YANG MA

Department of Physics and Astronomy, University of Pittsburgh
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PROFESSIONAL PREPARATION

Ph.D. in Physics (expected) 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: Madgraph, Pythia, FeynRules, FeynArts, FeynCalc, FormCalc, `WHIZARD`, ManeParse

POSITION HELD

Graduate Teaching Fellow May 2022 - present
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

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
Organization of Chinese Physics & Astrophysics (OCPA) member	September 2021 - present
American Association for the Advancement of Science (AAAS) member	September 2021 - present

PUBLICATIONS IN REFEREED JOURNALS

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, *$B \to K^*$ Transition Form Factors and the Semi-leptonic Decay $B \to K^* \mu^+ \mu^-$*, *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, *$B \to \rho$ 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 $B \to D\ell\bar{\nu}_\ell$ and the properties of the D meson distribution amplitude*, *Nucl. Phys. B* **884** (2014) 172 [1309.5723].

OTHER PUBLICATIONS

1. 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

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

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

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

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

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

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

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

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

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

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

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

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

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

CONFERENCE TALKS

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

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

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

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

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

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

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

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

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

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

11. *Electroweak parton distribution functions at a high-energy muon collider* April 2021
(Remote) Contributed talk at APS April Meeting 2021, Muon Collider Symposium IV

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

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

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

15. *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. LoopFest XX, University of Pittsburgh — May 2022
2. Phenomenology Symposium 2022 (Pheno 2022) — May 2022
   University of Pittsburgh
3. APS April Meeting 2022, New York — April 2022
4. PIKIMO 11, University of Pittsburgh (hybrid) — December 2021
5. Higgs 2021 — October 2021
   Stony Brook University & Brookhaven National Laboratory (remote)
6. The XXVIII International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY 2021), Shanghai (remote) — August 2021
7. European Physical Society Conference on High Energy Physics 2021 (EPS-HEP 2021) — July 2021
   DESY (remote)
8. 2021 Meeting of the Division of Particles and Fields of the APS (DPF21) — July 2021
   Florida State University (remote)
9. Phenomenology Symposium 2021 (Pheno 2021) — May 2021
   University of Pittsburgh (remote)
10. XIV International Workshop on Interconnections between Particle Physics and Cosmology (PPC 2021), University of Oklahoma (remote) — May 2021
11. APS April Meeting 2021 (remote) — April 2021
12. Muon Collider Physics and Simulation Meeting (remote) — March 2021
13. PITT PACC Workshop: Muon collider physics — November 2020
    University of Pittsburgh (remote)
14. Phenomenology Symposium 2020 (Pheno 2020) — May 2020
    University of Pittsburgh (remote)
15. Phenomenology Symposium 2020 (Pheno 2019) — May 2019
    University of Pittsburgh
16. PITT PACC Workshop: BSM circa 2020 — March 2019
    University of Pittsburgh
17. Phenomenology Symposium 2020 (Pheno 2018) — May 2018
    University of Pittsburgh
18. Phenomenology Symposium 2020 (Pheno 2017) — May 2017
    University of Pittsburgh
19. The CEPC-SppC Study Group Meeting — September 2015
    Institute of High Energy Physics (IHEP), Beijing

SUMMER SCHOOLS ATTENDED

1. **SSI 2021**, SLAC — August 2021
   49th SLAC SUMMER INSTITUTE: The Higgs State Fair
2. **HCPSS 2020**, Fermilab — August 2020
   15th annual Fermilab-CERN Hadron Collider Physics Summer School

3. **TASI 2020**, University of Colorado Boulder — June 2020
   The Obscure Universe: Neutrinos and Other Dark Matters
4. **CTEQ 2019**, University of Pittsburgh — July 2019
   CTEQ School on QCD and Electroweak Phenomenology
5. **CTEQ 2017**, University of Pittsburgh — July 2017
   CTEQ School on QCD and Electroweak Phenomenology

REFEREE SERVICE

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

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 - present
  Mentoring three first year graduate student
- Assist to guide one visiting graduate student (*Xiaoze Tan*) — December 2019 - December 2020
  (2202.08273, submitted to JHEP)
- Assist to guide one visiting undergraduate student — June 2019 - August 2019