

## Education

Ph.D. Physics, Columbia University	2014
Area of study: Experimental nuclear physics and heavy ion collisions	
Thesis: <i>Inclusive jet production in ultrarelativistic proton-nucleus collisions</i>	
Thesis supervisor: Brian Cole	
M.Phil. Physics, Columbia University	2012
M.A. Physics, Columbia University	2010
Physics Department Preceptor	
S.B. Physics, Massachusetts Institute of Technology	2008
Thesis: <i>(n, n'γ) Reactions in <sup>63,65</sup>Cu and Background in 0νββ Experiments</i>	
Thesis supervisor: Joseph Formaggio	
S.B. Mathematics w/ Computer Science, Massachusetts Institute of Technology	2008

## Academic Employment

Assistant Professor	2016 – present
Physics Department, University of Colorado Boulder	
Goldhaber Distinguished Fellow	2013 – 2016
Physics Department, Brookhaven National Laboratory	
Graduate Research Assistant	2010 – 2013
Physics Department, Columbia University	
Graduate Teaching Assistant, including as Physics Preceptor (Head TA)	2008 – 2010
Physics Department, Columbia University	

## External Funding

<i>Searching for Parton Energy Loss in Quark-Gluon Plasma Droplets</i>	
Single PI: Dennis Perepelitsa	
D.O.E. Office of Science Early Career Research Program	
Award amount: \$750,000	Funding period: 9/1/2017 - 8/31/2022
<i>Next-Generation Experimental Probes of Hot and Dense Nuclear Matter</i>	
Single PI: Dennis Perepelitsa	
Research Corporation for Scientific Advancement, Cottrell Scholar Award	
Award amount: \$100,000	Funding period: 7/1/2020 - 6/31/2023
<i>Experimental Relativistic Heavy Ion Physics at the University of Colorado Boulder</i>	
PI: James Nagle, Co-PI: Dennis Perepelitsa	
D.O.E. Office of Science, Office of Nuclear Physics	
Award amount: \$1,638,000	Funding period: 3/1/2021 - 2/29/2024
<i>MRI Consortium: Development of an Event Plane Detector for the sPHENIX Experiment at the Relativistic Heavy Ion Collider</i>	

PI: Rosi Reed, Co-PIs: Ron Belmont, Anders Knospe, Dennis Perepelitsa  
National Science Foundation, Major Research Instrumentation (MRI) Program

Award amount: \$572,067

Funding period: 8/1/2021 - 7/31/2023

## Awards and Recognitions

Outstanding Physics Teacher Award, University of Colorado Boulder	2021
Cottrell Scholar Award	2020
D.O.E. Office of Science Early Career Award	2017
MIT Laboratory for Nuclear Science, Lee Grodzins Award	2016
Delivered the 508th Brookhaven Lecture	2015
Blavatnik Awards for Young Scientists, Regional Award Finalist	2015
ATLAS Thesis Award	2014
RHIC/AGS Thesis Award	2014
Robert Hofstadter diploma, Erice school “New Talent” award	2014
Goldhaber Distinguished Fellowship	2013
Quark Matter 2012 Poster Award	2012
MIT Experimental Study Group, Todd Anderson Teaching Award	2008
Mathematical Contest in Modeling, Meritorious Winner	2007

## Research Experience

### ATLAS Heavy Ions (2011 - present)

- *Team Leader of CU Boulder effort on ATLAS Heavy Ions (2016 - present)*. I founded and lead the ATLAS Heavy Ions effort at CU Boulder. The Team Leader represent the group’s interests to the ATLAS Heavy Ions group, U.S. ATLAS, and the ATLAS Collaboration at large. This includes organizing our local group’s physics activities, supervising qualification tasks for new ATLAS members from CU (so far, for five graduate students and four post-docs), supervising an undergrad participating in the U.S. ATLAS SUPER (Summer Undergraduate Program for Exceptional Researchers) program, and advocating for conference and workshops talks for group members.
- *Convener of the Heavy Ion working group (2020 - present)*. The Heavy Ion Convener position is the highest scientific leadership position within ATLAS which is focused on the experimental nuclear physics part of the program (any higher position is typically drawn from the much larger high-energy physics side of ATLAS). The Conveners coordinate the overall data-taking, analysis approval, paper preparation, conference submission, and direct the overall scientific direction for the Heavy Ion effort as a whole.
- *Sub-convener of the Jets working sub-group (2019 - 2020)*, and *Sub-convener of the Electroweak/Quarkonia working sub-group (2016 - 2019)*. The two sub-conveners of each physics group organize physics analysis meetings, define data-taking, reconstruction, and publication strategies, and coordinate the review of physics analyses for measurements with reconstructed

jet final states (Jets) and those involving direct photons, heavy EW bosons, quarkonia and heavy flavor (EW/Onia).

- *Measurements of collectivity in small and large systems (2017 - present)*. The CU group has completed four measurements of collective behavior, particularly focusing on small systems. These are the first observation of charm and bottom flow in  $pp$  collisions (published PRL) and a measurement of the same in Pb+Pb collisions (published PLB), the first observation of flow in photo-nuclear collisions (published PRC), and the observation of flow for very high- $p_T$  particles in  $p$ +Pb collisions (published EPJC). The group has two additional analyses underway in this area.
- *Measurements of photon- and Z-tagged jet quenching (2016 - present)*. I performed the main analysis for our first two publications of photon-tagged jet energy loss and modification in Run 2 Pb+Pb data. These are measurements of how the photon+jet transverse momentum balance (published PLB) and the photon-tagged fragmentation function (published PRL) are modified in Pb+Pb collisions. The group has then produced a first measurement of Z-tagged jet modification, also published in PRL, and has two additional analyses underway in this area.
- *Operations during heavy ion data-taking (2011 - 2013, 2015 - 2018)* The CU group has been present at CERN for data-taking during heavy ion running periods in 2016, 2017, and 2018 (before coming to CU, the PI was also present in 2011, 2013, and 2015). Our group activities include trigger preparation, fast validation of reconstruction, data QA, rendering event displays, and performance plot production.
- *Service on Editorial Boards (2014 - present)*. I have served on the Editorial Board (internal ATLAS analysis and paper reviewer) for three results on inclusive jet fragmentation functions in Pb+Pb (published NPA), electromagnetic di-muon probes of QGP (published PRL), heavy flavor muon flow in  $p$ +Pb (Preliminary result for Quark Matter 2017).
- *Measurements of hard process rates in  $p$ +Pb collisions (2013 - present)*. These measurements are important for constraining the effects of the nuclear environment on hard process rates before any QGP effects, as well as exploring physical correlations between hard and soft particle production in extreme kinematic regimes. These have resulted in two publications on jets in 2013  $p$ +Pb data (main analyzer, PLB) and on photons in 2016  $p$ +Pb data (supervisor and paper editor, PLB), each the first paper for their final state in  $p$ +Pb collisions.
- *Measurements of hard and soft particle production in  $p$ +Pb and  $pp$  (2013 - 2016)*. I have published two ATLAS papers on this topic. The first interprets soft particle production in terms of novel geometric models of  $p$ +Pb collisions (contributing analyzer, EPJC), while the second measures rapidity-separated correlations between soft particle production from the fragmenting beam and the kinematics of the hard scattering (main analyzer, PLB).
- *Centrality calibration (2013 - present)*. I performed the centrality calibration for 2013  $p$ +Pb data, 2015 Pb+Pb data, 2017 Xe+Xe data, 2018 Pb+Pb data, and have supervised the calibration of 2016  $p$ +Pb data. The CU group has stewardship of the official geometric configurations and uncertainties used in all analyses from these datasets.

- *Luminosity calibration (2011 - 2013)*. I performed the van der Meer scan analysis of 2.76 TeV  $pp$  data taken in 2013 within the ATLAS Luminosity Task Force, as part of my Qualification Task to join ATLAS. This calibration is critical for the  $pp$  production cross-sections which are the reference data for Run 1  $R_{AA}$  measurements.

### **sPHENIX Experiment (2014 - present)**

- *Heavy ion jet, photon, and hadronic cluster reconstruction (2016 - present)*. The CU group is the principal developer and steward of the heavy ion underlying event estimation and subtraction algorithms, the downstream calorimeter jet reconstruction, the 3-D topological clustering, and the particle flow jet reconstruction. We also lead determinations of the expected performance using these procedures for jet and photon measurements. This is one of the major capabilities needed for all reconstructed jet-based analyses in sPHENIX.
- *Convener of Jet Structure Topical Group (2016 - present)* The two conveners coordinate work related to developing reconstruction methods, determining expected performance, and exploring possible jet, photon+jet and jet structure measurements.
- *Projections of physics measurements (2014 - present)*. The CU group has prepared projections for the expected kinematic reach for hadron, jet,  $b$ -jet, and direct photon yields and the statistical reach for correlation measurements. These have been included since the first major sPHENIX proposal document and have evolved with increasing understanding of luminosity projections and running plan. Some recent highlights include preparing the Beam Use Proposal for sPHENIX in 2023-2025 for the BNL Nuclear and Particle Physics (NPP) Department's Physics Advisory Committee (PAC), and preparing projections for the successful NSF MRI proposal to fund the Event Plane Detector (EPD).
- *Participation in sPHENIX science and project reviews (2015 - present)*. I have presented the technical and scientific case for sPHENIX in U.S. Department of Energy and internal Brookhaven National Laboratory reviews. The include proof-of-principle demonstration of  $b$ -jet tagging capabilities, the calorimeter simulations and reconstruction, and the Inner Hadronic Calorimeter scientific case.
- *Participation in beam tests of detector prototypes (2018 - 2019)*. The CU group has contributed to test beam data-taking with the sPHENIX electromagnetic and hadronic calorimeter prototypes at the Fermilab Test Beam Facility in Spring 2018, focusing primarily on the evaluation of the distribution of incident test beam energies. Analysis of the test beam data has been published in the IEEE Transactions on Nuclear Science.

### **PHENIX Experiment (2009 - present)**

- *Service on Internal Review Committees (2014 - present)*. I have served on the Internal Review Committee (formed within PHENIX to assist with paper preparation and to adjudicate internal circulation comments) for three papers: a study of the centrality determination and biases in  $d$ +Au collisions (published PRC), an analysis in progress on jet reconstruction in Cu+Au collisions, and an analysis in progress on  $\pi^0$  production in a systematic scan of small collision systems. The two analyses in progress expect to release papers in 2021.

- *Measurement of jet production in  $p+p$  and  $d+Au$  collisions (2011 - 2015)*. I was the main analyzer for the first published measurement of the reconstructed jet production cross-section in  $p+p$  collisions in PHENIX and the first one in  $d+Au$  collisions at RHIC (published PRL).
- *Data-taking shifts (2011 - 2016)*. I served on a total of six week-long data-taking shifts, in a variety of shift positions, during the runs in calendar years 2011 to 2016.
- *Integration of FVTX into data acquisition system (2009 - 2010)*. I helped integrate the readout of the forward silicon tracker sub-system into the PHENIX data acquisition and event builder systems.

## Teaching Experience

At the University of Colorado Boulder, I have lectured Phys2210 (Classical Mechanics and Mathematical Methods I, typically 80 students per lecture section) for three semesters, Phys1120 (General Physics II, calculus-based, 300 students per lecture section) for one semester, Phys2600 (Scientific Computing, 40 students) for two semesters, Phys3220 (Quantum Mechanics I, 80 students) for one semester, and Phys3210 (Classical Mechanics and Mathematical Methods II, 110 students) for one semester. For Phys2210, Phys3210, Phys3220, I wrote the lectures, homeworks and midterm exams. In my classes, I use several active learning methods, including clicker questions, demos, in-class tutorials, group exams, and others. In other semesters, I have served as a tutorial section leader and tutorial coordinator for Phys1120.

At Columbia University, I served as a teaching assistant for a variety of introductory and upper-division physics classes. For the 2009-2010 academic year, I served as the Physics Preceptor and organized laboratory sections for large introductory classes.

As a senior undergraduate student at the Massachusetts Institute of Technology, I lectured a semester of 18.03 Differential Equations in a small classroom setting as part of the MIT Experimental Study Group program. The lecture material, homeworks and exams were set by a faculty member.

## Professional Service and Development

Member, American Physical Society

Division of Nuclear Physics, Topical Group on Hadronic Physics

Referee for Physics Letters B, European Physics Journal C, Nuclear Physics A & B, Physical Review Letters, Physical Review C

Reviewer for the U.S. Department of Energy (DOE), U.S. National Science Foundation (NSF), Polish National Science Foundation (NCN)

### *Meeting Organization*

13th International Conference on Hard and EM Probes of High-Energy Nuclear Collisions  
International Advisory Committee March 2023, Aschaffenburg, Germany

20th International Conference on Strangeness in Quark Matter  
International Advisory Committee June 2022, Busan, South Korea

8th International Workshop on Heavy Flavor Production in Nuclear Collisions  
International Advisory Committee TBD 2022, Torino, Italy

2021 Annual Meeting of the APS Four Corners Section  
Local Organizer October 2021, Boulder, CO (Virtual)

Particles and Nuclei International Conference 2021  
Convener, “Hot and dense matter physics session” September 2021, Lisbon, Portugal (Virtual)

9th Workshop of the APS Topical Group on Hadronic Physics,  
Organizing Committee April, 2021, Sacramento, CA (Virtual)

40th International Conference on High Energy Physics  
Convener, Heavy Ion Session July 2020, Prague, Czech Republic (Virtual)

RHIC/AGS Annual Users Meeting  
Organizer, Small Systems Workshop June 2019, Upton, NY

13th International Workshop on High-pT Physics in the RHIC/LHC Era  
Local Organizing Committee March 2019, Knoxville, TN

11th International Conference on Hard and EM Probes of High-Energy Nuclear Collisions  
International Advisory Committee October 2018, Aix-Les-Bains, France

Novel tools and observables for jet physics in heavy-ion collisions, CERN TH Institute  
Organizer August 2017, CERN

2017 National Nuclear Physics Summer School (NNPSS)  
Organizer July 2017, Boulder, CO

RHIC/AGS Annual Users Meeting  
Organizer, Exotic and Highly Asymmetric Collisions Workshop June 2015, Upton, NY

***Service and Activities at the University of Colorado***

Graduate Committee 2016 - present

CU Saturday Physics Series organizer 2021 - present

Department Communications Committee 2020 - present

Arts & Sciences Physics Advising 2018 - 2021

Comprehensive Exam II, III and Honors Thesis committees 2017 - present

Junior Faculty Advisory Committee 2016 - present

Research and Innovation Office (RIO) panel member 2019 - present

Faculty Fellow, Learning by Design program, Active Learning Academy 2020

Building Plan Committee 2019 - 2020

Strongly-Coupled Systems Faculty Search 2017 - 2018

***Media and Public Outreach***

*ATLAS Physics Briefings*, Published online at [www.atlas.cern](http://www.atlas.cern)

“Studying “Little Bangs”: exotic collisions probe the size of quark-gluon plasma” July 2021

“Z bosons zoom through quark-gluon plasma as jets quench” August 2020

“Photon-tagged jet quenching in the quark-gluon plasma” October 2017

BNL News Articles, Published online at [www.bnl.gov](http://www.bnl.gov)

“sPHENIX Assembly Shifts into Visible High Gear” July 2021

“A Tale of Two Colliders, One Thesis, Two Awards-and a Physics Mystery” March 2015

#### Other Publications

Quoted in *Symmetry* article, “Can light melt atoms into goo?”,  
[www.symmetrymagazine.com](http://www.symmetrymagazine.com) August 2021

Quoted in *Longmont Leader* article, “Ph.D. students from University of Colorado Boulder help to build a new collider detector”, [www.longmontleader.com](http://www.longmontleader.com) June 2021

Quoted in *Defector* article, “Imagine The Awesome Face-Annihilating Powers Of The Anti-matter-Freezing Laser”, [www.defector.com](http://www.defector.com) April 2021

Quoted in *Astronomy* article, “Physicists create ultra-hot drops of ‘quark soup’ that dominated the very early universe”, [www.astronomy.com](http://www.astronomy.com) December 2018

Quoted in *Gizmodo* article, “Could the Large Hadron Collider Collide a Sandwich?”  
[www.gizmodo.com](http://www.gizmodo.com) May 2018

Quoted in *Gizmodo* article, “Biggest Quark Spotted in Whole New Way”  
[www.gizmodo.com](http://www.gizmodo.com) December 2017

#### Peer-Reviewed Publications

*Publications for which I have played a substantial role are listed here. A full list of 700+ publications may be found at: [www.inspirehep.net/author/profile/D.V.Perepelitsa.1](http://www.inspirehep.net/author/profile/D.V.Perepelitsa.1)*

ATLAS Collaboration, *Two-particle azimuthal correlations in photonuclear ultraperipheral Pb+Pb collisions at 5.02 TeV with ATLAS*, Phys. Rev. C104 (2021) 014903

C. A. Aidala et al. (including D.V.P.), *Design and Beam Test Results for the 2D Projective sPHENIX Electromagnetic Calorimeter Prototype*, IEEE Trans. Nucl. Sci. 68 (2021) 173

ATLAS Collaboration, *Medium-induced modification of Z-tagged charged particle yields in Pb+Pb collisions at 5.02 TeV with the ATLAS detector*, Phys. Rev. Lett. 126 (2021) 072301

ATLAS Collaboration, *Measurement of azimuthal anisotropy of muons from charm and bottom hadrons in Pb+Pb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV with the ATLAS detector*, Phys. Lett. B 807 (2020) 135595

ATLAS Collaboration, *Transverse momentum and process dependent azimuthal anisotropies in  $\sqrt{s_{NN}} = 8.16$  TeV p+Pb collisions with the ATLAS detector*, Eur. Phys. J. C80 (2020) 73

ATLAS Collaboration, *Measurement of azimuthal anisotropy of muons from charm and bottom hadrons in pp collisions at  $\sqrt{s} = 13$  TeV with the ATLAS detector*, Phys. Rev. Lett. 124 (2020) 082301

ATLAS Collaboration, *Measurement of prompt photon production in  $\sqrt{s_{NN}} = 8.16$  TeV p+Pb collisions with ATLAS*, Phys. Lett. B 796 (2019) 230

ATLAS Collaboration, *Comparison of fragmentation functions for light-quark- and gluon-dominated jets from pp and Pb+Pb collisions in ATLAS*, Phys. Rev. Lett. 123 (2019) 042001

- S.H. Lim, Q. Hu, R. Belmont, K.K. Hill, J.L. Nagle, D.V.P., *Examination of Flow and Non-Flow Factorization Methods in Small Collision Systems*, Phys. Rev. C100 (2019) 024908
- ATLAS Collaboration, *Measurement of photon-jet  $p_T$  correlations in 5.02 TeV Pb+Pb and pp collisions with ATLAS*, Phys. Lett. B 789 (2019) 167
- M. Alvioli, L. Frankfurt, D.V.P., M. Strikman, *Global analysis of color fluctuation effects in proton- and deuteron-nucleus collisions at RHIC and the LHC*, Phys. Rev. D 98 (2018) 071502
- ATLAS Collaboration, *Observation of centrality-dependent acoplanarity for muon pairs produced via two-photon scattering in Pb+Pb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV with the ATLAS detector*, Phys. Rev. Lett. 121 (2018) 212301
- J.L. Nagle, R. Belmont, K. Hill, D.V.P., J. Orjuela Koop, P. Yin, Z-W. Lin, D. McGlinchey, *Are minimal conditions for collectivity met in  $e+e-$  collisions?*, Phys. Rev. C 97 (2018) 024909
- ATLAS Collaboration, *Measurement of jet fragmentation in 5.02 TeV proton-lead and proton-proton collisions with the ATLAS detector*, Nucl. Phys. A 978 (2018) 65
- J.T. Mitchell, D.V.P., M.J. Tannenbaum, P. W. Stankus, *Tests of constituent-quark generation methods which maintain both the nucleon center of mass and the desired radial distribution in Monte Carlo Glauber models*, Phys. Rev. C93 (2016) 054910
- ATLAS Collaboration, *Measurement of the dependence of transverse energy production at large pseudorapidity on the hard-scattering kinematics of proton-proton collisions at  $\sqrt{s} = 2.76$  TeV with ATLAS*, Phys. Lett. B 756 (2016) 10
- D. McGlinchey, J.L. Nagle, D.V.P., *Consequences of high- $x$  proton size fluctuations in small collision systems at RHIC*, Phys. Rev. C94 (2016) 024915
- M. Alvioli, B. Cole, L. Frankfurt, D.V.P., M. Strikman, *Evidence for  $x$ -dependent proton color fluctuations in  $pA$  collisions at the CERN Large Hadron Collider*, Phys. Rev. C93 (2016) 011902
- PHENIX Collaboration, *Centrality-dependent modification of jet-production rates in deuteron-gold collisions at  $\sqrt{s_{NN}} = 200$  GeV*, Phys. Rev. Lett. 116 (2016) 122301
- ATLAS Collaboration, *Measurement of the centrality dependence of the charged particle pseudorapidity distribution in proton-lead collisions at  $\sqrt{s_{NN}} = 5.02$  TeV with the ATLAS detector*, Eur. Phys. J. C 76 (2016) 199
- ATLAS Collaboration, *Measurement of charged-particle spectra in Pb+Pb collisions at  $\sqrt{s_{NN}} = 2.76$  TeV with the ATLAS detector at the LHC*, J. High. Energy. Phys. 1509 (2015) 050
- ATLAS Collaboration, *Measurements of the nuclear modification factor for jets in Pb+Pb collisions at  $\sqrt{s_{NN}} = 2.76$  TeV with the ATLAS detector*, Phys. Rev. Lett. 114 (2015) 072302
- ATLAS Collaboration, *Centrality and rapidity dependence of inclusive jet production in  $\sqrt{s_{NN}} = 5.02$  TeV proton-lead collisions with the ATLAS detector*, Phys. Lett. B 748 (2015) 392
- PHENIX Collaboration, *Centrality categorization for  $R_{p(d)+A}$  in high-energy collisions*, Phys. Rev. C 90 (2014) 034902
- M. S. Boswell, S. R. Elliott, D.V.P., M. Devlin, N. Fotiades, R. O. Nelson, T. Kawano, and V. E. Guiseppe, *Neutron inelastic scattering in natural Cu as a background in neutrinoless*



*double- $\beta$  decay experiments*, Phys. Rev. C87 (2013) 064607

V.E. Guiseppe, M. Devlin, S.R. Elliott, N. Fotiades, A. Hime, D.-M. Mei, R.O. Nelson, D.V.P., *Neutron inelastic scattering and reactions in natural Pb as a background in neutrinoless double-beta decay experiments*, Phys. Rev. C79 (2009) 054604

### **Other public documents (reports, white papers, etc.)**

W. Li, J. Noronha-Hostler, D.V.P. (organizers), et al., *High Density QCD in Small Collision Systems*, Snowmass 2021 Letter of Intent, EF-07 Energy Frontier - Heavy Ions

J. Adolfsson et al. (including D.V.P.), *QCD Challenges from pp to A-A Collisions*, Report from the International QCD Workshop at Lund, Eur. Phys. J. A 56 (2020) 288

F. Antinori et al. (including D.V.P.), *Thoughts on opportunities in high-energy nuclear collisions*, Summary of Mont Sainte Odile post-Quark Matter meeting, Available at <https://arxiv.org/abs/1903.04289>

Z. Citron et al. (including D.V.P.), *Future physics opportunities for high-density QCD at the LHC with heavy-ion and proton beams*, Report from Working Group 5 of the Workshop on the Physics of the CERN HL-LHC, and Perspectives at the HE-LHC, Available at <https://arxiv.org/abs/1812.06772>

H. A. Andrews et al. (including D.V.P.), *Novel tools and observables for jet physics in heavy-ion collisions*, CERN Theory institute report, J. Phys. G 47 (2020) 065102

PHENIX Collaboration, *An Upgrade Proposal from the PHENIX Collaboration*, Submitted to the Department of Energy Office of Nuclear Physics, Available at <https://arxiv.org/abs/1501.06197>

D.V.P., P. Steinberg, *Calculation of centrality bias factors in p+A collisions based on a positive correlation of hard process yields with underlying event activity*, Available at <https://arxiv.org/abs/1412.0976>

### **Invited talks**

#### *Colloquia, Public Lectures and Symposia*

Physics & Astronomy Dept. Colloquium, Georgia State University Sept. 2021, Atlanta, GA  
“Exploring the Hottest Matter in the Universe with Ultra-Relativistic Heavy Ion Collisions”

Physics Department Colloquium, Colorado State University February 2020, Ft. Collins, CO  
“Exploring the Hottest Matter in the Universe with Ultra-Relativistic Heavy Ion Collisions”

Physics Department Colloquium, University of Kansas Oct. 2019, Lawrence, KS  
“Photon+Jet Probes of the Quark-Gluon Plasma Created in Ultra-Relativistic Heavy Ion Collisions”

9th Intl. Conf. on Hard and EM Probes of High-Energy Nuclear Collisions Sept. 2018, CERN  
Student Day Lecture, Physics of Small Collision Systems

Lee Grodzins Colloquium, MIT Laboratory for Nuclear Science Sept. 2016, Boston, MA  
“Novel probes of the proton wavefunction through collisions with nuclei”

Blavatnik Science Symposium, New York Academy of Sciences July 2016, New York, NY  
“Back to the Beginning: Using Man-Made Big Bangs to Study the Forces that Bind Matter

Together”

Physics Colloquium, Penn State University February 2016, State College, PA  
“Creating the hottest matter in the universe with nuclear collisions at the CERN LHC”

Physics Colloquium, University of Colorado Boulder February 2016, Boulder, CO  
“Jet and photon probes of hot, dense nuclear matter at the Large Hadron Collider”

508<sup>th</sup> Brookhaven Lecture, Brookhaven National Laboratory October 2015, Upton, NY  
“Using Nuclei to Catch Shape-Shifting Protons in the Act”

### ***Invited Seminars***

Los Alamos National Laboratory, P-3 Seminar August 2021, Los Alamos, NM (Virtual)  
“What can stop the flow? Azimuthal anisotropies at large mass, high  $p_T$ , and in exotic systems with ATLAS”

Lawrence Berkeley National Laboratory, Heavy Ion Tea May 2021, Berkeley, CA (Virtual)  
“What can stop the flow? Azimuthal anisotropies at large mass, high  $p_T$ , and in exotic systems with ATLAS”

Brookhaven National Laboratory, Nuclear Physics Seminar Sep. 2020, Upton, NY (Virtual)  
“What can stop the flow? Azimuthal anisotropies at large mass, high  $p_T$ , and in extremely small systems with ATLAS”

Fermilab, LHC Physics Center Topic of the Week July 2019, Batavia, IL  
“Photon and photon+jet probes of heavy ion collisions”

Lawrence Berkeley National Laboratory, Heavy Ion Tea June 2019, Berkeley, CA  
“Photon and photon+jet probes of heavy ion collisions”

Columbia University, Physics Seminar March 2016, New York, NY  
“New insights into dense and hot nuclear matter at RHIC and the LHC”

Penn State University, High-Energy Physics Seminar September 2015, State College, PA  
“Exploring the hot, deconfined plasma created in ultrarelativistic nuclear collisions”

Brookhaven National Laboratory, Nuclear Physics Seminar January 2015, Upton, NY  
“Calculation of centrality bias factors in  $p$ +A collisions”

Brookhaven Physics Department, Nuclear Physics Seminar December 2013, Upton, NY  
“Centrality and rapidity dependence of inclusive jet production in  $p$ +Pb collisions”

### ***Invited Conference and Workshop Talks***

Zimanyi School Winter Workshop on Heavy Ion Physics December 2020, Virtual  
“Jet Probes of the Quark-Gluon Plasma at the LHC”

Jets for 3-D Imaging at the EIC workshop November 2020, Virtual  
“sPHENIX Jet Capabilities and the Path to EIC”

Snowmass 2021, Energy Frontier (EF07), Jets in HIC Meeting November 2020, Virtual  
“Jets at RHIC”

Jet Observables at the Electron-Ion Collider, RBRC Workshop July 2020, Virtual  
“Jet Measurements in sPHENIX and the path towards an EIC detector built around the sPHENIX solenoid”

International Symposium on Multi-Particle Dynamics                      September 2019, Santa Fe, NM  
 “Connection between soft and hard probes of small collision systems at RHIC and LHC”

European Physical Society Conference on High Energy Physics      July 2019, Ghent, Belgium  
 “High-Density QCD Matter” (Plenary)

RHIC/AGS Annual Users Meeting Workshop on Jets                      June 2019, BNL  
 “sPHENIX and its Capabilities on Jet Substructure at RHIC Energies”

8<sup>th</sup> Workshop of the APS Topical Group on Hadronic Physics          April 2019, Denver, CO  
 “Progress in hard probes of small collision systems”

American Physical Society April Meeting                                      April 2019, Denver, CO  
 “Developments in hard probes of heavy ion collisions”

Electron Ion Collider User Group Meeting                                      August 2018, Washington, D.C.  
 “Overview of results from  $p+A$  collisions”

Definition of Jets in a Large Background                                      June 2018, Upton, NY  
 “Heavy ion jet reconstruction in sPHENIX and lessons from the LHC”

13th International Workshop on High- $p_T$  Physics in the RHIC/LHC Era  
 “Hard processes in small systems”                                      October 2017, Bergen, Norway

Precision Spectroscopy of QGP Properties with Jets and Heavy Quarks (INT Program 17-1b)  
 “ $pA$  (and AA and UPC) data at the LHC”                                      May 2017, Seattle, WA

The XXVI International Conference on Ultrarelativistic Heavy-Ion Collisions (Quark Matter)  
 “Hard processes in small systems” (Plenary)                                      February 2017, Chicago, IL

7<sup>th</sup> Workshop of the APS Topical Group on Hadronic Physics  
 “Jets in Heavy Ion Collisions”                                      February 2017, Washington, D.C.

Fall Meeting of the APS Division of Nuclear Physics                      October 2016, Vancouver, Canada  
 “Overview and interpretations of centrality-dependent high- $p_T$  jet production measurements at RHIC and the LHC”

Recent RHIC and LHC results and their implications for heavy ion physics in the 2020’s  
 “Recent and future jet and photon measurements”                                      October 2016, Boston, MA

Proton and Photon-induced nuclear collisions at the LHC                      July 2016, Geneva, Switzerland  
 “Soft-hard correlations in jet production”

Fall Meeting of the APS Division of Nuclear Physics                      October 2015, Santa Fe, NM  
 “Prospects for jet measurements with sPHENIX and LHC Run 2”

New Progress in Heavy Ion Collisions                                      October 2015, Wuhan, China  
 “Progress in Jet Tomography”

7th Int’l Conf. on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions  
 “Hard probes of small systems”                                      July 2015, Montreal, Canada

Large-Acceptance Jet and Upsilon Detector at RHIC Workshop                      June 2015, Upton, NY  
 “The sPHENIX science case and reference design”

3<sup>rd</sup> Workshop on Jet Modification in the RHIC and LHC Era                      August 2014, Detroit, MI  
 “Jet and high- $p_T$  probes of  $p+A$  collisions”

- 52<sup>nd</sup> Ettore Majorana International School of Subnuclear Physics June 2014, Erice, Italy  
 “High- $p_T$  probes of the partonic structure of heavy nuclei”
- RHIC/AGS Annual Users Meeting Workshop on  $p$ +A physics June 2014, Upton, NY  
 “High- $p_T$  phenomena in  $p/d$ +A collisions”
- LHC Physics Centre at CERN Workshop February 2014, Geneva, Switzerland  
 “Centrality dependent  $p$ +Pb measurements in ATLAS”

### Talks on Behalf of Experimental Collaborations

- Strangeness in Quark Matter May 2021, BNL (Virtual)  
 “Results from ATLAS” (Plenary overview)
- Opportunities of OO and  $p$ O Collisions at the LHC Feb 2021, CERN (Virtual)  
 “Opportunities with sPHENIX at RHIC”
- XXVIII Int’l. Conf. on Ultra-Relativistic Nucleus-Nucleus Collisions Nov 2019, Wuhan, China  
 “Measurements of electroweak boson tagged jet energy loss and modification by ATLAS”
- 5th Int’l. Conf. on Initial Stages in High-Energy Nuclear Collisions June 2019, New York, NY  
 “Photon and jet probes of small systems in ATLAS”
- UCLA Santa Fe Jets and Heavy Flavor Workshop January 2019, Los Angeles, CA  
 “Photon and photon+jet probes of small and large collision systems with ATLAS”
- Int’l. Conf. Hard & EM Probes High-Energy Nucl. Coll. Oct 2018, Aix-Les-Bans, France  
 “Energy loss and modification of photon-tagged jets with ATLAS”
- XXVII Int’l. Conf. on Ultra-Relativistic Nucleus-Nucleus Collisions May 2018, Venice, Italy  
 “Photon-tagged measurements of jet quenching with ATLAS”
- 7th Int’l. Conf. on High Energy Physics in the LHC Era January 2018, Valparaiso, Chile  
 “Charmonium production in HI collisions with ATLAS”  
*and* “sPHENIX: Design, Status, Schedule”
- 5th Heavy Ion Jet Workshop August 2017, CERN  
 “Overview of jet measurements by ATLAS and perspectives”
- European Physical Society Conference on High Energy Physics July 2017, Venice, Italy  
 “Electroweak bosons in heavy-ion collisions measured with the ATLAS detector”
- Santa Fe Jets and Heavy Flavor Workshop February 2017, Santa Fe, NM  
 “Measurements of jet production in  $pp$  and Pb+Pb collisions with the ATLAS detector”
- 33<sup>rd</sup> Winter Workshop on Nuclear Dynamics January 2017, Snowbird, UT  
 “Status of jet quenching measurements with the ATLAS detector at the LHC”
- 5th International Conference on New Frontiers in Physics July 2016, Kolymbari, Greece  
 “The physics program of sPHENIX: a new jet and upsilon detector at RHIC”
- 3rd Int’l. Conf. on Initial Stages in High-Energy Nuclear Collisions May 2016, Lisbon, Portugal  
 “Reconstructed jet probes of small and large systems with the PHENIX detector”
- 6th Int’l. Workshop on High Energy Physics in the LHC Era January 2016, Valparaiso, Chile  
 “Recent ATLAS results on jet suppression and modification in Pb+Pb collisions”  
*and* “Progress in reconstructed jet measurements with the PHENIX detector at RHIC”

XXV Int'l. Conf. on Ultra-Relativistic Nucleus-Nucleus Collisions    Sept. 2015, Kobe, Japan  
 “New results on fully corrected dijet asymmetry in Pb+Pb collisions with ATLAS”

European Physical Society Conference on High Energy Physics    July 2015, Vienna, Austria  
 “Jet results in heavy ion collisions with the ATLAS experiment at the LHC”

7<sup>th</sup> Int'l. Conf. on the Physics and Astrophysics of the QGP    Feb. 2015, Kolkata, India  
 “Jet quenching measurements in lead-lead collisions at 2.76 TeV with the ATLAS detector”

31<sup>st</sup> Winter Workshop on Nuclear Physics    January 2015, Keystone, CO  
 “Jet physics opportunities and *b*-jet tagging within sPHENIX”

14<sup>th</sup> Zimanyi Winter School on Heavy Ion Physics    December 2014, Budapest, Hungary  
 “Jet probes of the nuclear and proton wavefunctions in proton-lead collisions with ATLAS”

Hot Quarks '14    September 2014, Las Negras, Spain  
 “High- $p_T$  probes of proton-lead collisions with the ATLAS detector”

XXIV Int'l. Conf. on Ultra-Relativistic Nucleus-Nucleus Coll.    May 2014, Darmstadt, Germany  
 “Centrality and rapidity dependence of inclusive jet production in *p*+Pb collisions w/ ATLAS”

Int'l. Conf. Hard & EM Probes High-Energy Nucl. Coll.    Nov. 2013, Stellenbosch, South Africa  
 “Inclusive jet production in *p*+Pb collisions at 5.02 TeV with the ATLAS detector at the LHC”

International Workshop on Low-*X* Physics    May 2013, Rehovot, Israel  
 “Centrality and jet performance in *p*+Pb collisions at 5.02 TeV with the ATLAS detector”

8<sup>th</sup> International Workshop on High  $p_T$  Physics at the LHC    October 2012, Wuhan, China  
 “Jet Suppression in PHENIX”

XXIII Int'l. Conf. on Ultra-Relativistic Nucleus-Nucleus Coll.    Aug. 2012, Washington, D.C.  
 “Measurement of muon tagged open heavy flavor production in Pb+Pb collisions with ATLAS”

5<sup>th</sup> Int'l. Conf. on Hard & EM Probes of High Energy Nuclear Coll.    May 2012, Cagliari, Italy  
 “Reconstructed Jet Results in *p*+*p*, *d*+Au and Cu+Cu collisions at 200 GeV from PHENIX”