

# YANG MA

Department of Physics and Astronomy, University of Pittsburgh

✉ [mayangluon@pitt.edu](mailto:mayangluon@pitt.edu)

🌐 <https://yangphy.github.io>

## PROFESSIONAL PREPARATION

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### Ph.D. in Physics

University of Pittsburgh, PA, U.S.A.

expected April 2022

GPA: 3.816/4.0

### M.S. in Physics

Chongqing University, Chongqing, China

June 2016

## SKILLS

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**Programming Language:** C/C++, Fortran, Python, Shell script

**Handy Programs:** Mathematica, Matlab, L<sup>A</sup>T<sub>E</sub>X, Excel, Powerpoint, Linux (OS)

**HEP Packages:** Madgraph, Pythia, FeynRules, FeynArts, FeynCalc, FormCalc, WHIZARD, ManeParse

## POSITION HELD

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### Arts & Sciences Pre-Doctoral Fellow

Kenneth P. Dietrich School of Arts & Sciences, University of Pittsburgh

Sept. 2020 - present

### Graduate Research Assistant

Dept. Physics & Astronomy, University of Pittsburgh

Jan. 2020 - Aug. 2020

### Graduate Teaching Assistant

Dept. Physics & Astronomy, University of Pittsburgh

Sept. 2016 - Jan. 2020

## AWARDS AND HONORS

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### Thomas-Lain Scholarship

Dept. Physics & Astronomy, University of Pittsburgh

Apr. 2021

### FGSA Award for Excellence in Graduate Research

American Physical Society (APS)

Feb. 2021

### Arts & Sciences Graduate Fellowship

Kenneth P. Dietrich School of Arts & Sciences, University of Pittsburgh

Sept. 2020

### Pitt Physics and Astronomy China Initiative (PACI) Scholarship

Dept. Physics & Astronomy, University of Pittsburgh

Sept. 2016

## MEMBERSHIP IN PROFESSIONAL SOCIETIES

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American Physical Society (APS) member

Mar. 2021 - present

Organization of Chinese Physics & Astrophysics (OCPA) member

Sept. 2021 - present

American Association for the Advancement of Science (AAAS) member

Sept. 2021 - present

## PUBLICATIONS

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1. T. Han, W. Kilian, N. Kreher, Y. Ma, J. Reuter, T. Striegl et al., *Precision Test of the Muon-Higgs Coupling at a High-energy Muon Collider*, [2108.05362](#).
2. D. Buarque et al., *Vector Boson Scattering Processes: Status and Prospects*, [2106.01393](#).
3. T. Han, Y. Ma and K. Xie, *Quark and Gluon Contents of a Lepton at High Energies*, [2103.09844](#).
4. T. Han, Y. Ma and K. Xie, *High energy leptonic collisions and electroweak parton distribution functions*, *Phys. Rev. D* **103** (2021) L031301 [[2007.14300](#)].
5. Z. Sun and Y. Ma, *Inclusive productions of  $\Upsilon(1S, 2S, 3S)$  and  $\chi_b(1P, 2P, 3P)$  via the Higgs boson decay*, *Phys. Rev. D* **100** (2019) 094019 [[1909.08548](#)].
6. Z. Sun, X.-G. Wu, Y. Ma and S. J. Brodsky, *Exclusive production of  $J/\psi + \eta_c$  at the B factories Belle and Babar using the principle of maximum conformality*, *Phys. Rev. D* **98** (2018) 094001 [[1807.04503](#)].
7. Y. Ma and X.-G. Wu, *Renormalization scheme dependence of high-order perturbative QCD predictions*, *Phys. Rev. D* **97** (2018) 036024 [[1707.09886](#)].
8. J.-M. Shen, X.-G. Wu, Y. Ma and S. J. Brodsky, *The Generalized Scheme-Independent Crewther Relation in QCD*, *Phys. Lett. B* **770** (2017) 494 [[1611.07249](#)].
9. H.-Y. Bi, X.-G. Wu, Y. Ma, H.-H. Ma, S. J. Brodsky and M. Mojaza, *Degeneracy Relations in QCD and the Equivalence of Two Systematic All-Orders Methods for Setting the Renormalization Scale*, *Phys. Lett. B* **748** (2015) 13 [[1505.04958](#)].
10. H.-H. Ma, X.-G. Wu, Y. Ma, S. J. Brodsky and M. Mojaza, *Setting the renormalization scale in perturbative QCD: Comparisons of the principle of maximum conformality with the sequential extended Brodsky-Lepage-Mackenzie approach*, *Phys. Rev. D* **91** (2015) 094028 [[1504.01260](#)].
11. Y. Ma, X.-G. Wu, H.-H. Ma and H.-Y. Han, *General Properties on Applying the Principle of Minimum Sensitivity to High-order Perturbative QCD Predictions*, *Phys. Rev. D* **91** (2015) 034006 [[1412.8514](#)].
12. H.-B. Fu, X.-G. Wu and Y. Ma,  *$B \rightarrow K^*$  Transition Form Factors and the Semi-leptonic Decay  $B \rightarrow K^* \mu^+ \mu^-$* , *J. Phys. G* **43** (2016) 015002 [[1411.6423](#)].
13. H.-B. Fu, X.-G. Wu, H.-Y. Han, Y. Ma and H.-Y. Bi, *The  $\rho$ -meson longitudinal leading-twist distribution amplitude*, *Phys. Lett. B* **738** (2014) 228 [[1409.3053](#)].
14. G. Chen, X.-G. Wu, Z. Sun, Y. Ma and H.-B. Fu, *Photoproduction of doubly heavy baryon at the ILC*, *JHEP* **12** (2014) 018 [[1408.4615](#)].
15. H.-B. Fu, X.-G. Wu, H.-Y. Han and Y. Ma,  *$B \rightarrow \rho$  transition form factors and the  $\rho$ -meson transverse leading-twist distribution amplitude*, *J. Phys. G* **42** (2015) 055002 [[1406.3892](#)].
16. X.-G. Wu, Y. Ma, S.-Q. Wang, H.-B. Fu, H.-H. Ma, S. J. Brodsky et al., *Renormalization Group Invariance and Optimal QCD Renormalization Scale-Setting*, *Rept. Prog. Phys.* **78** (2015) 126201 [[1405.3196](#)].
17. S.-Q. Wang, X.-G. Wu, J.-M. Shen, H.-Y. Han and Y. Ma, *QCD improved electroweak parameter  $\rho$* , *Phys. Rev. D* **89** (2014) 116001 [[1402.0975](#)].
18. Z. Sun, X.-G. Wu, G. Chen, Y. Ma, H.-H. Ma and H.-Y. Bi, *Bottomonium production associated with a photon at a high luminosity  $e^+e^-$  collider with the one-loop QCD correction*, *Phys. Rev. D* **89** (2014) 074035 [[1401.2735](#)].

19. H.-B. Fu, X.-G. Wu, H.-Y. Han, Y. Ma and T. Zhong,  $|V_{cb}|$  from the semileptonic decay  $B \rightarrow D\ell\bar{\nu}_\ell$  and the properties of the  $D$  meson distribution amplitude, *Nucl. Phys. B* **884** (2014) 172 [[1309.5723](#)].

## SEMINAR AND COLLOQUIUM

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|---|------------|
| 1. <i>Multi-boson production and the muon Yukawa coupling</i><br>(Scheduled) HEP Seminar, University of Utah                                | Oct. 2021  |
| 2. <i>Multi-boson production and the muon Yukawa coupling</i><br>PITT PACC Group Seminar, University of Pittsburgh                          | Sept. 2021 |
| 3. <i>Parton contents of a lepton at high energies</i><br>(Remote) Particle Theory Seminar, Carleton University                             | May 2021   |
| 4. <i>The partonic picture at high-energy lepton colliders</i><br>(Remote) SLAC EPP Theory Seminar, SLAC                                    | Apr. 2021  |
| 5. <i>The partonic picture at high-energy lepton colliders</i><br>(Remote) Particle Theory Seminar, Shandong University                     | Apr. 2021  |
| 6. <i>Parton contents of a lepton at high energies</i><br>(Remote) HEP Seminar, Oklahoma State University                                   | Apr. 2021  |
| 7. <i>QCD jet production at high energy lepton colliders</i><br>(Remote) PITT PACC Group Seminar, University of Pittsburgh                  | Mar. 2021  |
| 8. <i>High energy lepton collisions and electroweak PDFs</i><br>(Remote) Particle Theory Seminar, Carleton University                       | Oct. 2020  |
| 9. <i>High energy lepton collisions and electroweak PDFs</i><br>(Remote) PITT PACC Group Seminar, University of Pittsburgh                  | Sept. 2020 |
| 10. <i>How much do we need polarized PDFs?</i><br>PITT PACC Group Seminar, University of Pittsburgh   | Oct. 2019  |
| 11. <i>Renormalization scheme uncertainties in high order perturbative QCD results</i><br>PITT PACC Group Seminar, University of Pittsburgh | Mar. 2019  |

## CONFERENCE TALKS

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| 1. <i>Higgs boson decay to <math>J/\psi</math> via <math>c</math>-quark fragmentation</i><br>(Scheduled) Parallel talk at Higgs 2021 Conference, Stony Brook University | Oct. 2021 |
| 2. <i>The partonic picture at high-energy lepton colliders</i><br>(Remote) Parallel talk at SUSY 2021, Shanghai   | Aug. 2021 |
| 3. <i>QCD jet production at a high energy muon collider</i><br>(Remote) Parallel talk at EPS-HEP 2021, DESY   | July 2021 |
| 4. <i>Quark and gluon contents of a lepton at high energies</i><br>(Remote) Parallel talk at the DPF meeting, Florida State University                                  | July 2021 |
| 5. <i>Quark and gluon contents of a lepton at high energies</i><br>(Remote) Parallel talk at Pheno 2021, University of Pittsburgh                                       | May 2021  |
| 6. <i>The partonic picture at high-energy lepton colliders</i><br>(Remote) Parallel talk at PPC 2021, University of Oklahoma  | May 2021  |

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| 7. <i>Electroweak parton distribution functions at a high-energy muon collider</i><br>(Remote) Parallel talk at APS April Meeting, Muon Collider Symposium IV    | Apr. 2021  |
| 8. <i>QCD jet production at a high energy muon collider</i><br>(Remote) Talk at Muon Collider Physics and Simulation Meeting, CERN                               | Mar. 2021  |
| 9. <i>The electroweak parton distribution functions - Necessity and application</i><br>(Remote) Student talk at Theoretical Advanced Study Institute (TASI 2020) | June 2020  |
| 10. <i>The electroweak parton distribution functions</i><br>(Remote) Parallel talk at Pheno 2020, University of Pittsburgh                                       | May 2020   |
| 11. <i>QCD Scale-setting problem in Future Chinese Collider physics</i><br>Parallel talk at CEPC-SppC Study Group Meeting, IHEP, Beijing                         | Sept. 2015 |

## CONFERENCES AND WORKSHOPS ATTENDED

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| 1. The XXVIII International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY 2021), Shanghai (remote)   | Aug. 2021  |
| 2. European Physical Society Conference on High Energy Physics 2021 (EPS-HEP 2021)<br>DESY (remote)                                  | July 2021  |
| 3. 2021 Meeting of the Division of Particles and Fields of the APS (DPF21)<br>Florida State University (remote)                      | July 2021  |
| 4. Phenomenology Symposium 2021 (Pheno 2021)<br>University of Pittsburgh (remote)  | May 2021   |
| 5. XIV International Workshop on Interconnections between Particle Physics and Cosmology (PPC 2021), University of Oklahoma (remote) | May 2021   |
| 6. APS April Meeting (remote)  | Apr. 2021  |
| 7. Muon Collider Physics and Simulation Meeting (remote)   | Mar. 2021  |
| 8. PITT PACC Workshop: Muon collider physics<br>University of Pittsburgh (remote)  | Nov. 2020  |
| 9. Phenomenology Symposium 2020 (Pheno 2020)<br>University of Pittsburgh (remote)  | May 2020   |
| 10. Phenomenology Symposium 2020 (Pheno 2019)<br>University of Pittsburgh  | May 2019   |
| 11. PITT PACC Workshop: BSM circa 2020<br>University of Pittsburgh   | Mar. 2019  |
| 12. Phenomenology Symposium 2020 (Pheno 2018)<br>University of Pittsburgh  | May 2018   |
| 13. Phenomenology Symposium 2020 (Pheno 2017)<br>University of Pittsburgh  | May 2017   |
| 14. The CEPC-SppC Study Group Meeting<br>Institute of High Energy Physics (IHEP), Beijing  | Sept. 2015 |

## SUMMER SCHOOLS ATTENDED

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| 1. <b>SSI 2020</b> , SLAC<br><i>49th SLAC SUMMER INSTITUTE: The Higgs State Fair</i> | Aug. 2021 |
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| 2. <b>HCPSS 2020</b> , Fermilab<br><i>15th annual Fermilab-CERN Hadron Collider Physics Summer School</i>             | Aug. 2020 |
| 3. <b>TASI 2020</b> , University of Colorado Boulder<br><i>The Obscure Universe: Neutrinos and Other Dark Matters</i> | June 2020 |
| 4. <b>CTEQ 2019</b> , University of Pittsburgh<br><i>CTEQ School on QCD and Electroweak Phenomenology</i>             | July 2019 |
| 5. <b>CTEQ 2017</b> , University of Pittsburgh<br><i>CTEQ School on QCD and Electroweak Phenomenology</i>             | July 2017 |

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## REFEREE SERVICE

- European Physical Journal C (EPJC)  $\times 1$

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## TEACHING EXPERIENCE

### Graduate Teaching Assistant at the University of Pittsburgh

1. PHYS 0219 - *Basic Laboratory Physics for Science and Engineering*  
Fall 2016, Spring 2017, and Fall 2018
2. PHYS 0212 - *Introduction to Laboratory Physics*  
Fall 2017, Spring 2018, and Summer 2018
3. PHYS 0110 - *Introduction to Physics 1*, Summer 2018  
Covers Mechanics, Heat and Thermodynamics, and Waves
4. PHYS 0111 - *Introduction to Physics 2*, Summer 2017  
Covers Thermodynamics, Electromagnetism, Optics, Special Relativity, and Quantum Physics
5. PHYS 0175 - *Basic Physics, Science and Engineering 2*, Spring 2019 and Summer 2021  
Covers Electromagnetism, Elementary Quantum Mechanics, and Atomic Structure

### Graduate Teaching Assistant at Chongqing University

1. College Physics I - *Classical Mechanics and Electromagnetism*, Spring 2014
2. College Physics II - *Thermodynamics, Optics and Special Relativity*, Fall 2013

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## MENTORING EXPERIENCE

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|---|-----------------------|
| 1. Dept. Physics & Astronomy Graduate Student Mentor<br>Mentoring three first year graduate student | Aug. 2021 - present   |
| 2. Assist to guide one visiting graduate student<br>( <i>publication in prep.</i> )                 | Dec. 2019 - Dec. 2020 |
| 3. Assist to guide one visiting undergraduate student   | June 2019 - Aug. 2019 |