

YANG MA

Department of Physics and Astronomy, University of Pittsburgh

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🌐 <https://yangphy.github.io>

PROFESSIONAL PREPARATION

Ph.D. in Physics

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

Apr. 2022

Advisor: Tao Han

M.S. in Physics

Chongqing University, Chongqing, China

June 2016

SKILLS

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

Handy Programs: Mathematica, Matlab, L^AT_EX, Excel, Powerpoint, Linux (OS)

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

POSITION HELD

Graduate Research Fellow

Dept. Physics & Astronomy, University of Pittsburgh

Jan. 2022 - present

Arts & Sciences Pre-Doctoral Fellow

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

Sept. 2020 - Dec. 2021

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

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

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

1. T. Han, A. K. Leibovich, Y. Ma and X.-Z. Tan, *Higgs boson decay to charmonia via c-quark fragmentation*, [2202.08273](#).
2. 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*, *JHEP* **12** (2021) 162 [[2108.05362](#)].
3. D. Buarque et al., *Vector Boson Scattering Processes: Status and Prospects*, *Rev. Phys.* **8** (2022) 100071 [[2106.01393](#)].
4. T. Han, Y. Ma and K. Xie, *Quark and gluon contents of a lepton at high energies*, *JHEP* **02** (2022) 154 [[2103.09844](#)].
5. T. Han, Y. Ma and K. Xie, *High energy leptonic collisions and electroweak parton distribution functions*, *Phys. Rev. D* **103** (2021) L031301 [[2007.14300](#)].
6. 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](#)].
7. 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](#)].
8. Y. Ma and X.-G. Wu, *Renormalization scheme dependence of high-order perturbative QCD predictions*, *Phys. Rev. D* **97** (2018) 036024 [[1707.09886](#)].
9. 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](#)].
10. 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](#)].
11. 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](#)].
12. 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](#)].
13. 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](#)].
14. H.-B. Fu, X.-G. Wu, H.-Y. Han, Y. Ma and H.-Y. Bi, *The ρ -meson longitudinal leading-twist distribution amplitude*, *Phys. Lett. B* **738** (2014) 228 [[1409.3053](#)].
15. 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](#)].
16. H.-B. Fu, X.-G. Wu, H.-Y. Han and Y. Ma, *$B \rightarrow \rho$ transition form factors and the ρ -meson transverse leading-twist distribution amplitude*, *J. Phys. G* **42** (2015) 055002 [[1406.3892](#)].
17. 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](#)].
18. S.-Q. Wang, X.-G. Wu, J.-M. Shen, H.-Y. Han and Y. Ma, *QCD improved electroweak parameter ρ* , *Phys. Rev. D* **89** (2014) 116001 [[1402.0975](#)].

19. 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](#)].
20. 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](#)].

OTHER PUBLICATIONS

1. T. Han, Y. Ma and K. Xie, *Electroweak fragmentation at high energies: A Snowmass White Paper*, in *2022 Snowmass Summer Study*, 3, 2022, [2203.11129](#).
2. J. M. Campbell et al., *Event Generators for High-Energy Physics Experiments*, in *2022 Snowmass Summer Study*, 3, 2022, [2203.11110](#).
3. I. Adachi et al., *The International Linear Collider: Report to Snowmass 2021*, in *2022 Snowmass Summer Study*, 3, 2022, [2203.07622](#).
4. J. De Blas et al., *The physics case of a 3 TeV muon collider stage*, in *2022 Snowmass Summer Study*, 3, 2022, [2203.07261](#).
5. C. Aimè et al., *Muon Collider Physics Summary*, in *2022 Snowmass Summer Study*, 3, 2022, [2203.07256](#).

SEMINAR AND COLLOQUIUM

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|---|------------|
| 1. <i>Higgs decay to charmonia and the charm quark Yukawa</i> PITT PACC Group Seminar, University of Pittsburgh | Mar. 2022 |
| 2. <i>Multi-boson production and the muon Yukawa coupling</i> (Remote) HEP Journal Club, University of Utah | Oct. 2021 |
| 3. <i>Multi-boson production and the muon Yukawa coupling</i> PITT PACC Group Seminar, University of Pittsburgh | Sept. 2021 |
| 4. <i>Parton contents of a lepton at high energies</i> (Remote) Particle Theory Seminar, Carleton University | May 2021 |
| 5. <i>The partonic picture at high-energy lepton colliders</i> (Remote) SLAC EPP Theory Seminar, SLAC | Apr. 2021 |
| 6. <i>The partonic picture at high-energy lepton colliders</i> (Remote) Particle Theory Seminar, Shandong University | Apr. 2021 |
| 7. <i>Parton contents of a lepton at high energies</i> (Remote) HEP Seminar, Oklahoma State University | Apr. 2021 |
| 8. <i>QCD jet production at high energy lepton colliders</i> (Remote) PITT PACC Group Seminar, University of Pittsburgh | Mar. 2021 |
| 9. <i>High energy lepton collisions and electroweak PDFs</i> (Remote) Particle Theory Seminar, Carleton University | Oct. 2020 |
| 10. <i>High energy lepton collisions and electroweak PDFs</i> (Remote) PITT PACC Group Seminar, University of Pittsburgh | Sept. 2020 |
| 11. <i>How much do we need polarized PDFs?</i> PITT PACC Group Seminar, University of Pittsburgh | Oct. 2019 |

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| 12. <i>Renormalization scheme uncertainties in high order perturbative QCD results</i> PITT PACC Group Seminar, University of Pittsburgh | Mar. 2019 |
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CONFERENCE TALKS

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| 1. <i>Multi-boson production and the muon Yukawa coupling</i> Contributed talk at APS April Meeting 2022, New York | Apr. 2022 |
| 2. <i>Multi-boson production and the muon Yukawa coupling</i> PIKIMO 11, University of Pittsburgh | Dec. 2021 |
| 3. <i>Electroweak parton distributions and fragmentations for high-energy lepton colliders</i> (Remote) Snowmass EF04 Topical Group Community Meeting | Oct. 2021 |
| 4. <i>Higgs boson decay to J/ψ via c-quark fragmentation</i> (Remote) Parallel talk at Higgs 2021 Conference, Stony Brook University | Oct. 2021 |
| 5. <i>The partonic picture at high-energy lepton colliders</i> (Remote) Parallel talk at SUSY 2021, Shanghai | Aug. 2021 |
| 6. <i>QCD jet production at a high energy muon collider</i> (Remote) Parallel talk at EPS-HEP 2021, DESY | July 2021 |
| 7. <i>Quark and gluon contents of a lepton at high energies</i> (Remote) Parallel talk at the DPF meeting, Florida State University | July 2021 |
| 8. <i>Quark and gluon contents of a lepton at high energies</i> (Remote) Parallel talk at Pheno 2021, University of Pittsburgh | May 2021 |
| 9. <i>The partonic picture at high-energy lepton colliders</i> (Remote) Parallel talk at PPC 2021, University of Oklahoma | May 2021 |
| 10. <i>Electroweak parton distribution functions at a high-energy muon collider</i> (Remote) Contributed talk at APS April Meeting 2021, Muon Collider Symposium IV | Apr. 2021 |
| 11. <i>QCD jet production at a high energy muon collider</i> (Remote) Talk at Muon Collider Physics and Simulation Meeting, CERN | Mar. 2021 |
| 12. <i>The electroweak parton distribution functions - Necessity and application</i> (Remote) Student talk at Theoretical Advanced Study Institute (TASI 2020) | June 2020 |
| 13. <i>The electroweak parton distribution functions</i> (Remote) Parallel talk at Pheno 2020, University of Pittsburgh | May 2020 |
| 14. <i>QCD Scale-setting problem in Future Chinese Collider physics</i> Parallel talk at CEPC-SppC Study Group Meeting, IHEP, Beijing | Sept. 2015 |

CONFERENCES AND WORKSHOPS ATTENDED

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| 1. APS April Meeting 2022, New York | Apr. 2022 |
| 2. PIKIMO 11, University of Pittsburgh (hybrid) | Dec. 2021 |
| 3. Higgs 2021 Stony Brook University & Brookhaven National Laboratory (remote) | Oct. 2021 |
| 4. The XXVIII International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY 2021), Shanghai (remote) | Aug. 2021 |
| 5. European Physical Society Conference on High Energy Physics 2021 (EPS-HEP 2021) DESY (remote) | July 2021 |

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| 6. 2021 Meeting of the Division of Particles and Fields of the APS (DPF21) Florida State University (remote) | July 2021 |
| 7. Phenomenology Symposium 2021 (Pheno 2021) University of Pittsburgh (remote) | May 2021 |
| 8. XIV International Workshop on Interconnections between Particle Physics and Cosmology (PPC 2021), University of Oklahoma (remote) | May 2021 |
| 9. APS April Meeting 2021 (remote) | Apr. 2021 |
| 10. Muon Collider Physics and Simulation Meeting (remote) | Mar. 2021 |
| 11. PITT PACC Workshop: Muon collider physics University of Pittsburgh (remote) | Nov. 2020 |
| 12. Phenomenology Symposium 2020 (Pheno 2020) University of Pittsburgh (remote) | May 2020 |
| 13. Phenomenology Symposium 2020 (Pheno 2019) University of Pittsburgh | May 2019 |
| 14. PITT PACC Workshop: BSM circa 2020 University of Pittsburgh | Mar. 2019 |
| 15. Phenomenology Symposium 2020 (Pheno 2018) University of Pittsburgh | May 2018 |
| 16. Phenomenology Symposium 2020 (Pheno 2017) University of Pittsburgh | May 2017 |
| 17. The CEPC-SppC Study Group Meeting Institute of High Energy Physics (IHEP), Beijing | Sept. 2015 |

SUMMER SCHOOLS ATTENDED

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

REFeree SERVICE

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

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

MENTORING EXPERIENCE

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|---|-----------------------|
| 1. Dept. Physics & Astronomy Graduate Student Mentor Mentoring three first year graduate student | Aug. 2021 - present |
| 2. Assist to guide one visiting graduate student (<i>Xiaoze Tan</i>) (2202.08273 , submitted to JHEP) | Dec. 2019 - Dec. 2020 |
| 3. Assist to guide one visiting undergraduate student | June 2019 - Aug. 2019 |