Personal information

Surname(s) / First name(s)	**Cooper, Patrick James**
Address(es)	New York University, 4 Washington Place, New York, NY 10003
Telephone(s)	+1(608)-886-2307
Email(s)	pjc370@nyu.edu
Nationality(-ies)	USA
Date of birth	April 30, 1987 (Pittsburgh, Pennsylvania)

Education

New York University
Sept 2010 - Present
New York City, USA

Masters in Theoretical Physics, Ph.D. Candidate

- Physics Department
- Research Topics: Effective String Theory, Supersymmetry, Integrability of p-branon scattering

University of Pittsburgh
Sept 2005 - June 2010
Pittsburgh, Pennsylvania

Honours B.Sc

- Major in Physics
- Major in Mathematics

University of Oxford
Sept 2008 - June 2009
Oxford, England

- Studied the equivalent of Oxford's second year physics program, as well as courses in mathematics, philosophy and literature.

Research & Projects

New York University
September 2013 - present

Searching For Integrability on the Flux Tube
Here we examine the complete landscape of integrable theories whose light degrees of freedom are Goldstone particles of spontaneously broken superspace symmetries.

New York University
April 2013 - September 2013

Superluminality on the worldsheet of an effective string.
We examine a novel theory of acausal yet UV-complete and Lorentz Invariant scattering of p-brane excitations using the thermodynamic Bethe Ansatz, providing a non-trivial example of a 'wrong sign', yet UV-healthy theory. (See Physics Reveiw Letters 2014 for publication)

New York University
October 2012 - August 2013

Reintroducing reparameterization invariance into effective string theories
Here I establish an isomorphism between effective string theories derived from a derivative expansion of geometric invariants, and those that follow from a CCWZ coset construction of spontaneously broken spactime symmetries (See Physical Review Letters D August 2013 for publication)

University of Pittsburgh
May 2010 - August 2010

GRW Decoherence
As a Brackenridge Fellow, I attempted to understand and simulate various features of a proposed theory of quantum measurement and presented my results at a year-end conference for the Fellowship program.

University of Hamburg
May 2008 - August 2008

Molecules of Degenerate quantum gases
In Klaus Sengstock's laboratory at the Institute for Laser Physics in Hamburg, Germany I was a research assistant. We used laser trapping and evaporative cooling to try and create bound states of bose-einstein condensates with ultracold fermions. My role was mainly engineering, designing lab equipment in CAD, and incorporating it into the experiemnt.

Teaching

Cooper Union

Spring 2013
Cooper Union for the Advancement of Science and Art

Adjunct Professor

- Professor for an advanced undergraduate course on General Relativity to students of the engineering school

New York University

October 2011 - Present
New York University

Adjunct Professor

- Teaching assistant for Physics I under Kyle Cranmer, and again under David Grier
- Teaching assistant for Physics II under Andrew MacFadyen
- Teaching assistant for General Physics under Burton Budick (X2)
- Lab instructor for Intermediate Physics Lab under Andy Haas
- Teaching Assistant for Quantum Mechanics II for Aditi Mitra
- Teaching Assistant for General Relativity for Andrei Gruzinov

University of Pittsburgh

April 2006, April 2010
University of Pittsburgh

Various Positions

- Grader for several courses ranging from Calculus I through Differential equations
- Worked as a tutor at the Mathemamatics Assistance Center for 3 years teaching the full undergraduate mathematics curriculum.
- Undergraduate teaching assistant for the physics department, teaching the full undergraduate physics curriculum.
- Worked for the Academic Resource Center (ARC) teaching various topics in mathematics, physics, economics and other sciences.

New York and Pittsburgh

September 2006 - present
Pittsburgh, PA and New York, NY

Private Tutoring

- Conducted several private tutoring sessions about a broad range of topics for the last 9 years, especially but not limited to mathematics and physics.

Conferences and Outreach

Conferences

Sept 19-21, 2014
New York, NY

Physics of the Universe Summit
short description

Sept 28-29, 2013
New York, NY

Back to the Future of Particle Physics
short description

January 9-12, 2013
San Diego, CA

Annual Joint Mathematics Meeting
short description

Outreach

Spring 2014
Washington D.C., USA

National STEM Festival
Headed the theory team for the ATLAS detector at LHC at the national STEM festival in Washington D.C. There I explained various topics on the frontiers of physics from all age groups, in clusters of varying size

Winter 2014
New York, USA

Invited talk at the NYC Atheist Society
I'll be giving a talk about the theoretical motivation and implications of the Higgs Boson discovery at the Large Hadron Collider.

Current
New York, USA

CoLab
I cofounded a non-profit where my current project is to write content for an open source online science textbook/tool for teachers. A very strong emphasis is placed on hands on learning, creative thinking, as well as integration with other subjects and current events.

Languages

Proficient: LaTeX, Python, C/C++, German
Beginner: JavaScript, HTML, CSS, and Spanish