Patrick Brown

Air Force Institute of Technology, Wright Patterson Air Force Base
Home: (937)705-6677
Cell: (805)284-6723
Email: Patrick.Brown.Ctr@afit.edu

Education

Air Force Institute of Technology

- 2019-Present, Master of Science in Applied Physics, Focus: Nuclear and Plasma Physics (In progress)

University of New Mexico

- 2015-2019, Graduated Summa Cum Laude GPA: 3.94 Deans List 2015-2018, Major: Astrophysics, Minor: Mathematics

Work Experience

Researcher AFIT/NRL

- 2019-present, Advisor: Dr. John McClory
  Research area: Modeling of high energy and high density plasma formation and utilization in NRL Gamble II
  Responsibilities: Numerically/analytically modelling the high energy and high density plasma simulations within Gamble II

Research Honors Thesis, University of New Mexico

- 2018-2019, Advisor: Dr. Rouzbeh Allahverdi
  Research area: Modeling of Early Matter Domination to obtain the equation of temperature in the very early universe
  Responsibilities: Forming and numerically/analytically solving the solution to the Boltzmann Equations that govern our theory

Research Assistant, University of New Mexico

- Fall 2018-Spring 2019, Principal Investigator: Dr. Sally Seidel
  Research project: Development of new radiation hard 3D silicon particle detectors
  Responsibilities: Performing measurements on sensors to characterize radiation hardness

Research Assistant, Starfire Optical Range, Air Force Research Laboratory, Kirtland Air Force Base

- September 2018-2019, Principal Investigator: Dr. Robert Johnson
  Research project: Develop and demonstrate optical wavefront control technologies
  Responsibilities: conducting analysis of sodium beacon laser guide star - *Classified*

CERN Internship, AEGIS Experiment, Antiproton Decelerator, Geneva, Switzerland

- June 2018-August 2018, AEGIS Project Spokesperson: Dr. Michael Doser
  Research project: Antihydrogen Experiment: Gravity, Interferometry, Spectroscopy (AEGIS)
  Responsibilities: Testing the feasibility of Compton Scattering to map a beam of non-relativistic antiprotons; simulating the fluorescent spectrum of C_2 anions; data analysis of Rydberg Positronium experiment

Research Assistant, Air Force Research Laboratory, Kirtland Air Force Base

- January-May and August-December 2017, Principal Investigator: Dr. Greg Pitz
  Research project: Supersonic Cesium Dimer Laser Experiment
  Responsibilities: Assisted principal investigator in setting up and conducting the experiment

Research Internship, Air Force Research Laboratory, Kirtland Air Force Base

- May-August 2017, Principal Investigator: Dr. Greg Pitz
  Research area: Advanced Laser Division Gas-Laser Program
  Responsibilities: Designed, constructed, & conducted experiments on the Cavity Dumped Cesium Based-Pulsed Laser System

Dan LaPorte/NASA Internship

- June-July 2015, Lab Assistant to Dan LaPorte, Global Hawk Project, Armstrong Flight Test Center, Edwards Air Force Base, Palmdale, CA, Responsibilities: observed installation & testing of the Scanning High Resolution Interferometer Sounder (Scanning-H.I.S.)

Special Skills

Computer Programming

- Programming skills include:
  MatLab, Mathematica, C++, Root, Python, Chicago, Solidworks Computer Aided Design

Security Clearance Yes. Level: Secret

Volunteer Experience

Air Force Research Laboratory/University of New Mexico Mentorship Program

- Fall 2017-present, Mentor
  Responsibilities: Work with first & second year STEM students, assisting with class schedules, academic tutoring, counseling on UNM pathways, advising on AFRL student internship and research opportunities

University of New Mexico Observatory

- January 2018-2019, Volunteer Operator
  Responsibilities: Operate telescope and observatory during public events, instruct public & student body on telescope and answer questions

Homestretch Greyhound Rescue and Adoption

- 2007-2017, Senior Volunteer
  Responsibilities: Meet & Greets introducing the public to rescued track dogs, educating the public on the realities and cruelties of Greyhound racing, & counseling prospective adoptors; "Homecoming" days when dogs are taken directly from the racetrack to the adoption facility, receive veterinary evaluations, baths, and temperament evaluations. My focus is usually on the extremely shy and frightened dogs

First Congregational Church of Santa Barbara

- 2008-2015, Youth Group activities in support of my church and my community
  Events included: 30 Hour Famine, Alzheimer's Walk, Pacific Pride Festival, & Showers of Blessings
  Responsibilities: Community outreach, church support, making lunches for homeless shelter, volunteering at Unity Shoppe (free) grocery store, collecting donations for Santa Barbara Food Bank, and fundraising to support our volunteer work

Achievements & Scholarships

- 2018, University of New Mexico I Am STEM Award
- 2018, University of New Mexico Goldwater Nominee
- Awarded Scholarships:
  - 2015-Present, University of New Mexico Amigo Scholarship
  - 2016-2017, Tallant-Cooper Academic Scholarship
  - 2016-2019, George A. Kaseman Academic Scholarship
  - 2016-2019, Van Donge Memorial Scholarship
  - 2011-2015, National Honor Society

Memberships

- Phi Kappa Phi
- American Physical Society (APS)
- Sigma Pi Sigma
- Society of Physics Students, University of New Mexico chapter
- National Society of Leadership and Success

Presentations

- Salt Lake City, October 2018, Development and Characterization of New 3D Radiation Hard Silicon Particle Detectors for the HL-LHC
- CERN, August 2018, Compton Scattering as a Tool for Antiproton Beam Mapping
- CERN, July 2018, C_2^- Fluorescence Spectroscopy within the AEGIS Experiment
- 2019 University of New Mexico Physics Day, Modeling of Early Matter Domination in the Very Early Universe
- 2018 University of New Mexico Physics Day, Non-Standard Cosmological Histories
- 2017 University of New Mexico Physics Day, Dark Matter as Probe of the Very Early Universe

Publications

- Brown, Patrick and Doser, Michael, Compton Scattering as a Tool for Antiproton Beam Mapping, CERN Summer Research Report, Published on CERN Document Server
- Brown, Patrick and Doser, Michael, Fluorescence Spectroscopy within the AEGIS Experiment, CERN Summer Research Report, Published on CERN Document Server
- Brown, Patrick and Pitz, Greg, Cs-Based Cavity Dumped Pulsed Laser Experiment, Air Force Research Laboratory Technical Memorandum, Classified, Published for Department of Defense use only

References

- ***Dr. John McClory:*** Professor of Nuclear Engineering, Research/Academic Advisor
  Phone(work): (937)255-3636 ext. 7308 Email: John.McClory@afit.edu
- ***Dr. Rouzbeh Allahverdi:*** Associate Professor of Astrophysics UNM, Research Advisor
  Phone(work): (505)401-3711 Email: rouzbeh@unm.edu
- ***Dr. Greg Pitz:*** Associate Research Physicist, Air Force Research Laboratory, Kirtland Air Force Base
  Phone(cell): (505)853-1386 Email: greg.pitz@us.af.mil
- ***Captain PJ Moran, USAF:*** Physicist, Air Force Research Laboratory, Kirtland Air Force Base
  Phone(cell): (443)822-5802 Email: paul.moran.1@us.af.mil
- ***Dan LaPorte:*** Retired NASA Instrumentation Physicist, Personal Mentor
  Phone(cell): (805)314-5326 Email: dandl805@cox.net