Andrew D. Hanlon *Postdoctoral Research Associate*

ahanlon@bnl.gov • +1 (412) 328-5449 • bnl.gov/staff/ahanlon • andrewhanlon.com
Physics Department • Brookhaven National Laboratory • Upton, New York 11973 • USA

Education

University of Pittsburgh — Pittsburgh, Pennsylvania, USA

Ph.D. in Physics — *December 2017*

Thesis: *The ρ Meson Spectrum and $K\pi$ Scattering with Partial Wave Mixing in Lattice QCD*

Advisor: Prof. Colin Morningstar

Co-Advisor: Prof. Adam K. Leibovich

M.S. in Physics — *September 2017*

Michigan State University — East Lansing, Michigan, USA

B.Sc. in Physics — *May 2013*

B.Sc. in Computer Science — *December 2010*

Teaching Experience

University of Pittsburgh — Pittsburgh, Pennsylvania, USA

Teaching Assistant — *August 2015 - May 2017*

Physics 0174 - Basc Phys Sci & Engr 1 (Spring 2017)
Physics 2566 - Non-Relativistic Quantum Mechanics 2 (grad level, Spring 2016)
Physics 0111 - Intro to Physics 2 (Spring 2016)
Physics 0174 - Basc Phys Sci & Engr 1 (Fall 2015)

Michigan State University — East Lansing, Michigan, USA

Teaching Assistant — *August 2011 - December 2011*

PHY 183 - Physics for Scientists and Engineers I

Research Positions

Brookhaven National Laboratory — Upton, New York, USA

Postdoctoral Research Associate — *November 2020 - Present*

My current work has incorporated physics related to the Electron-Ion Collider, which is to be constructed at Brookhaven National Laboratory. This includes investigating the internal structure of the nucleon from first principles. Of particular interest is the recently developed formalism for calculating parton distribution functions in lattice QCD using Large-Momentum Effective Field Theory.

Supervisor: Dr. Swagato Mukherjee

Helmholtz-Institut Mainz — Mainz, Germany

Postdoctoral Research Associate — *October 2017 - October 2020*

Highlights of my work during this time include the calculation of several three-pion finite-volume excited-state energies in various momentum frames for the first time, and the discovery of large discretization errors for baryon-baryon systems. These results were published in high-impact journals and several conference proceedings.

Supervisor: Prof. Hartmut Wittig

University of Pittsburgh — Pittsburgh, Pennsylvania, USA

Graduate Student Researcher — *August 2014 - September 2017*

My Ph.D. research focused on $K\pi$ scattering and the implementation of tetraquark interpolating operators with lattice QCD. Using the so-called Lüscher method, we could extract information about infinite-volume resonances (i.e. the $K^*(892)$) from finite-volume $K\pi$ energies. Additionally, by including tetraquark operators, we found extra finite-volume energies in our system, suggesting these operators are very important for a complete basis. This work served as the foundation for my dissertation, and has been

reported in various publications and conference proceedings.

Supervisor: Prof. Colin Morningstar

Michigan State University — East Lansing, Michigan, USA

Undergraduate Student Researcher — *September 2012 - August 2013*

We studied the effects of applying residual symmetries to the neutrino mass matrix, which resulted in predictions for the Dirac CP phase, the atmospheric mixing angle, and the Jarlskog invariant in the neutrino sector. In addition, we determined the conditions that would allow experiments to measure the mass hierarchy and/or the octant of the atmospheric angle. This work resulted in two publications.

Supervisor: Prof. Wayne Repko

Wayne State University — Detroit, Michigan, USA

Undergraduate Student Researcher — *May 2011 - August 2011*

This was an REU (Research Experience for Undergraduates) program. I did research on charmed meson mixing within the 't Hooft model.

Supervisor: Prof. Alexey Petrov

Technical Positions

Michigan State University — East Lansing, Michigan, USA

IT Assistant — *June 2012 - July 2013*

Maintain and update The Lai Research Group's servers and websites.

Supervisor: Dr. Chih-Wei Lai

International Business Center at Michigan State University — East Lansing, Michigan, USA

Web Developer — *October 2009 - May 2011*

I helped develop and maintain several websites and implemented miscellaneous software needs. The main tools used were classic asp, ASP.NET with C# backend, and a some PHP.

Supervisor: Jamie Rytlewski

Integrated Systems Specialists — Shelby Township, Michigan, USA

IT Technician — *June 2007 - August 2009*

This company had several clients for which various IT services were provided. My role was to provide support to our clients, which involved setting up networks and servers, programming, troubleshooting, etc.

Supervisor: Dean Rynkowski

Technical Skills

- 15+ years experience programming:
  C++ (10+ years), Python (10+ years), and several other languages (e.g. C, C#, Java, Perl, Ruby, Bash, PHP, etc.)
- High performance computing using GPUs, OpenMPI, and OpenMP on several supercomputers around the world
- Implementation and use of numerical algorithms and data analysis:
  performing Monte Carlo simulations, solving linear systems, implementing nonlinear regression analysis, etc.
- Experience with database management:
  Microsoft SQL Server, MySQL, SQLite
- 10+ years experience with Linux/GNU

Peer-Reviewed Publications

Interactions of πK, $\pi\pi K$ and $KK\pi$ systems at maximal isospin from lattice QCD
Zachary T. Draper, Andrew D. Hanlon, Ben Hörz, Colin Morningstar, Fernando Romero-López, Stephen R. Sharpe
JHEP 05 (2023) 137 • doi:10.1007/JHEP05(2023)137 • arXiv:2302.13587

Unpolarized proton PDF at NNLO from lattice QCD with physical quark masses
Xiang Gao, Andrew D. Hanlon, Jack Holligan, Nikhil Karthik, Swagato Mukherjee, Peter Petreczky, Sergey Syritsyn, Yong Zhao
Phys.Rev.D 107 (2023) 7, 074509 • doi:10.1103/PhysRevD.107.074509 • arXiv:2212.12569

Elastic nucleon-pion scattering at $m_\pi = 200$ MeV from lattice QCD
John Bulava, Andrew D. Hanlon, Ben Hörz, Colin Morningstar, Amy Nicholson, Fernando Romero-López, Sarah Skinner, Pavlos Vranas, André Walker-Loud
Nucl.Phys.B 987 (2023) 116105 • doi:10.1016/j.nuclphysb.2023.116105 • arXiv:2208.03867

Continuum-extrapolated NNLO valence PDF of the pion at the physical point
Xiang Gao, Andrew D. Hanlon, Nikhil Karthik, Swagato Mukherjee, Peter Petreczky, Philipp Scior, Shuzhe Shi, Sergey Syritsyn, Yong Zhao, Kai Zhou
Phys.Rev.D 106 (2022) 11, 114510 • doi:10.1103/PhysRevD.106.114510 • arXiv:2208.02297

Pion distribution amplitude at the physical point using the leading-twist expansion of the quasi-distribution-amplitude matrix element
Xiang Gao, Andrew D. Hanlon, Nikhil Karthik, Swagato Mukherjee, Peter Petreczky, Philipp Scior, Sergey Syritsyn, Yong Zhao
Phys.Rev.D 106 (2022) 7, 074505 • doi:10.1103/PhysRevD.106.074505 • arXiv:2206.04084

On the Reliable Lattice-QCD Determination of Multi-Baryon Interactions and Matrix Elements
(*Chapter 16 of* ***Nuclear Forces for Precision Nuclear Physics: A Collection of Perspectives***)
Raúl Briceño, Jeremy R. Green, Andrew D. Hanlon, Amy Nicholson, André Walker-Loud
Few Body Syst. 63 (2022) 4, 67 • doi:10.1007/s00601-022-01749-x • arXiv:2202.01105

Lattice QCD Determination of the Bjorken-x Dependence of Parton Distribution Functions at Next-to-Next-to-Leading Order
Xiang Gao, Andrew D. Hanlon, Swagato Mukherjee, Peter Petreczky, Philipp Scior, Sergey Syritsyn, Yong Zhao
Phys.Rev.Lett. 128 (2022) 14, 142003 • doi:10.1103/PhysRevLett.128.142003 • arXiv:2112.02208

Interactions of two and three mesons including higher partial waves from lattice QCD
Tyler D. Blanton, Andrew D. Hanlon, Ben Hörz, Colin Morningstar, Fernando Romero-López, Stephen R. Sharpe
JHEP 10 (2021) 023 • doi:10.1007/JHEP10(2021)023 • arXiv:2106.05590

Weakly Bound H Dibaryon from SU(3)-Flavor-Symmetric QCD
Jeremy R. Green, Andrew D. Hanlon, Parikshit M. Junnarkar, Hartmut Wittig
Phys.Rev.Lett. 127 (2021) 24, 242003 • doi:10.1103/PhysRevLett.127.242003 • arXiv:2103.01054

Two-nucleon S-wave interactions at the SU(3) flavor-symmetric point with $m_{ud} \approx m_s^{\rm phys}$: a first lattice QCD calculation with the stochastic Laplacian Heaviside method
Ben Hörz, Dean Howarth, Enrico Rinaldi, Andrew Hanlon, Chia Cheng Chang, Christopher Körber, Evan Berkowitz, John Bulava, M.A. Clark, Wayne Tai Lee, Colin Morningstar, Amy Nicholson, Pavlos Vranas, André Walker-Loud
Phys.Rev.C 103 (2021) 1, 014003 • doi:10.1103/PhysRevC.103.014003 • arXiv:2009.11825

Two- and Three-Pion Finite-Volume Spectra at Maximal Isospin from Lattice QCD
Ben Hörz, Andrew Hanlon
Phys.Rev.Lett. 123 (2019) 14, 142002 • doi:10.1103/PhysRevLett.123.142002 • arXiv:1905.04277

Determination of s- and p-wave $I = 1/2$ $K\pi$ scattering amplitudes in $N_f = 2 + 1$ lattice QCD
Ruairí Brett, John Bulava, Jacob Fallica, Andrew Hanlon, Ben Hörz, Colin Morningstar
Nucl.Phys.B 932 (2018) 29-51 • doi:10.1016/j.nuclphysb.2018.05.008 • arXiv:1802.03100

Estimating the two-particle K-matrix for multiple partial waves and decay channels from finite-volume energies
Colin Morningstar, John Bulava, Bijit Singha, Ruairí Brett, Jacob Fallica, Andrew Hanlon, Ben Hörz
Nucl.Phys.B 924 (2017) 477-507 • doi:10.1016/j.nuclphysb.2017.09.014 • arXiv:1707.05817

Residual Symmetries Applied to Neutrino Oscillations at NOνA and T2K
Andrew D. Hanlon, Wayne W. Repko, Duane A. Dicus
Adv.High Energy Phys. 2014 (2014) 469572 • doi:10.1155/2014/469572 • arXiv:1403.7552

Phenomenological consequences of residual $\mathbb{Z}_2^s$ and $\overline{\mathbb{Z}}_2^s$ symmetries
Andrew D. Hanlon, Shao-Feng Ge, Wayne W. Repko
Phys.Lett.B 729 (2014) 185-191 • doi:10.1016/j.physletb.2013.12.063 • arXiv:1308.6522

Articles Submitted to Peer-Reviewed Journals

Lattice QCD study of $\pi\Sigma$–$\bar{K}N$ scattering and the $\Lambda(1405)$ resonance
John Bulava, Bárbara Cid-Mora, Andrew D. Hanlon, Ben Hörz, Daniel Mohler, Colin Morningstar, Joseph Moscoso, Amy Nicholson, Fernando Romero-López, Sarah Skinner, André Walker-Loud
arXiv:2307.13471
Submitted to Physical Review D

The two-pole nature of the $\Lambda(1405)$ from lattice QCD
John Bulava, Bárbara Cid-Mora, Andrew D. Hanlon, Ben Hörz, Daniel Mohler, Colin Morningstar, Joseph Moscoso, Amy Nicholson, Fernando Romero-López, Sarah Skinner, André Walker-Loud
arXiv:2307.10413
Submitted to Physical Review Letters

Conference Proceedings

The long-distance behaviour of the vector-vector correlator from $\pi\pi$ scattering
Srijit Paul, Andrew D. Hanlon, Ben Hörz, Daniel Mohler, Colin Morningstar, Hartmut Wittig
PoS LATTICE2022 (2023) 073 • Lattice 2022 • doi:10.22323/1.430.0073

Lattice QCD Determination of the Bjorken-x Dependence of PDFs at NNLO
Xiang Gao, Andrew D. Hanlon, Swagato Mukherjee, Peter Petreczky, Philipp Scior, Sergey Syritsyn, Yong Zhao
PoS LATTICE2022 (2023) 104 • Lattice 2022 • doi:10.22323/1.430.0104

Nucleon-nucleon scattering from distillation
Jeremy R. Green, Andrew D. Hanlon, Parikshit M. Junnarkar, Hartmut Wittig
PoS LATTICE2022 (2023) 200 • Lattice 2022 • arXiv:2212.09587

Setting the Scale Using Baryon Masses with Isospin-Breaking Corrections
Alexander M. Segner, Andrew D. Hanlon, Andreas Risch, Hartmut Wittig
PoS LATTICE2022 (2023) 084 • Lattice 2022 • arXiv:2212.07176

Isospin-breaking Effects in Octet and Decuplet Baryon Masses
Alexander M. Segner, Andrew D. Hanlon, Renwick J. Hudspith, Andreas Risch, Hartmut Wittig
PoS LATTICE2021 (2022) 095 • Lattice 2021 • arXiv:2112.08262

$I = 1$ π-π scattering at the physical point
Srijit Paul, Andrew D. Hanlon, Ben Hörz, Daniel Mohler, Colin Morningstar, Hartmut Wittig
PoS LATTICE2021 (2022) 551 • Lattice 2021 • arXiv:2112.07385

Toward a resolution of the NN controversy
Amy Nicholson, Evan Berkowitz, John Bulava, Chia Cheng Chang, M.A. Clark, Andrew D. Hanlon, Ben Hörz, Dean Howarth, Christopher Körber, Wayne Tai Lee, Aaron S. Meyer, Henry Monge-Camacho, Colin Morningstar, Enrico Rinaldi, Pavlos Vranas, André Walker-Loud
PoS LATTICE2021 (2022) 098 • Lattice 2021 • arXiv:2112.04569

H dibaryon away from the $SU(3)_f$ symmetric point
M. Padmanath, John Bulava, Jeremy R. Green, Andrew D. Hanlon, Ben Hörz, Parikshit Junnarkar, Colin Morningstar, Srijit Paul, Hartmut Wittig
PoS LATTICE2021 (2022) 459 • Lattice 2021 • arXiv:2111.11541

Continuum limit of baryon-baryon scattering with $SU(3)$ flavor symmetry
Jeremy R. Green, Andrew D. Hanlon, Parikshit M. Junnarkar, Hartmut Wittig
PoS LATTICE2021 (2022) 294 • Lattice 2021 • arXiv:2111.09675

Progress on Meson-Baryon Scattering
Colin Morningstar, John Bulava, Andrew D. Hanlon, Ben Hörz, Daniel Mohler, Amy Nicholson, Sarah Skinner, André Walker-Loud
PoS LATTICE2021 (2022) 170 • Lattice 2021 • arXiv:2111.07755

Including Tetraquark Operators in the Low-Lying Scalar Meson Sectors in Lattice QCD
Daniel Darvish, Ruairí Brett, John Bulava, Jacob Fallica, Andrew Hanlon, Ben Hörz, Colin Morningstar
AIP Conf.Proc. 2249 (2020) 1, 030021 • MENU 2019 • arXiv:1909.07747

Spectroscopy From The Lattice: The Scalar Glueball
Ruairí Brett, John Bulava, Daniel Darvish, Jacob Fallica, Andrew Hanlon, Ben Hörz, Colin Morningstar
AIP Conf.Proc. 2249 (2020) 1, 030032 • MENU 2019 • arXiv:1909.07306

The H dibaryon from lattice QCD with SU(3) flavor symmetry
Andrew Hanlon, Anthony Francis, Jeremy Green, Parikshit Junnarkar, Hartmut Wittig
PoS LATTICE2018 (2018) 081 • Lattice 2018 • arXiv:1810.13282

Scattering phase shift determinations from a two-scalar field theory
Daniel Darvish, Ruairí Brett, John Bulava, Jacob Fallica, Andrew Hanlon, Colin Morningstar
PoS LATTICE2018 (2018) 070 • Lattice 2018 • arXiv:1810.11433

$K\pi$ scattering and excited meson spectroscopy using the stochastic LapH method
Ruairí Brett, John Bulava, Jacob Fallica, Andrew Hanlon, Ben Hörz, Colin Morningstar
PoS LATTICE2018 (2019) 071 • Lattice 2018 • arXiv:1810.11311

Scattering from finite-volume energies including higher partial waves and multiple decay channels
Ruairí Brett, John Bulava, Jacob Fallica, Andrew Hanlon, Ben Hörz, Colin Morningstar, Bijit Singha
EPJ Web Conf. 175 (2018) 05005 • Lattice 2017 • arXiv:1710.04169

Lattice QCD Study of Excited Hadron Resonances
Colin Morningstar, John Bulava, Brendan Fahy, Jacob Fallica, Andrew Hanlon, Ben Hörz, Keisuke Juge, Chik Him Wong
Acta Phys.Polon.Supp. 9 (2016) 421-426 • Excited QCD 2016 • doi:10.5506/APhysPolBSupp.9.421

Excited-state energies and scattering phase shifts from lattice QCD with the stochastic LapH method
Colin Morningstar, John Bulava, Brendan Fahy, Jacob Fallica, Andrew Hanlon, Ben Hoerz, Keisuke Juge, Chik Him Wong
CIPANP 2015 • arXiv:1510.00371

Talks

Invited Talks

Hadron spectroscopy and few-body dynamics *August 3, 2023*
Review Plenary at the 40th International Symposium on Lattice Field Theory
Fermi National Accelerator Laboratory

Two-baryon interactions from lattice QCD: Towards controlling systematics *March 22, 2023*
INT Workshop 20r-2c: Accessing and Understanding the QCD Spectra
The Institute for Nuclear Theory, University of Washington, Seattle, WA

The Nature of Strongly Interacting Matter: Connecting Theory to Experiment *March 6, 2023*
Physics Department Colloquium
College of William & Mary, Williamsburg, VA

Multi-hadron Interactions from lattice QCD *February 27, 2023*
Physics Theory Seminar
Columbia University, New York, NY

Two-nucleon interactions in the continuum from lattice QCD *November 14, 2022*
4th Workshop on Future Directions in Spectroscopy Analysis (FDSA2022)
Jefferson Lab, Newport News, VA

The Unpolarized Nucleon PDF at the physical point from lattice QCD using NNLO matching *September 15, 2022*
INT Workshop 22-83W: Parton Distributions and Nucleon Structure
The Institute for Nuclear Theory, University of Washington, Seattle, WA

Pushing the limits of the three-particle quantization condition with lattice QCD *August 15, 2022*
Bethe Forum: Multihadron Dynamics in a Box
Bethe Center for Theoretical Physics, Bonn, Germany

Pushing the limits of the three-particle quantization condition with lattice QCD *May 9, 2022*
HU Berlin / NIC DESY Zeuthen Joint Lattice Seminar
Humboldt University / DESY Zeuthen, Germany (virtual)

Reliable baryon-baryon interactions from lattice QCD: variational spectrum and continuum limit *May 5, 2021*
INT Program 21-1b: Nuclear Forces for Precision Nuclear Physics
The Institute for Nuclear Theory (Joint virtual talk with Jeremy Green)

Towards the continuum limit of two-baryon interactions from lattice QCD *March 10, 2021*
Hadron in Nucleus 2020 (HIN20)
Yukawa Institute for Theoretical Physics, Kyoto University (virtual)

The H dibaryon from lattice QCD *September 25, 2019*
Nuclear Theory Seminar
Lawrence Berkeley National Laboratory

Progress on dibaryon systems from lattice QCD *September 9, 2019*
Bethe Forum: Multihadron dynamics in a box
Bethe Center for Theoretical Physics, Bonn, Germany

Progress on the H dibaryon from $N_f = 2 + 1$ CLS ensembles *April 15, 2019*
International Molecule-type Workshop: Frontiers in Lattice QCD and related topics
Yukawa Institute for Theoretical Physics, Kyoto University

Lattice QCD study of the H dibaryon using hexaquark and two-baryon interpolators *September, 2019*
The Ninth International Workshop on Chiral Dynamics
Durham, NC, USA

Special Seminars

Form Factors in the Partonic Regime: Computing the large-Q^2 Pion Form Factors and the Kaon Distribution Amplitude with Physical Quark Masses *April 22, 2022*
USQCD All Hands Meeting
MIT (virtual)

Two-baryon interactions from lattice QCD *February 5, 2021*
Nuclear Physics & RIKEN Theory Seminar
Brookhaven National Laboratory (virtual)

Scattering from Lattice QCD: The Infinite Volume Inside a Box *June 14, 2019*
Colloquium talk in celebration of 10 years of HIM
Helmholtz-Institut Mainz, Mainz, Germany

Contributed Talks

Pion and proton PDFs at the physical point from lattice QCD with NNLO matching *March 30, 2023*
DIS2023: XXX International Workshop on Deep-Inelastic Scattering and Related Subjects
Michigan State University, East Lansing, MI

The NNLO unpolarized isovector quark PDF of the nucleon at the physical point from lattice QCD *December 1, 2022*
2022 Meeting on Lattice Parton Physics from Large-Momentum Effective Theory
Argonne National Laboratory

Nucleon PDFs at the physical point from lattice QCD using NNLO matching *August 10, 2022*
The 39th International Symposium on Lattice Field Theory
Universität Bonn, Bonn, Germany

Three-hadron s- and d-wave interactions from lattice QCD *July 29, 2021*
The 38th International Symposium on Lattice Field Theory
ZOOM/GATHER@MIT

Beyond s-wave interactions of two- and three-meson systems with maximal isospin from lattice QCD *July 28, 2021*
19th International Conference on Hadron Spectroscopy and Structure in memoriam Simon Eidelman (HADRON2021)
Universidad Nacional Autónoma de México, Mexico City (Virtual Zoom meeting)

Two-nucleon interactions from lattice QCD with a variational method: where are the bound states? *April 14, 2021*
9th Workshop of the APS Topical Group on Hadronic Physics
Virtual Zoom meeting

Progress on the H dibaryon from $N_f = 2 + 1$ CLS ensembles *April 10, 2019*
Bound states in QCD and beyond III
Schlosshotel Rheinfels, Germany.

The H dibaryon from Lattice QCD using CLS ensembles *February 14, 2019*
"Matter and the Universe" Days
DESY Hamburg, Germany.

The H-dibaryon from Lattice QCD using Two-baryon Operators with Distillation *August 29, 2018*
Scattering Amplitudes and Resonance Properties from Lattice QCD
Mainz Institute for Theoretical Physics, Johannes Gutenberg University.

Progress towards understanding the H-dibaryon from lattice QCD *July 26, 2018*
The 36th International Symposium on Lattice Field Theory
East Lansing, MI, USA.

Implementing a Lüscher Analysis with Multiple Partial Waves and Decay Channels *May 15, 2018*
Scattering from the lattice: applications to phenomenology and beyond
Hamilton Mathematics Institute, TCD, Dublin, IE.

Hadron Resonances from Lattice QCD *May 10, 2016*
The 2016 Phenomenology Symposium at the University of Pittsburgh
Pittsburgh, PA, USA.

Excited state energies and scattering phase shifts from lattice QCD with the stochastic LapH method *April 10, 2015*
6th Workshop of the APS Topical Group on Hadronic Physics
Baltimore, MD, USA.

Computer Time Allocations

Hadron-hadron scattering from lattice QCD, TACC (PHY20009) 2023/2024
450,000 node-hours on Frontera

Hadronic Interactions and Spectroscopy in Lattice QCD with Wilson Quarks, Juelich (hintspec) 2022/2023
10.0 Mcore-hours on JUWELS Booster
37.0 Mcore-hours on JUWELS

Form-factors in the partonic regime: Computing the large-Q^2 Pion Form Factors and the Kaon Distribution Amplitude with Physical Quark Masses, USQCD (formfactors-22-23) 2022/2023
90K K80-GPU-hours at BNL
Principal Investigator

Hadron-hadron scattering from lattice QCD, TACC (PHY20009) 2022/2023
2,000,000 node-hours on Frontera

Internal Structure of Strong Interaction Nambu-Goldstone Bosons, INCITE 2022
200,000 node-hours on Polaris

Hadronic Interactions and Spectroscopy in Lattice QCD with Wilson Quarks, Juelich (hintspec) 2021/2022
9.0 Mcore-hours on JUWELS Booster
50.0 Mcore-hours on JUWELS

Realistic study of the internal structure of pions and kaons on a lattice, XSEDE (PHY210071) 2022/2021
380,000 GPU Hours on NCSA Delta system

Computing Pion Generalized Parton Distribution with Physical Quark Masses, USQCD (piongpd-21-22) 2021/2022
73K K80-GPU-hours at BNL

Hadron-hadron scattering from lattice QCD, TACC (PHY20009) 2021/2022
2,160,000 node-hours on Frontera

Lattice QCD with Wilson Quarks at zero and non-zero Temperature, Juelich (chmz21) 2020/2021
27.90 Mcore-hours on JURECA Booster
29.00 Mcore-hours on JUWELS
2.90 Mcore-hours on JUWELS Booster

Hadron-hadron scattering from lattice QCD, TACC (PHY20009) 2020/2021
1,900,000 node-hours on Frontera

The Structure and Interactions of Nucleons from the Standard Model, INCITE 2020
500,000 node-hours on Summit

Lattice QCD with Wilson Quarks at zero and non-zero Temperature, Juelich (chmz21) 2019/2020
35 Mcore-hours on JUWELS
30 Mcore-hours on JURECA BOOSTER

Hadron-hadron scattering from lattice QCD, XSEDE (TG-MCA07S017) 2019/2020
659,989 node-hours on Stampede2

Lattice QCD with Wilson Quarks at zero and non-zero Temperature, Juelich (chmz21) 2018/2019
20 Mcore-hours on JUWELS

Meson-meson and meson-baryon scattering from lattice QCD, XSEDE (TG-MCA07S017) 2018/2019
761,000 node-hours on Stampede2

Synergistic Activities

- BNL Nuclear/RIKEN Theory Seminar Committee member (2022 - Present)
- Reviewer of computing time allocations for several facilities
- Co-editor of the Delocalized Editorial blog (2019 - Present)
  https://www.theorygirls.com/blog
- Member of the Pitt Science Outreach Club (2016/2017)

Honors and Awards

- University of Pittsburgh School of Arts & Sciences Fellowship (Fall 2016)
- Kenneth P. Dietrich School of Arts & Sciences Fellowship
  University of Pittsburgh (2013-2014)
- Lawrence W. Hantel Endowed Fellowship Fund, in Memory of Professor Donald J. Montgomery
  Michigan State University (2012-2013)