University, Ithaca NY, B.A. Physics and Mathematics, May 2004

Experience:

Research Associate (Post-Doc)

8/2015-9/2020

University of Washington, CENPA/Eöt-Wash Gravity Group (faculty won Breakthrough Prize 2020)

- Rotating torsion-balance tests of the Equivalence Principle
- Searches for ultra-light axion-like dark matter
- Sub-nanoradian inertial-rotation sensing for gravitational-wave detection and seismology
- Led CENPA's atmospheric monitoring for radionuclides and provided detector support for UW's Cs-137 response
- Coordinated and oversaw disposal of 3 tons of depleted uranium
- Instructed seminar courses
- Informal advisor to 3+ graduate students, Advisor to ~ 10 undergraduates
- > 3 published papers.
- Coordinated or assisted with successful grant proposals totalling >\$3.3M in funding

Research Assistant

8/2004-8/2015

University of Washington, CENPA/Eöt-Wash Gravity Group - Dr. Jens Gundlach, Advisor

- Thesis: *A sub-millimeter test of gravity* (testing Newton's law at distances below 100 microns)
- Built next-generation autocollimators (sub-nanoradian in 1 s, dynamic range 10^7), wireless micropower sensor net.
- Mentored four undergraduate students to become contributing members of our research group.
- First measurement of the distance-dependence of proximity-enhanced gas damping.
- Designed, constructed, implemented, and operated a modern torsion balance. Sensitivity $< 10^{-14}$ N-m/ $\sqrt{\text{Hz}}$.
- Developed, constructed, and characterized high Q ($> 10^5$) quartz torsion fibers.
- 8 published papers.

Teaching Assistant

8/2004-6/2005

University of Washington, Physics Department

- Instructed calculus and algebra-based labs, tutorials, study center. Fun!

Research Assistant

6/2001-7/2004

Cornell University/LASSP - Dr. Eberhard Bodenschatz, Advisor

- Built and maintained camera/framegrabber software to image chaotic systems
- Designed and built mechanical system for micron-precision laser calibration of a turbulent flow experiment
- Developed and implemented process for thick SU-8 structures on thick silicon substrates

Research Experience for Undergraduates

6/2002-8/2002

University of Colorado, Boulder CO - Dr. Charles Rogers, Advisor

- Assisted with development of mechanical "tweezers" for connection to molecular circuitry.
- Lithography: UV contact, e^- -beam. SEM

Whitewater Kayaking Instructor/Teaching Assistant

8/2001-5/2004

Cornell University, Ithaca NY - Theo Theobald, Supervisor

Patent:

- Interferometric quasi-autocollimator. Turner, Gundlach, Hagedorn, Schlamminger. US Patent 8,842,291.

Service:

Data co-Lead

3/2020-present

FindTheMasks (PPE donation and aggregation for COVID-19 relief)

- Assisted from day-1 the largest aggregation of PPE-need information in the US.
- One of two co-leads charged with ensuring data quality
- Recruited, trained, and coordinated team of 40+ volunteers for data-moderation
- Wrote and published public-facing overviews of our data
- Presently caretaking and winding down the site

Honors:

- Referee for the Physical Review (PRL, PRD)
- Invited talk, 2015 APS April Meeting
- 2015 Best graduate-student talk, Pacific Coast Gravity Meeting
- 2011 Outstanding Referee, Review of Scientific Instruments
- Hartman Prize, Cornell University - Most Outstanding Undergraduate Experimental Physicist
- Dean's List, Cornell University

Skills:

- Inventive problem solving, Data analysis, Precision measurement, Mechanical design.
- *Hardware:* Metalwork (Lathe, Mill, Sheet metal, CNC), Rapid prototyping and development, Electronics/Design, Lapping, Photolithography, High Vacuum, Fiber Fizeau Interferometer, Arduino/XBee, ...
- *Software:* Linux, Windows, Data Acquisition, Simulation, MATLAB/Octave, Gnuplot, git, make, Solidworks, ...
- *Life:* Ski mountaineering/Ski touring. Comfortable navigating avalanche terrain. Risk management.