



Marcell Howard

Curriculum Vitae

PERSONAL DETAILS

Address 3941 OHara Street, Pittsburgh, PA 15260 USA
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EDUCATION

University of Pittsburgh, Pittsburgh, PA *2019 - Present*
Ph.D., Physics

Case Western Reserve University, Cleveland, OH *2015 - 2019*
B.S., Mathematics and Physics

RESEARCH EXPERIENCE

Graduate Research Assistant *2020 - Present*
University of Pittsburgh advised by Arthur Kosowsky

Senior Honor's Thesis *2018 - 2019*
Case Western Reserve University advised by Kurt Hinterbichler

Research Experience for Undergraduates *Summer 2018*
Rutgers, the State University of New Jersey advised by Andrew Baker

Research Experience for Undergraduates *Summer 2017*
Cornell University advised by Gordon Stacey

PUBLICATIONS

S. Alexander, T. Daniel, M. Howard and M. König, *Exact fermionic Chern-Simons-Kodama state in quantum gravity*, *Physical Review D* **106** (2022) 106012 [2207.11856]

M. Howard, A. Kosowsky and G. Valogiannis, *Galaxy Cluster Statistics in Modified Gravity Cosmologies*, *arXiv e-prints* (2022) arXiv:2205.13015 [2205.13015]

TEACHING EXPERIENCE

Graduate Core Course Tutor

PHYS 2565: Non-Relativistic Quantum Mechanics 1

PHYS 2566: Non-Relativistic Quantum Mechanics 2

PHYS 1373 & 2373 (Combined section): Mathematical Methods in Physics

- Held two office hours per week.
- Provided homework help as well as furthered conceptual understanding of the material.

Graduate Teaching Assistant

PHYS 0111: Introduction to Physics 2

PHYS 0174: Basic Physics for Science and Engineering 1

PHYS 0175: Basic Physics for Science and Engineering 2

PHYS 0212: Introduction to Laboratory Physics

- Held two-four recitation sessions per week.
- Graded quizzes and tests.

Undergraduate Supplemental Instructor

MATH 121: Calculus for Scientists and Engineers I

MATH 122: Calculus for Scientists and Engineers II

- Held three small groups and one recitation session per week.
- Graded quizzes and tests.

Undergraduate Teaching Assistant

PHYS 121: General Physics I - Mechanics

PHYS 122: General Physics II - Electricity and Magnetism

- Graded written homework handed in every week.
- Handed out in class assignments and provided help to various students.

TALKS AND POSTER PRESENTATIONS

28th International Symposium on Particles, Strings, and Cosmology (PASCOS)

June 2023

An SZ-Like Effect On Stochastic Gravitational Wave Backgrounds

Invited talk

Simons Center for Geometry and Physics, Ending Inflation and the Hot Big Bang Workshop

June 2023

An SZ-Like Effect On Stochastic Gravitational Wave Backgrounds

Invited talk

American Physical Society April Meeting 2023

Apr 2023

An SZ-Like Effect On Stochastic Gravitational Wave Backgrounds

Contributed talk

Pennsylvania State University, Neighborhood Workshop

Apr 2023

An SZ-Like Effect On Stochastic Gravitational Wave Backgrounds

Contributed talk

Massachusetts Institute of Technology, String Theory Group Meeting

Feb 2023

An Exact Fermionic Chern-Simons-Kodama State in Quantum Gravity

Invited talk

National Society of Black Physicists Conference

Nov 2022

An Exact Fermionic Chern-Simons-Kodama State in Quantum Gravity

Contributed talk

Case Western Reserve University, Particle Astrophysics Seminar

Sep 2022

An Exact Fermionic Chern-Simons-Kodama State in Quantum Gravity

Invited talk

University of Pittsburgh, Group Meeting

Sep 2022

An Exact Fermionic Chern-Simons-Kodama State in Quantum Gravity

Contributed talk

American Physical Society April Meeting 2022

Apr 2022

Galaxy Cluster Statistics in Modified Gravity Cosmologies

Contributed talk	
Brown University, Alexander Lab Group Meeting	<i>Mar 2022</i>
<i>Galaxy Cluster Statistics in Modified Gravity Cosmologies</i>	
Invited talk	
National Society of Black Physicists Conference	<i>Nov 2021</i>
<i>Galaxy Cluster Statistics in Modified Gravity Cosmologies</i>	
Contributed talk	
Case Western Reserve University, Final Senior Project	<i>May 2019</i>
<i>The People vs Mimetic Gravity</i>	
Contributed poster and talk	
American Astronomical Society Meeting (Seattle, WA)	<i>Jan 2019</i>
<i>Probing the Evolution of Galaxies Using Stellar Mass Selected Samples</i>	
Contributed poster	
Case Western Reserve University, Senior Project Update	<i>Oct 2018</i>
<i>Counting the Degrees of Freedom in Mimetic Gravity</i>	
Contributed talk	
Rutgers, the State University of New Jersey, REU Presentation	<i>Aug 2018</i>
<i>Probing the Evolution of Galaxies Using Stellar Mass Selected Samples</i>	
Contributed poster and talk	
Cornell University, REU Presentation	<i>Aug 2017</i>
<i>Using Far-Infrared Fine-Structure Lines for Characterizing the Star Formation Processes in Nearby Galaxies</i>	
Contributed poster and talk	

OUTREACH

Astronomy on Tap NYC	<i>May 2023</i>
<i>Pete's Candy Store</i>	
Invited talk	
International Baccalaureate Class Group Project	<i>Mar 2023</i>
<i>St Edward High School</i>	
Invited speaker	
Seminar at High School (SAHS) and Pathway Career Speaker Series	<i>Dec 2022</i>
<i>Woodland Hills High School</i>	
Invited speaker	
Society of Physics Students Graduate Student Panel	<i>Oct 2022</i>
<i>University of Pittsburgh</i>	
Panel contributor	
Astronomy on Tap	<i>Sept 2022</i>
<i>Two Fray's Brewery</i>	
Contributed talk	
Cornell's Focus for Teens	<i>Summer 2017</i>
<i>Cornell University</i>	
Workshop Leader	

SKILLS

<i>Programming</i>	Python, Mathematica, Matlab
<i>Languages</i>	
<i>Software</i>	SciPy/matplotlib, AstroPy, git

PROFESSIONAL ORGANIZATIONS

Pittsburgh Particle Astrophysics and Cosmology Center (PITT PACC) *2020 - Present*

National Society of Black Physicists *2018 - Present*

FELLOWSHIPS AND AWARDS

2021 Honorable Mention for the Ford Foundation Predoctoral Fellowship *2021*

Dietrich School of Arts and Sciences Summer Research Predoctoral Fellowship
2020

Kenneth P. Dietrich School of Arts & Sciences Fellowship *2019*

Hayden Scholarship *2017*

Gaemsslen Grant Fund *2017*

Case Alumni Scholarship *2017*

University Scholarship *2015*

CWRU Grant *2015*