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Education and training

- **Research Associate**, 09/2023 – present
Department of Physics and Astronomy, Michigan State University, East Lansing, MI 48825
Supervisors: Kirtimaan Mohan and C.-P. Yuan
- **Postdoctoral Associate**, 09/2019 – 08/2023
Pittsburgh Particle Physics, Astrophysics, and Cosmology Center (PITT PACC),
Department of Physics and Astronomy, University of Pittsburgh, Pittsburgh, PA 15260
Supervisors: Ayres Freitas and Tao Han
- **Ph.D. in Physics**, 08/2014 – 08/2019
Department of Physics, Southern Methodist University, Dallas, TX 75275-0181
Advisors: Pavel Nadolsky and Roberto Vega
Thesis: Massive elementary particles in the Standard Model and its supersymmetric triplet Higgs extension [\[link\]](#)
- **B.S. in Physics**, 09/2010 – 07/2014
School of Physics, Peking University, Beijing 100871, China
Advisor: Han-Qing Zheng

Research interests

I mainly work on the precision and resummation calculations. As a member of the CTEQ-TEA (CT) collaboration, I am one of the major contributors to the latest [CT18](#) parton distribution functions (PDFs). I led the corresponding QED corrections ([CT18QED](#)). Recently, I dedicate to the electroweak (EW) PDFs, and their applications at high-energy muon colliders. I also work on high-order calculations, heavy flavors, neutrinos, Higgs bosons beyond the Standard Model, and effective field theory.

Publications

The latest list of my publications, including citations, can be viewed in the data bases of [INSPIRE HEP](#), [Google Scholar](#), and [Semantic Scholar](#).

INSPIRE HEP			Google Scholar			Semantic
	Citeable	Published		All	Since 2019	
Papers	70	31				62
Citations	3564	2481		3256	3179	1928
h-index	26	19		24	24	21
Average	50.9	80	i10-index	41	39	

Table 1: Publications and citations

Peer-reviewed journals

- [1] W. Altmannshofer, T. Mäkelä, S. Sarka, S. Trojanowski, K. Xie, and B. Zhou, “Discovering neutrino tridents at the Large Hadron Collider”, *Phys. Rev. D* **110** no. 7, (2024) 07208, [arXiv:2406.16803 \[hep-ph\]](#).
- [2] E. Celada, T. Han, W. Kilian, N. Kreher, Y. Ma, F. Maltoni, D. Pagani, J. Reuter, T. Streigl, and K. Xie, “Probing Higgs-muon interactions at a multi-TeV muon collider”, *JHEP* **08** (2024) 021 [arXiv:2312.13082 \[hep-ph\]](#).
- [3] A. Dasgupta, P. S. B. Dev, T. Han, R. Padhan, S. Wang, and K. Xie, “Searching for heavy leptophilic Z' : from lepton colliders to gravitational waves”, *JHEP* **12** (2023) 011, [arXiv:2308.12804 \[hep-ph\]](#).
- [4] A. Ablat, M. Guzzi, K. Xie, S. Dulat, and T.-J. Hou, I. Sitiwaldi, and C.-P., Yuan, “Exploring the impact of high-precision top-quark pair production data on the structure of the proton at the LHC”, *Phys. Rev. D* **109** no. 5, (2024) 054027 [arXiv:2307.11153 \[hep-ph\]](#).
- [5] X. Jing *et al.*, “Quantifying the interplay of experimental constraints in analyses of parton distributions,” *Phys. Rev. D* **108** no. 3, (2023) 034029, [arXiv:2306.03918 \[hep-ph\]](#).
- [6] A. Freitas, Q. Song, and K. Xie, “Fermionic Electroweak NNLO Corrections to $e^+e^- \rightarrow ZH$ with Polarized Beams and Different Renormalization Schemes,” *Phys. Rev. D* **108** no. 5, (2023) 053006, [arXiv:2305.16547 \[hep-ph\]](#).
- [7] **CTEQ-TEA** Collaboration, I. Sitiwaldi, K. Xie, A. Ablat, S. Dulat, T.-J. Hou, and C.-P. Yuan, “Precision studies of the post-CT18 LHC Drell-Yan data in the CTEQ-TEA global analysis” *Phys. Rev. D* **108** no. 3, (2023) 034030, [arXiv:2305.10733 \[hep-ph\]](#).
- [8] **CTEQ-TEA** Collaboration, K. Xie, B. Zhou, and T. J. Hobbs, “The Photon Content of the Neutron,” *JHEP* **04** (2024) 022, [arXiv:2305.10497 \[hep-ph\]](#).
- [9] **CTEQ-TEA** Collaboration, K. Xie, J. Gao, T. J. Hobbs, D. R. Stump, and C.-P. Yuan, “High-energy neutrino deep inelastic scattering cross sections,” *Phys. Rev. D* **109** no. 11, (2024) 113001, [arXiv:2303.13607 \[hep-ph\]](#).
- [10] C. Accettura *et al.*, “Towards a muon collider”, *Eur. Phys. J. C* **83** no. 9, (2023) 864, [arXiv:2303.08533 \[physics.acc-ph\]](#).
- [11] M. Guzzi, T. J. Hobbs, K. Xie, J. Huston, P. Nadolsky, and C.-P. Yuan, “The persistent nonperturbative charm enigma,” *Phys. Lett. B* **843** (2023) 137975, [arXiv:2211.01387 \[hep-ph\]](#).
- [12] B. Batell, T. Ghosh, T. Han, and K. Xie, “Heavy Neutral Leptons at the Electron-Ion Collider,” *JHEP* **03** (2023) 020 [arXiv:2210.09287 \[hep-ph\]](#).
- [13] K. M. Black *et al.*, “Muon Collider Forum Report,” *JINST* **19** no. 02, (2024) T02015, [arXiv:2209.01318 \[hep-ex\]](#).
- [14] A. Courtoy, J. Huston, P. Nadolsky, K. Xie, M. Yan, and C.-P. Yuan, “Parton distributions need representative sampling,” *Phys. Rev. D* **107** no. 3, (2023) 034008, [arXiv:2205.10444 \[hep-ph\]](#).
- [15] J. Gao, D. Liu, and K. Xie, “Understanding PDF uncertainty on the W boson mass measurements in CT18 global analysis,” *Chin. Phys. C* **46** no. 12, (2022) 123110, [arXiv:2205.03942 \[hep-ph\]](#).
- [16] S. Amoroso *et al.*, “Snowmass 2021 whitepaper: Proton structure at the precision frontier,” *Acta Phys. Polon. B* **53** no. 12, (2022) A1, [arXiv:2203.13923 \[hep-ph\]](#).
- [17] J. M. Campbell *et al.*, “Event Generators for High-Energy Physics Experiments,” *SciPost Phys.* **16** no. 5, (2024) 130, [arXiv:2203.11110 \[hep-ph\]](#).
- [18] D. d’Enterria *et al.*, “The strong coupling constant: State of the art and the decade ahead,” *J. Phys. G* **51** no. 9, (2024) 090501, [arXiv:2203.08271 \[hep-ph\]](#).
- [19] **PDF4LHC Working Group** Collaboration, R. D. Ball *et al.*, “The PDF4LHC21 combination of global PDF fits for the LHC Run III,” *J. Phys. G* **49** no. 8, (2022) 080501, [arXiv:2203.05506 \[hep-ph\]](#).

- [20] J. L. Feng *et al.*, “The Forward Physics Facility at the High-Luminosity LHC,” *J. Phys. G* **50** no. 3, (2023) 030501, [arXiv:2203.05090 \[hep-ex\]](#).
- [21] L. A. Anchordoqui *et al.*, “The Forward Physics Facility: Sites, experiments, and physics potential,” *Phys. Rept.* **968** (2022) 1–50, [arXiv:2109.10905 \[hep-ph\]](#).
- [22] T. Han, W. Kilian, N. Kreher, Y. Ma, J. Reuter, T. Striegl, and K. Xie, “Precision test of the muon-Higgs coupling at a high-energy muon collider,” *JHEP* **12** (2021) 162, [arXiv:2108.05362 \[hep-ph\]](#).
- [23] **CTEQ-TEA** Collaboration, K. Xie, T. J. Hobbs, T.-J. Hou, C. Schmidt, M. Yan, and C.-P. Yuan, “Photon PDF within the CT18 global analysis,” *Phys. Rev. D* **105** no. 5, (2022) 054006, [arXiv:2106.10299 \[hep-ph\]](#).
- [24] D. Buarque Franzosi *et al.*, “Vector boson scattering processes: Status and prospects,” *Rev. Phys.* **8** (2022) 100071, [arXiv:2106.01393 \[hep-ph\]](#).
- [25] T. Han, Y. Ma, and K. Xie, “Quark and gluon contents of a lepton at high energies,” *JHEP* **02** (2022) 154, [arXiv:2103.09844 \[hep-ph\]](#).
- [26] T. Han, Y. Ma, and K. Xie, “High energy leptonic collisions and electroweak parton distribution functions,” *Phys. Rev. D* **103** no. 3, (2021) L031301, [arXiv:2007.14300 \[hep-ph\]](#).
- [27] T.-J. Hou *et al.*, “New CTEQ global analysis of quantum chromodynamics with high-precision data from the LHC,” *Phys. Rev. D* **103** no. 1, (2021) 014013, [arXiv:1912.10053 \[hep-ph\]](#).
- [28] R. Vega, R. Vega-Morales, and K. Xie, “Light (and darkness) from a light hidden Higgs,” *JHEP* **06** (2018) 137, [arXiv:1805.01970 \[hep-ph\]](#).
- [29] R. Vega, R. Vega-Morales, and K. Xie, “The Supersymmetric Georgi-Machacek Model,” *JHEP* **03** (2018) 168, [arXiv:1711.05329 \[hep-ph\]](#).
- [30] T.-J. Hou, S. Dulat, J. Gao, M. Guzzi, J. Huston, P. Nadolsky, C. Schmidt, J. Winter, K. Xie, and C.-P. Yuan, “CT14 Intrinsic Charm Parton Distribution Functions from CTEQ-TEA Global Analysis,” *JHEP* **02** (2018) 059, [arXiv:1707.00657 \[hep-ph\]](#).
- [31] T.-J. Hou *et al.*, “Reconstruction of Monte Carlo replicas from Hessian parton distributions,” *JHEP* **03** (2017) 099, [arXiv:1607.06066 \[hep-ph\]](#).
- [32] K. Xie, W. Ke, W. Liang, X. Fu, C. Jiao, J. Pei, and F. Xu, “Collective rotations of fission isomers in actinide nuclei”, *Sci. China Phys. Mech. Astron.* **57** (2014) 189-193.

Under review

- [1] M. Guzzi, P. Nadolsky, L. Reina, D. Wackerroth, K. Xie, “A general mass variable flavor number scheme for Z boson production in association with a heavy quark at hadron colliders”, [arXiv:2410.03876 \[hep-ph\]](#).
- [2] A. Ablat, A. Courtoy, S. Dulat, M. Guzzi, T.J. Hobbs, T.-J. Hou, J. Huston, K. Mohan, H.-W. Lin, P. Nadolsky, I. Sitiwaldi, K. Xie, M. Yan, C.-P. Yuan, “New results in the CTEQ-TEA global analysis of parton distributions in the nucleon”, [arXiv:2408.04020 \[hep-ph\]](#).

Proceedings

- [1] A. Ablat, S. Dulat, M. Guzzi, T.-J. Hou, N. Kidonakis, I. Sitiwaldi, A. Tonero, K. Xie, and C.-P. Yuan, “Progress in top-quark pair production cross section calculations and impact on parton distribution functions of the proton,” in *12th Large Hadron Collider Physics Conference*. 10, 2024. [arXiv:2411.00055 \[hep-ph\]](#).
- [2] M. Guzzi, P. Nadolsky, L. Reina, D. Wackerroth, and K. Xie, “General Mass treatment for Z boson production in association with a heavy quark at hadron colliders”, in *31st International Workshop on Deep-Inelastic Scattering and Related Subjects*. 10, 2024. [arXiv:2410.13044 \[hep-ph\]](#).

- [3] Y. Ma, E. Celada, T. Han, W. Kilian, N. Kreher, F. Maltoni, D. Pagani, J. Reuter, T. Streigl, and K. Xie, “Higgs-muon interactions at a multi-TeV muon collider”, [arXiv:2410.06991 \[hep-ph\]](#).
- [4] A. Ablat, A. Courtoy, S. Dulat, M. Guzzi, T.J. Hobbs, T.-J. Hou, J. Huston, K. Mohan, H.-W. Lin, P. Nadolsky, I. Sitiwaldi, K. Xie, M. Yan, and C.-P. Yuan, “The upcoming CTEQ-TEA parton distributions in a nutshell”, [arXiv:2408.11131 \[hep-ph\]](#).
- [5] J. Reuter, T. Han, W. Kilian, N. Kreher, Y. Ma, T. Streigl, and K. Xie, “Precision test of the muon-Higgs coupling at a high-energy muon collider,” *PoS ICHEP2022* (2022) 1239, [arXiv:2212.01323 \[hep-ph\]](#).
- [6] M. Guzzi, A. Ablat, S. Dulat, T.-J. Hou, P. M. Nadolsky, I. Sitiwaldi, K. Xie, and C.-P. Yuan, “Heavy-flavor impact on CTEQ-TEA global QCD analyses,” *EPJ Web Conf.* **270** (2022) 00004, [arXiv:2209.11143 \[hep-ph\]](#).
- [7] M. Guzzi, K. Xie, T.-J. Hou, P. Nadolsky, C. Schmidt, M. Yan, and C.-P. Yuan, “CTEQ-TEA group updates: Photon PDF and Impact from heavy flavors in the CT18 global analysis,” *PoS EPS-HEP2021* (2022) 370, [arXiv:2110.11495 \[hep-ph\]](#).
- [8] M. Guzzi et al., “NNLO constraints on proton PDFs from the SeaQuest and STAR experiments and other developments in the CTEQ-TEA global analysis,” *SciPost Phys. Proc.* **8** (2022) 005, [arXiv:2108.06596 \[hep-ph\]](#).
- [9] K. Xie, J. M. Campbell, and P. M. Nadolsky, “A general-mass scheme for prompt charm production at hadron colliders,” *SciPost Phys. Proc.* **8** (2022) 084, [arXiv:2108.03741 \[hep-ph\]](#).
- [10] M. Guzzi, P. Nadolsky, and K. Xie, “Impact of heavy-quark production measurements in the CT18 global QCD analysis of PDFs,” *SciPost Phys. Proc.* **8** (2022) 164, [arXiv:2108.01791 \[hep-ph\]](#).
- [11] K. Xie, T. Hobbs, T.-J. Hou, C. Schmidt, M. Yan, and C.-P. Yuan, “The photon content of the proton in the CT18 global analysis,” *SciPost Phys. Proc.* **8** (2022) 074, [arXiv:2107.13580 \[hep-ph\]](#).
- [12] T.-J. Hou *et al.*, “Progress in the CTEQ-TEA NNLO global QCD analysis,” [arXiv:1908.11394 \[hep-ph\]](#).
- [13] T.-J. Hou *et al.*, “New CTEQ Global Analysis with High Precision Data from the LHC,” [arXiv:1908.11238 \[hep-ph\]](#).
- [14] T.-J. Hou *et al.*, “LHC and DIS experimental data in the CT18(Z) global QCD analysis,” *PoS DIS2019* (2019) 021, [arXiv:1909.00001 \[hep-ph\]](#).
- [15] O. Amat *et al.*, “Impact of LHC top-quark pair measurements to CTEQ-TEA PDF analysis,” *PoS DIS2019* (2019) 017, [arXiv:1908.06441 \[hep-ph\]](#).
- [16] C.-P. Yuan *et al.*, “New CTEQ global analysis with high precision data from the LHC,” *PoS DIS2019* (2019) 001.
- [17] M. Guzzi, T.-J. Hou, S. Dulat, J. Gao, J. Huston, P. Nadolsky, C. Schmidt, J. Winter, K. Xie, and C.-P. Yuan, “CTEQ-TEA parton distribution functions with intrinsic charm,” *EPJ Web Conf.* **192** (2018) 00003, [arXiv:1810.00264 \[hep-ph\]](#).
- [18] M. Guzzi, T.-J. Hou, S. Dulat, J. Gao, J. W. Huston, P. Nadolsky, C. Schmidt, J. Winter, K. Xie, and C.-P. Yuan, “CTEQ-TEA parton distributions functions with intrinsic charm,” *PoS DIS2017* (2018) 030.
- [19] T.-J. Hou *et al.*, “CT14 Monte-Carlo parton distributions with positivity and asymmetric uncertainties,” *PoS DIS2016* (2016) 034.

Community papers

- [1] **MuCoL** Collaboration, C. Accettura *et al.*, “MuCol Milestone Report No. 5: Preliminary Parameters,” [arXiv:2411.02966 \[physics.acc-ph\]](#).
- [2] **International Muon Collider** Collaboration, C. Accettura *et al.*, “Interim report for the

- International Muon Collider Collaboration (IMCC),” *CERN Yellow Rep.Monogr* **2** (2024), [arXiv:2407.12450 \[physics.acc-ph\]](#).
- [3] F. Maltoni *et al.*, “TF07 Snowmass Report: Theory of Collider Phenomena,” [arXiv:2210.02591 \[hep-ph\]](#).
 - [4] M. Begel *et al.*, “Precision QCD, Hadronic Structure & Forward QCD, Heavy Ions: Report of Energy Frontier Topical Groups 5, 6, 7 submitted to Snowmass 2021,” [arXiv:2209.14872 \[hep-ph\]](#).
 - [5] T. Bose *et al.*, “Report of the Topical Group on Physics Beyond the Standard Model at Energy Frontier for Snowmass 2021,” [arXiv:2209.13128 \[hep-ph\]](#).
 - [6] K. Agashe *et al.*, “Report of the Topical Group on Top quark physics and heavy flavor production for Snowmass 2021,” [arXiv:2209.11267 \[hep-ph\]](#).
 - [7] A. Belloni *et al.*, “Report of the Topical Group on Electroweak Precision Physics and Constraining New Physics for Snowmass 2021,” [arXiv:2209.08078 \[hep-ph\]](#).
 - [8] R. Abdul Khalek *et al.*, “Snowmass 2021 White Paper: Electron Ion Collider for High Energy Physics,” in *2022 Snowmass Summer Study*. 3, 2022. [arXiv:2203.13199 \[hep-ph\]](#).
 - [9] T. Han, Y. Ma, and K. Xie, “Electroweak fragmentation at high energies: A Snowmass White Paper,” in *2022 Snowmass Summer Study*. 3, 2022. [arXiv:2203.11129 \[hep-ph\]](#).
 - [10] **Muon Collider** Collaboration, N. Bartosik *et al.*, “Simulated Detector Performance at the Muon Collider,” [arXiv:2203.07964 \[hep-ex\]](#).
 - [11] **Muon Collider** Collaboration, D. Stratakis *et al.*, “A Muon Collider Facility for Physics Discovery,” [arXiv:2203.08033 \[physics.acc-ph\]](#).
 - [12] **Muon Collider** Collaboration, S. Jindariani *et al.*, “Promising Technologies and R&D Directions for the Future Muon Collider Detectors,” [arXiv:2203.07224 \[physics.ins-det\]](#).
 - [13] **Muon Collider** Collaboration, J. de Blas *et al.*, “The physics case of a 3 TeV muon collider stage,” [arXiv:2203.07261 \[hep-ph\]](#).
 - [14] **ILC International Development Team** Collaboration, A. Aryshev *et al.*, “The International Linear Collider: Report to Snowmass 2021,” [arXiv:2203.07622 \[physics.acc-ph\]](#).
 - [15] **ν -Test** Collaboration, B. Batell, T. Ghosh, T. Han, and K. Xie, “Heavy Neutral Lepton Searches at the Electron-Ion Collider: A Snowmass Whitepaper,” in *2022 Snowmass Summer Study*. 3, 2022. [arXiv:2203.06705 \[hep-ph\]](#).
 - [16] K. Xie, M. Guzzi, and P. Nadolsky, “Probing heavy-flavor parton distribution functions at hadron colliders,” in *2022 Snowmass Summer Study*. 3, 2022. [arXiv:2203.06207 \[hep-ph\]](#).
 - [17] S. Klein *et al.*, “New opportunities at the photon energy frontier,” [arXiv:2009.03838 \[hep-ph\]](#).
 - [18] J. R. Andersen *et al.*, “Les Houches 2015: Physics at TeV Colliders Standard Model Working Group Report,” in *9th Les Houches Workshop on Physics at TeV Colliders*. 5, 2016. [arXiv:1605.04692 \[hep-ph\]](#).
 - [19] T. Cheng, *et al.*, “Monte Carlo Tools for future collider projects,” 6, 2014.

Recent presentations

Seminars

1. **High-energy neutrino deep inelastic scattering cross sections**
Fermilab Neutrino Seminar, Fermilab, Batavia, IL, 03/2024
2. **Parton Distributions for the Precision Era at the LHC**
LPC Physics Forum, Fermilab, Batavia, IL, 10/2023
3. **Electroweak factorization and parton distribution functions**
Physics Seminar, Wichita State University, Wichita, KS, 10/2023
4. **Electroweak parton distribution functions and their applications at future**

high-energy muon colliders

Theory Seminar, Jefferson Lab, Newport News, VA, 11/2022

High Energy Physics Seminar, Michigan State University, East Lansing, MI, 09/2022

5. Bread & Butter Physics at High-energy Muon Colliders

SYSU-PKU Collider Physics forum For Young Scientists, Virtual, 06/2022

Department of Physics, Southern Methodist University, Dallas, TX, 04/2022

6. The photon content of proton in the CT18 global analysis

Institute of Nuclear Physics, Polish Academy of Sciences, Krakow, Poland, 11/2021

7. The partonic picture at high-energy lepton colliders

Seminar at Tsung-Dao Lee Institute & School of Physics and Astronomy, Shanghai Jiao Tong University, Shanghai, China, 06/2021

8. Light Exotic Higgs Bosons at the LHC

Department of Physics, Southern Methodist University, Dallas, TX, 03/2019

Theoretical Physics Department, Fermilab, Batavia, IL, 11/2018

Plenary talks

1. A general mass variable flavor number scheme for Z boson associated with a heavy quark production at hadron colliders

LoopFest XXII, Southern Methodist University, Dallas, TX, 05/2024

2. New physics searches at the EIC

Electroweak and Beyond the Standard Model Physics at the EIC, INT Workshop, University of Washington, Seattle, WA, 02/2024

3. Parton distributions for the LHC precision era

27th Mini-Workshop on the frontier of LHC, Sun Yat-Sen University, Zhuhai, Guangzhou, China, 01/2024

4. Heavy neutral leptons and related new physics at the Electron-Ion Collider

The 17th International Workshops on Tau Lepton Physics (TAU2023), University of Louisville, Louisville, KY, 12/2023

5. Electroweak Factorization

Muon Collider Physics Benchmark Workshop, University of Pittsburgh, PA, 11/2023

6. Parton distribution functions at the electron-ion collider, forward physics facility and its impact on top-quark measurement at the LHC

16th International Workshop on Top Quark Physics (TOP2023), Traverse City, MI, 09/2023

7. Heavy neutral leptons at the Electron-Ion Collider

1st International Workshop on a 2nd Detector for the Electron-ion Collider, Temple University, Philadelphia, PA, 05/2023

8. Electroweak Factorization at High-Energy Muon Colliders

Muon Collider Workshop, KITP Program, University of California, Santa Barbara, CA, 02/2023

9. New Physics Searches at the EIC

IAS Program on High Energy Physics (HEP 2023), the Hong Kong University of Science and Technology, Hong Kong, 02/2023

10. Electroweak parton distributions at high-energy lepton colliders

Parton Distributions and Nucleon Structure, INT Workshop, University of Washington, Seattle, WA, 09/2022

11. **Electroweak Showers at High-Energy Colliders**
Multi-Boson Interactions (MBI) 2022, Shanghai, China, 08/2022
12. **Heavy neutral lepton searches at the electron-ion collider**
11th Workshop of the Long-Lived Particle Community, Virtual, CERN, 06/2022
13. **Quark and gluon contents of a lepton at high energies**
Muon Collider Physics and Detector Workshop, International Muon Collider Collaboration, 06/2021
14. **Electroweak Parton Distribution Functions**
Winter 2021 topical meeting on VBS: VBS at Snowmass, VBSCan Action, 01/2021
15. **Standard Model physics at high-energy muon colliders**
PITT PACC Workshop: Muon Collider Physics, University of Pittsburgh, PA, 12/2020

Parallel talks

1. **Multi-Boson Production to Test Muon-Higgs Interactions at Muon Colliders**
Inaugural US Muon Collider Meeting, Fermilab, Batavia, IL, 08/2024
2. **The photon content of neutron**
Pheno-DPF 2024, University of Pittsburgh, PA, 05/2024
CTEQ Fall Meeting 2023, Michigan State University, East Lansing, MI, 11/2023
3. **Forward D-meson production at the LHC**
Forward Physics Facility Theory Workshop, CERN, Geneva, Switzerland, 09/2023
4. **The Heavy-Flavor Production at the LHC**
SM@LHC 2023, Fermilab, Batavia, IL, 07/2023
5. **High-energy neutrino cross sections**
Phenomenology 2023 Symposium, University of Pittsburgh, PA, 05/2023
PIKIMO Spring Meeting 2023, Ohio State University, OH, 04/2023
APS April Meeting 2023, Minneapolis, MN, 04/2023
6. **Impacts of LHC Drell-Yan data in the CTEQ-TEA global fit**
DIS 2023, Michigan State University, East Lansing, MI, 03/2023
DIS 2022, Santiago de Compostela, Spain, 05/2022
7. **The small- x dynamics in the CTEQ-TEA PDFs and the application to the Forward Physics Facility**
DIS 2023, Michigan State University, East Lansing, MI, 03/2023
8. **Ongoing activities related to the heavy-flavor impact on CTEQ global analyses**
CTEQ Fall Meeting 2022, Fermilab, Batavia, IL, 11/2022
9. **Overview of Parton Distribution Functions**
Invited overview in the EF05/06/07 joint session, the Community Summer Study, Seattle, WA, 07/2022
10. **Electroweak fragmentations at high energies**
Invited in EF04 Topical Group at the Community Summer Study, Seattle, WA, 07/2022
11. **Heavy Neutral Lepton Searches at the Electron-Ion Collider**
PPC 2022, Washington University in St. Louis, Missouri, 06/2022
12. **The Update of the CT18QED Photon PDF**
DIS 2022, Santiago de Compostela, Spain, 05/2022

13. **The parton distributions at small momentum fractions**
DIS 2022, Santiago de Compostela, Spain, 05/2022
14. **The partonic picture at high-energy lepton colliders**
CTEQ Fall Meeting 2021, Online, 12/2021
15. **Precision Test of the Muon-Higgs Coupling at a High-energy Muon Collider**
Higgs 2021, Stony Brook University, NY, 10/2021
Invited talk in “Lepton Colliders” Session, SUSY 2021, ITP-CAS, Beijing, China, 08/2021
16. **Photon PDF and Impact from heavy flavors in the CT18 global analysis**
The European Physical Society Conference on High Energy Physics, University of Hamburg and DESY, Germany, 07/2021
17. **Nonperturbative contributions to the photon PDF uncertainty in the CT18 global analysis**
19th International Conference on Hadron Spectroscopy and Structure, Mexico City, Mexico, 07/2021
18. **The Photon PDF within the CT18 global analysis**
2021 APS DPF Meeting, Florida State University, Tallahassee, FL, 07/2021
DIS 2021, Stony Brook University, NY, 04/2021
19. **A next-to-leading order method general-mass method for heavy-flavor production at the LHC**
DIS 2021, Stony Brook University, NY, 04/2021
20. **BSM Physics at the Electron Ion Collider: Searching for Heavy Neutral Leptons**
Snowmass RF4 meeting, Virtual, 10/2020
21. **Small- x PDFs in the CTEQ-TEA global QCD analysis**
Snowmass EF06 meeting, Virtual, 07/2020
22. **The Electroweak PDFs (I): the general considerations**
Phenomenology 2020 Symposium, University of Pittsburgh, PA, 05/2020
23. **New CTEQ Global Analysis with High Precision Data from the LHC**
8th PIKIMO Meeting, University of Cincinnati, OH, 11/2019
APS April Meeting, Denver, CO, 04/2019
24. **Heavy flavor production at hadron colliders**
QCD@LHC 2019, State University of New York at Buffalo, NY, 07/2019
Phenomenology 2019 Symposium (Travel Award), University of Pittsburgh, PA, 05/2019
25. **Light Exotic Higgs Bosons in the Supersymmetric Georgi-Machacek Model**
SUSY 2019, Texas A&M University - Corpus Christi, TX, 05/2019
26. **Next-to-leading order general-mass scheme for heavy-quark production at the LHC**
Parton Distributions as a Bridge from Low to High Energies Workshop, Jefferson Lab, Newport News, VA, 11/2018
27. **Light (and darkness) from a light hidden Higgs**
6th PIKIO Meeting, University of Notre Dame, IN, 10/2018
28. **The Supersymmetric Georgi-Machacek Model**
Phenomenology 2018 Symposium, University of Pittsburgh, PA, 05/2018
29. **A hint of a new heavy particle at the LHC: *What do we see? What can it be?***
Research Day Poster Session (Dean’s Award), Southern Methodist University, Dallas, TX 02/2016

30. **Heavy-quark mass treatment for deep inelastic scattering at N3LO level**
Fall 2015 Texas Section of APS Meeting (Travel Award), Baylor University, Waco, TX,
10/2015

Public tools

- I extend the Error PDF Updating Method Package ([ePump](#)) to simultaneously constrain the PDF and SMEFT parameters.
- I am the leading author for the [S-ACOT-MPS](#) package, *i.e.*, the Simplified Aivazis-Collins-Olness-Tung scheme with Massive Phase Space. It is designed to deal with the heavy-flavor hadroproduction, especially at the Large Hadron Collider (LHC).
- I am one of the maintainers for the [CTEQ-TEA PDFs](#).
- I develop and maintain the SARAH model files for the Supersymmetric Georgi-Machacek ([SGM](#)) Model, a decoupling limit of the Supersymmetric Custodial Triplet Model (SCTM), which gives a weakly coupled origin for the GM model at the electroweak scale.

Professional activities and service

- **Organization committee for conferences, workshops, and schools**
 - PITT PACC Workshops: [Muon Collider Physics Benchmark Workshop \(2023\)](#); [Nu Tools for BSM at Neutrino Beam Facilities \(2022\)](#); [11th PIKIMO \(2021\)](#); [LHC Run III Workshop \(2021\)](#); [Muon Collider Physics \(2020\)](#)
 - [2022 CTEQ Summer School](#)
 - [LoopFest XX \(2022\)](#)
 - Phenomenology Symposium, [2023](#), [2022](#), [2021](#), [2020](#)
- **Convener** for [2021 CTEQ-MCnet Summer School \(Virtual\)](#); [Phenomenology Symposium 2019](#), Pittsburgh, PA; [APS April Meeting 2019](#), Denver, CO
- **Referee** for journals and awards
 - *Journal of High Energy Physics*
 - *Physical Review D*
 - *Chinese Physics C*
 - *Nuclear Physics B*
 - *International Journal of Modern Physics A*
 - [Advanced Scientific Computing Research Leadership Computing Challenge](#), [2022](#), [2023](#)
- **Member** of the **CTEQ-TEA** and **PDF4LHC Working Group** Collaborations
- **Visitor** at Fermilab, 2017 – 2018; Michigan State University, 2016
- **Research Assistant**, Southern Methodist University, 2015 – 2019
Nominee for the Student Employee of the Year, 2019
Lightner-Sams Graduate Fellowship 2018
- **Teaching Assistant**, Southern Methodist University, 2014 – 2015
Outstanding Teaching Assistant Award 2015

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