YANG MA

INFN, Sezione di Bologna ⋄ Via Irnerio 46, 40126 Bologna, Italy
yang.ma@bo.infn.it https://yangphy.github.io

PROFESSIONAL PREPARATION

Ph.D. in Physics August 2022
University of Pittsburgh, PA, U.S.A. Advisor: Tao Han

M.S. in Physics June 2016
Chongqing University, Chongqing, China

SKILLS

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

Handy Programs: Mathematica, Matlab, LaTeX, Excel, Powerpoint, Linux (OS)

HEP Packages: `MadGraph5_aMC@NLO`, Pythia, FeynRules, FeynArts, FeynCalc, FormCalc, `WHIZARD`, ManeParse

POSITION HELD

Postdoctoral Researcher September 2022 - present
INFN Bologna, Italy

Graduate Teaching Fellow May 2022 - July 2022
Dept. Physics & Astronomy, University of Pittsburgh

Graduate Research Fellow January 2022 - April 2022
Dept. Physics & Astronomy, University of Pittsburgh

Arts & Sciences Pre-Doctoral Fellow September 2020 - December 2021
Kenneth P. Dietrich School of Arts & Sciences, University of Pittsburgh

Graduate Research Assistant January 2020 - August 2020
Dept. Physics & Astronomy, University of Pittsburgh

Graduate Teaching Assistant September 2016 - January 2020
Dept. Physics & Astronomy, University of Pittsburgh

AWARDS AND HONORS

Outstanding Reviewer Awards 2022 March 2023
Journal of Physics Communications, IOP Publishing

DPF Student Travel Award April 2022
APS Division of Particles and Fields (DPF)

Thomas-Lain Scholarship April 2021
Dept. Physics & Astronomy, University of Pittsburgh

FGSA Award for Excellence in Graduate Research February 2021
American Physical Society (APS)

Arts & Sciences Graduate Fellowship September 2020
Kenneth P. Dietrich School of Arts & Sciences, University of Pittsburgh

Pitt Physics and Astronomy China Initiative (PACI) Scholarship September 2016
Dept. Physics & Astronomy, University of Pittsburgh

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Physical Society (APS) member	March 2021 - present
International Organization of Chinese Physics & Astrophysics member	September 2021 - present
American Association for the Advancement of Science (AAAS) member	September 2021 - present
International Muon collider collaboration (IMCC) member	July 2022 - present

PUBLICATIONS IN REFEREED JOURNALS

1. E. Celada, T. Han, W. Kilian, N. Kreher, Y. Ma, F. Maltoni et al., *Probing Higgs-muon interactions at a multi-TeV muon collider*, 2312.13082.
2. C. Accettura et al., *Towards a muon collider*, *Eur. Phys. J. C* **83** (2023) 864 [2303.08533].
3. T. Han, A. K. Leibovich, Y. Ma and X.-Z. Tan, *Higgs boson decay to charmonia via c-quark fragmentation*, *JHEP* **08** (2022) 073 [2202.08273].
4. 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].
5. D. Buarque et al., *Vector Boson Scattering Processes: Status and Prospects*, *Rev. Phys.* **8** (2022) 100071 [2106.01393].
6. T. Han, Y. Ma and K. Xie, *Quark and gluon contents of a lepton at high energies*, *JHEP* **02** (2022) 154 [2103.09844].
7. T. Han, Y. Ma and K. Xie, *High energy leptonic collisions and electroweak parton distribution functions*, *Phys. Rev. D* **103** (2021) L031301 [2007.14300].
8. 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].
9. 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].
10. Y. Ma and X.-G. Wu, *Renormalization scheme dependence of high-order perturbative QCD predictions*, *Phys. Rev. D* **97** (2018) 036024 [1707.09886].
11. 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].
12. 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].
13. 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].
14. 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].

15. H.-B. Fu, X.-G. Wu and Y. Ma, $B \to K^*$ *Transition Form Factors and the Semi-leptonic Decay* $B \to K^*\mu^+\mu^-$, *J. Phys. G* **43** (2016) 015002 [1411.6423].

16. 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].

17. 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].

18. H.-B. Fu, X.-G. Wu, H.-Y. Han and Y. Ma, $B \to \rho$ *transition form factors and the ρ-meson transverse leading-twist distribution amplitude*, *J. Phys. G* **42** (2015) 055002 [1406.3892].

19. 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].

20. 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].

21. 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].

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

OTHER PUBLICATIONS

1. J. Reuter, T. Han, W. Kilian, N. Kreher, Y. Ma, T. Striegl et al., *Precision test of the muon-Higgs coupling at a high-energy muon collider*, *PoS* **ICHEP2022** (2022) 1239 [2212.01323].

2. T. Han, A. K. Leibovich, Y. Ma and X.-Z. Tan, *Higgs decay to charmonia and the charm-quark Yukawa coupling*, *PoS* **ICHEP2022** (2022) 517 [2211.10727].

3. K. M. Black et al., *Muon Collider Forum Report*, 2209.01318.

4. 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.

5. J. M. Campbell et al., *Event Generators for High-Energy Physics Experiments*, in *2022 Snowmass Summer Study*, 3, 2022, 2203.11110.

6. I. Adachi et al., *The International Linear Collider: Report to Snowmass 2021*, in *2022 Snowmass Summer Study*, 3, 2022, 2203.07622.

7. J. De Blas et al., *The physics case of a 3 TeV muon collider stage*, in *2022 Snowmass Summer Study*, 3, 2022, 2203.07261.

8. C. Aimè et al., *Muon Collider Physics Summary*, in *2022 Snowmass Summer Study*, 3, 2022, 2203.07256.

SEMINARS AND COLLOQUIUM

1. *Physics opportunities and challenges at future multi-TeV lepton colliders* December 2023
HEP Seminar, Nankai University

2. *Physics opportunities and challenges at future multi-TeV lepton colliders* December 2023
HEP Seminar, Chongqing University

3. *Physics opportunities and challenges at future multi-TeV lepton colliders* December 2023
   HEP Seminar, Shandong University
4. *Physics opportunities and challenges at future multi-TeV lepton colliders* December 2023
   HEP Seminar, University of Science and Technology of China (USTC)
5. *Physics opportunities and challenges at future multi-TeV lepton colliders* December 2023
   HEP Seminar, Nanjing Normal University
6. *Physics opportunities and challenges at future multi-TeV lepton colliders* December 2023
   HEP Seminar, Southeast University
7. *Physics opportunities and challenges at future multi-TeV lepton colliders* December 2023
   HEP Seminar, Fudan University
8. *Physics opportunities and challenges at future multi-TeV lepton colliders* December 2023
   HEP Seminar, Nanjing University
9. *Physics opportunities and challenges at future multi-TeV lepton colliders* December 2023
   HEP Seminar, Tsung-Dao Lee Institute (TDLI), Shanghai Jiao Tong University
10. *Physics opportunities and challenges at future multi-TeV lepton colliders* November 2023
    HEP Seminar, Tsinghua University
11. *Physics opportunities and challenges at future multi-TeV lepton colliders* November 2023
    HEP Seminar, Peking University
12. *Physics opportunities and challenges at future multi-TeV lepton colliders* November 2023
    HEP Seminar, Institute of Theoretical Physics, Chinese Academy of Sciences
13. *Physics opportunities and challenges at future multi-TeV lepton colliders* November 2023
    HEP Theory Seminar, IHEP, Chinese Academy of Sciences
14. *Bread and butter physics at future multi-TeV lepton colliders* May 2023
    NHETC Theory Seminar, Rutgers University
15. *Measuring the Yukawa couplings: Towards the 2nd generation fermions* May 2023
    HEP Lunch Seminar, University of Chicago
16. *Electroweak Tevatron: High-Energy lepton colliders* May 2023
    Theoretical Physics Seminar, Fermilab
17. *Bread and butter physics at future multi-TeV lepton colliders* May 2023
    LEPP Theory Seminar, Cornell University
18. *Measuring the Yukawa couplings: Towards the 2nd generation fermions* May 2023
    HEP Theory Seminar, University at Buffalo
19. *Determine the Yukawa couplings of the second generation fermions* January 2023
    at high-energy colliders
    (Remote) HEP Theory Seminar, Argonne National Laboratory (ANL)
20. *Determine the Yukawa couplings of the second generation fermions* December 2022
    at high-energy colliders
    (Remote) TDLI/INPAC Joint Theory Seminar, Shanghai Jiao Tong University
21. *Determine the Yukawa couplings of the second generation fermions* December 2022
    at high-energy colliders
    (Remote) Particle Physics Seminar, Chongqing University

22. *Determine the Yukawa couplings of the second generation fermions at high-energy colliders* — December 2022
(Remote) Theoretical Physics Seminar, Shandong University

23. *Phenomenology at high-energy colliders* — November 2022
Bologna HEP Theory Journal Club, INFN Bologna & University of Bologna

24. *The partonic picture and the SM expectation of high-energy lepton colliders* — September 2022
HEP Seminar, University of Notre Dame

25. *The partonic picture and the SM expectation of high-energy lepton colliders* — September 2022
HEP Seminar, University of Wisconsin-Madison

26. *The partonic picture and the SM expectation of high-energy lepton colliders* — September 2022
HEP Special Seminar, University of Michigan

27. *The partonic picture and the SM expectation of high-energy lepton colliders* — September 2022
HEP Seminar, Northwestern University

28. *Higgs decay to charmonia and the charm-quark Yukawa coupling* — September 2022
HEP Seminar, Michigan State University

29. *Higgs decay to charmonia and the charm-quark Yukawa coupling* — September 2022
HEP Seminar, Washington University in St. Louis

30. *The partonic picture and the SM expectation of high-energy lepton colliders* — August 2022
HEP Seminar, University of Minnesota

31. *Higgs decay to J/ψ via c-quark fragmentation* — May 2022
(Remote) Nuclear Physics Seminar, UCLA

32. *Higgs decay to charmonia and the charm quark Yukawa* — March 2022
PITT PACC Group Seminar, University of Pittsburgh

33. *Multi-boson production and the muon Yukawa coupling* — October 2021
(Remote) HEP Journal Club, University of Utah

34. *Multi-boson production and the muon Yukawa coupling* — September 2021
PITT PACC Group Seminar, University of Pittsburgh

35. *Parton contents of a lepton at high energies* — May 2021
(Remote) Particle Theory Seminar, Carleton University

36. *The partonic picture at high-energy lepton colliders* — April 2021
(Remote) SLAC EPP Theory Seminar, SLAC

37. *The partonic picture at high-energy lepton colliders* — April 2021
(Remote) Particle Theory Seminar, Shandong University

38. *Parton contents of a lepton at high energies* — April 2021
(Remote) HEP Seminar, Oklahoma State University

39. *QCD jet production at high energy lepton colliders* — March 2021
(Remote) PITT PACC Group Seminar, University of Pittsburgh

40. *High energy lepton collisions and electroweak PDFs* — October 2020
(Remote) Particle Theory Seminar, Carleton University

41. *High energy lepton collisions and electroweak PDFs* — September 2020
(Remote) PITT PACC Group Seminar, University of Pittsburgh

42. *How much do we need polarized PDFs?* October 2019
PITT PACC Group Seminar, University of Pittsburgh

43. *Renormalization scheme uncertainties in high order perturbative QCD results* March 2019
PITT PACC Group Seminar, University of Pittsburgh

CONFERENCE AND WORKSHOP TALKS

1. *Probing Higgs-Muon Interactions at Multi-TeV Collider* March 2024
Parallel talk at IMCC and MuCol Annual Meeting 2024, CERN

2. *Multiple boson production at high-energy muon colliders to probe the Higgs-muon coupling* November 2023
Parallel talk at Higgs 2023, IHEP, Beijing

3. *Higgs decay to quarkonia and the Yukawa couplings* November 2023
Parallel talk at Higgs 2023, IHEP, Beijing

4. *Muon colliders and Weak PDFs* September 2023
MadGraph5_aMC@NLO meeting 2023, Gargnano, Lake Garda, Italy

5. *Muon Yukawa couplings at the high-energy muon collider* May 2023
Parallel talk at Pheno 2023, University of Pittsburgh

6. *Electroweak LHC: High-energy lepton colliders* April 2023
Invited talk at PIKIMO Spring 2023, Ohio State University

7. *EW and QCD physics at the muon collider* December 2022
Parallel talk at Milan Christmas Meeting 2022, Milan, Italy

8. *Higgs decay to charmonia and the charm-quark Yukawa coupling* November 2022
Parallel talk at the Higgs 2022 Conference, Pisa, Italy

9. *EW and QCD physics at the muon collider* October 2022
Parallel talk at Muon Collider Collaboration Meeting 2022, CERN

10. *Higgs decay to charmonia via c-quark fragmentation* September 2022
Invited plenary talk at QWG 2022, GSI Darmstadt, Germany

11. *Higgs decay to charmonia and the charm-quark Yukawa coupling* September 2022
(Remote) Invited talk at the SYSU-PKU Collider Physics forum For Young Scientists

12. *Higgs decay to J/ψ via c-quark fragmentation* July 2022
(Remote) Parallel talk at ICHEP 2022, Bologna, Italy

13. *Higgs decay to J/ψ via c-quark fragmentation* May 2022
Parallel talk at Pheno 2022, University of Pittsburgh

14. *Multi-boson production and the muon Yukawa coupling* April 2022
Contributed talk at APS April Meeting 2022, New York

15. *Multi-boson production and the muon Yukawa coupling* December 2021
PIKIMO 11, University of Pittsburgh

16. *Electroweak parton distributions and fragmentations for high-energy lepton colliders* October 2021
(Remote) Snowmass EF04 Topical Group Community Meeting

17. *Higgs boson decay to J/ψ via c-quark fragmentation* October 2021
(Remote) Parallel talk at Higgs 2021 Conference, Stony Brook University

18. *The partonic picture at high-energy lepton colliders* — August 2021
(Remote) Parallel talk at SUSY 2021, Shanghai

19. *QCD jet production at a high energy muon collider* — July 2021
(Remote) Parallel talk at EPS-HEP 2021, DESY

20. *Quark and gluon contents of a lepton at high energies* — July 2021
(Remote) Parallel talk at the DPF meeting, Florida State University

21. *Quark and gluon contents of a lepton at high energies* — May 2021
(Remote) Parallel talk at Pheno 2021, University of Pittsburgh

22. *The partonic picture at high-energy lepton colliders* — May 2021
(Remote) Parallel talk at PPC 2021, University of Oklahoma

23. *Electroweak parton distribution functions at a high-energy muon collider* — April 2021
(Remote) Contributed talk at APS April Meeting 2021

24. *QCD jet production at a high energy muon collider* — March 2021
(Remote) Talk at Muon Collider Physics and Simulation Meeting, CERN

25. *The electroweak parton distribution functions - Necessity and application* — June 2020
(Remote) Student talk at Theoretical Advanced Study Institute (TASI 2020)

26. *The electroweak parton distribution functions* — May 2020
(Remote) Parallel talk at Pheno 2020, University of Pittsburgh

27. *QCD Scale-setting problem in Future Chinese Collider physics* — September 2015
Parallel talk at CEPC-SppC Study Group Meeting, IHEP, Beijing

CONFERENCES AND WORKSHOPS ATTENDED

1. IMCC and MuCol Annual Meeting 2024, CERN — March 2024
2. Higgs 2023, IHEP, Beijing — November 2023
3. MadGraph5_aMC@NLO meeting 2023, Gargnano, Lake Garda, Italy — September 2023
4. Muon Collider Collaboration Meeting 2023, IJCLab in Orsay, France — May 2023
5. Phenomenology Symposium 2023 (Pheno 2023), University of Pittsburgh — May 2023
6. PIKIMO Spring 2023, Ohio State University — April 2023
7. Milan Christmas Meeting 2022, Milan, Italy — December 2022
8. Higgs 2022, Pisa, Italy — November 2022
9. Muon Collider Collaboration Meeting 2022, CERN — October 2022
10. The 15th International Workshop on Heavy Quarkonium (QWG 2022) — September 2022
GSI Darmstadt, Germany
11. SYSU-PKU Collider Physics forum For Young Scientists (remote) — September 2022
12. Snowmass Community Summer Study Workshop (Snowmass 2022), Seattle — July 2022
13. XLI International Conference on High Energy Physics (ICHEP 2022), Bologna, Italy — July 2022
14. LoopFest XX, University of Pittsburgh — May 2022
15. Phenomenology Symposium 2022 (Pheno 2022), University of Pittsburgh — May 2022
16. APS April Meeting 2022, New York — April 2022

17. PIKIMO 11, University of Pittsburgh (hybrid) December 2021
18. Higgs 2021 October 2021
    Stony Brook University & Brookhaven National Laboratory (remote)
19. The XXVIII International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY 2021), Shanghai (remote) August 2021
20. European Physical Society Conference on High Energy Physics 2021 (EPS-HEP 2021) DESY (remote) July 2021
21. 2021 Meeting of the Division of Particles and Fields of the APS (DPF21) July 2021
    Florida State University (remote)
22. Phenomenology Symposium 2021 (Pheno 2021), University of Pittsburgh May 2021 (remote)
23. XIV International Workshop on Interconnections between Particle Physics and Cosmology (PPC 2021), University of Oklahoma (remote) May 2021
24. APS April Meeting 2021 (remote) April 2021
25. Muon Collider Physics and Simulation Meeting (remote) March 2021
26. PITT PACC Workshop: Muon collider physics November 2020
    University of Pittsburgh (remote)
27. Phenomenology Symposium 2020 (Pheno 2020) May 2020
    University of Pittsburgh (remote)
28. Phenomenology Symposium 2020 (Pheno 2019), University of Pittsburgh May 2019
29. PITT PACC Workshop: BSM circa 2020, University of Pittsburgh March 2019
30. Phenomenology Symposium 2020 (Pheno 2018), University of Pittsburgh May 2018
31. Phenomenology Symposium 2020 (Pheno 2017), University of Pittsburgh May 2017
32. The CEPC-SppC Study Group Meeting September 2015
    Institute of High Energy Physics (IHEP), Beijing

SUMMER SCHOOLS ATTENDED

1. **CTEQ 2022**, University of Pittsburgh July 2022
   CTEQ School on QCD and Electroweak Phenomenology
2. **SSI 2021**, SLAC August 2021
   49th SLAC SUMMER INSTITUTE: The Higgs State Fair
3. **HCPSS 2020**, Fermilab August 2020
   15th annual Fermilab-CERN Hadron Collider Physics Summer School
4. **TASI 2020**, University of Colorado Boulder June 2020
   The Obscure Universe: Neutrinos and Other Dark Matters
5. **CTEQ 2019**, University of Pittsburgh July 2019
   CTEQ School on QCD and Electroweak Phenomenology
6. **CTEQ 2017**, University of Pittsburgh July 2017
   CTEQ School on QCD and Electroweak Phenomenology

REFEREE SERVICE

- Physical Review D (Phys. Rev. D) $\times 1$
- Chinese Physics C (CPC) $\times 1$
- The European Physical Journal C (Eur. Phys. J. C) $\times 1$
- Journal of Physics Communications (J. Phys. Commun.) $\times 1$
- Journal of Physics G: Nuclear and Particle Physics (J. Phys. G) $\times 1$
- Nuclear Physics B (Nucl. Phys. B) $\times 1$
- Machine Learning: Science and Technology (MLST) $\times 1$

TEACHING EXPERIENCE

Graduate Teaching Fellow (instructor) at the University of Pittsburgh

- PHYS 0174 - *Basic Physics, Science and Engineering 1*, Summer 2022
  Covers Mechanics and Wave

Graduate Teaching Assistant at the University of Pittsburgh

- PHYS 0219 - *Basic Laboratory Physics for Science and Engineering*
  Fall 2016, Spring 2017, and Fall 2018
- PHYS 0212 - *Introduction to Laboratory Physics*
  Fall 2017, Spring 2018, and Summer 2018
- PHYS 0110 - *Introduction to Physics 1*, Summer 2018
  Covers Mechanics, Heat and Thermodynamics, and Waves
- PHYS 0111 - *Introduction to Physics 2*, Summer 2017
  Covers Thermodynamics, Electromagnetism, Optics, Special Relativity, and Quantum Physics
- 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

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

MENTORING EXPERIENCE

- Dept. Physics & Astronomy Graduate Student Mentor — August 2021 - May 2022
  Mentor three first year graduate students
- Assist to guide one visiting graduate student (*Xiaoze Tan*) — December 2019 - December 2020
  (*JHEP* **08** (2022) 073 [2202.08273])
- Assist to guide one visiting undergraduate student — June 2019 - August 2019