

Employment

- **The Pennsylvania State University** **Pennsylvania, USA**
Postdoctoral researcher starting 2026
- **Max Planck Institute for Physics** **Garching (Munich), Germany**
Postdoctoral researcher 2022 - 2026
Research area: *scattering amplitudes, Feynman integrals, higher-order perturbative calculations, positive geometry, tropical geometry, correlation functions, AdS/CFT correspondence.*
Main results:
 - Tropical Monte-Carlo integration for Feynman integrals in QCD and $\mathcal{N} = 4$ super Yang-Mills (SYM).
 - Complete function space for all planar five-particle scattering amplitudes at N^3 LO for LHC.
 - Pentagonal Wilson loops with Lagrangian insertion in $\mathcal{N} = 4$ SYM and pure Yang-Mills amplitudes.
 - Amplituhedron and Grassmannian for three-dimensional ABJM theory.
 - Mellin amplitudes for gravity multiplet correlators in $AdS_3 \times S^3$.

Education

- **Queen Mary University of London** **London, UK**
Ph.D, Physics 2018 - 2022
Thesis Title: "Scattering Amplitudes from Rational Maps and Correlators in AdS/CFT"
Supervisor: Dr. Congkao Wen
- **National Taiwan University** **Taipei, Taiwan**
M.S., Physics 2015 - 2018
Master project: "The Manifestation of Spontaneous Symmetry Breaking on Scattering Amplitudes"
Supervisor: Prof. Yu-tin Huang
- **National Cheng-Kung University** **Tainan, Taiwan**
B.S., Electrical Engineering 2012 - 2015

Publications [\[Link to INSPIRE\]](#) (* In this field, author lists are ordered alphabetically.)

12 journal articles (including a single-authored paper [8]), 3 preprints, 1 to appear, 2 theses.

Metric: 304 citations, h-index: 11.

- [1] Chenyu Wang, **Shun-Qing Zhang**. "Tropical integration for gauge theory Feynman integrals", **To appear**.
- [2] Dmitry Chicherin, Johannes Henn, Elia Mazzucchelli, Jaroslav Trnka, Qinglin Yang, **Shun-Qing Zhang**. "Geometric Landau analysis and symbol bootstrap". In: *JHEP* 02 (2026), p. 083. DOI: 10.1007/JHEP02(2026)083. arXiv: 2508.05443 [hep-th].
- [3] Lance J. Dixon, Umut Oktem, Umut and Shruti Paranjape, Jaroslav Trnka, Yongqun Xu, **Shun-Qing Zhang**. "Multi-Loop Negative Geometries". In: (May 2026). arXiv: 2605.28926 [hep-th].
- [4] Dmitry Chicherin, Johannes Henn, Yongqun Xu, **Shun-Qing Zhang**, Yang Zhang, "Three-loop pentagonal Wilson loop with Lagrangian insertion". In: (Dec. 2025). arXiv: 2512.17881 [hep-th].
- [5] Dmitry Chicherin, Yu Wu, Zhihao Wu, Yongqun Xu, **Shun-Qing Zhang**, Yang Zhang, "Complete computation of all three-loop five-point massless planar integrals". In: (Dec. 2025). arXiv: 2512.17330 [hep-ph].
- [6] Dmitry Chicherin, Johannes M. Henn, Jaroslav Trnka, and **Shun-Qing Zhang**. "Positivity properties of five-point two-loop Wilson loops with Lagrangian insertion". In: *JHEP* 04 (2024), p. 022. DOI: 10.1007/JHEP04(2025)022. arXiv: 2410.11456 [hep-th].
- [7] Martín Lagares and **Shun-Qing Zhang**. "Higher-loop integrated negative geometries in ABJM". In: *JHEP* 05 (2024), p. 142. DOI: 10.1007/JHEP05(2024)142. arXiv: 2402.17432 [hep-th].
- [8] **Shun-Qing Zhang**. "Nonplanar integrated correlator in $N=4$ SYM". In: *Phys. Rev. D* 110.2 (2024), p. 025003. DOI: 10.1103/PhysRevD.110.025003. arXiv: 2404.18900 [hep-th].

- [9] Johannes M. Henn, Martín Lagares, and **Shun-Qing Zhang**. “Integrated negative geometries in ABJM”. In: *JHEP* **05** (2023), p. 112. DOI: 10.1007/JHEP05(2023)112. arXiv: 2303.02996 [hep-th].
- [10] **Shun-Qing Zhang**. “Scattering Amplitudes from Rational Maps and Correlators in AdS/CFT”. PhD thesis. Queen Mary, U. of London (main), 2023.
- [11] Yu-tin Huang, Ryota Kojima, Congkao Wen, and **Shun-Qing Zhang**. “The orthogonal momentum amplituhedron and ABJM amplitudes”. In: *JHEP* **01** (2022), p. 141. DOI: 10.1007/JHEP01(2022)141. arXiv: 2111.03037 [hep-th].
- [12] Congkao Wen and **Shun-Qing Zhang**. “Integrated correlators in $\mathcal{N} = 4$ super Yang-Mills and periods”. In: *JHEP* **05** (2022), p. 126. DOI: 10.1007/JHEP05(2022)126. arXiv: 2203.01890 [hep-th].
- [13] Congkao Wen and **Shun-Qing Zhang**. “Notes on gravity multiplet correlators in $AdS_3 \times S^3$ ”. In: *JHEP* **07** (2021), p. 125. DOI: 10.1007/JHEP07(2021)125. arXiv: 2106.03499 [hep-th].
- [14] Congkao Wen and **Shun-Qing Zhang**. “D3-Brane Loop Amplitudes from M5-Brane Tree Amplitudes”. In: *JHEP* **07** (2020), p. 098. DOI: 10.1007/JHEP07(2020)098. arXiv: 2004.02735 [hep-th].
- [15] Matthew Heydeman, John H. Schwarz, Congkao Wen and **Shun-Qing Zhang**. “All Tree Amplitudes of 6D (2,0) Supergravity: Interacting Tensor Multiplets and the $K3$ Moduli Space”. In: *Phys. Rev. Lett.* **122**.11 (2019), p. 111604. DOI: 10.1103/PhysRevLett.122.111604. arXiv: 1812.06111 [hep-th].
- [16] Zhi-Zhong Li, Hung-Hwa Lin, and **Shun-Qing Zhang**. “Infinite Soft Theorems from Gauge Symmetry”. In: *Phys. Rev. D* **98**.4 (2018), p. 045004. DOI: 10.1103/PhysRevD.98.045004. arXiv: 1802.03148 [hep-th].
- [17] **Shun-Qing Zhang**. “The Manifestation of Spontaneous Symmetry Breaking on Scattering Amplitudes”. MA thesis. 2018. DOI: 10.6342/NTU201704348.
- [18] Zhi-Zhong Li, Hung-Hwa Lin, and **Shun-Qing Zhang**. “On the Symmetry Foundation of Double Soft Theorems”. In: *JHEP* **12** (2017), p. 032. DOI: 10.1007/JHEP12(2017)032. arXiv: 1710.00480 [hep-th].

Presentations

Public talks.....

- (Upcoming) Seminar talk at National Dong-Hwa University, Hualien, August 12, 2026
- (Upcoming) Seminar talk at National Taiwan University, Taipei, August 07, 2026
- LoopFest 2026, 27th -29th, May 2026, Brookhaven, USA
- Prague Spring Amplitudes, 11th -15th, May 2026, Prague, Czech Republic
- Symbology@15, 15th -19th, December 2025, Garching, Germany (Gong show)
- Loop-the-Loop workshop, 10th - 12th, November 2025, Edinburgh , UK (Online).
- DESY Theory Workshop 2025, Sept 22th - 26th, DESY Hamburg, Germany.
- Eurostrings 2024, Sept 2nd - 6th, Southampton, UK. [\[Link to talk\]](#)
- Positive Geometry in Particle Physics and Cosmology, Feb 12th - 16th, 2024, Leipzig, Germany.
- Theory seminar at Max Planck Institute for Physics, Nov 9th, 2022, Munich, Germany.
- Amplitudes 2022 Summer School, Aug 1st - 7th, Prague, Czech Republic. (Gong show)
- Geometry and Scattering Amplitudes Journal Club 2022, Jan 4th, Munich, Germany.
- Hamilton School on Mathematical Physics 2020, Aug 24th - 28th, Dublin, Ireland (Online).
- NCTS Annual Theory Meeting 2017: Particles, Cosmology and Strings 2017, Dec 5th - 8th, NCTS, Hsinchu, Taiwan. [\[Link to talk\]](#)

Journal club talks.....

I led the following journal club discussions at Max Planck Institute for physics in Garching.

- “Solving Infinite Families of Dual Conformal Integrals and Periods”, Oct 24th 2025.
- “SOFIA: Singularities of Feynman Integrals Automatized”, Apr 3rd 2025.

- Conference posters.....
- “Tropical Integration for Gauge Theory Feynman Integrals”, Amplitudes and Algebraic Geometry Workshop, March 15th - 20th 2026, Erwin Schrödinger Institute, Vienna.
 - “Non-Planar integrated correlators in $\mathcal{N} = 4$ SYM”, Amplitudes 2024 Summer School, Jun 17th - 22nd, IAS Princeton, USA.
 - “Orthogonal Momentum Amplituhedron and ABJM Amplitudes”, ICTP workshop on scattering amplitudes and cosmology, April 17th-21st, 2023, Trieste, Italy.
 - “Integrated correlators in $\mathcal{N} = 4$ super Yang-Mills and periods”, Amplitudes 2022, Aug 8th - 12th, Prague, Czech Republic.
 - “6D Tree Level Amplitudes from Rational Maps”, Hamilton School on Mathematical Physics 2019, May 20th - 22nd, Dublin, Ireland.

Teaching Experience

- Teaching Assistant.....
- Electric and Magnetic Fields, Queen Mary University of London (SPA4210), 2022 Spring.
 - An Introduction to String Theory and Branes (SPA7032), Queen Mary University of London, 2020 Spring.
 - General Physics, National Taiwan University, 2017 Fall.

Software Skills

- Wolfram Mathematica 14.3, with *specialist packages*: FIRE6.5, LiteRed1.84, Kira3, pySecDec 1.6.4, NeatIBP v1.1.0.3, FiniteFlow, AMFlow, DiffExp, PolyLogTools, SOFIA.
- Maplesoft 2025, with *specialist packages*: HyperInt, HyperlogProcedure.
- Julia v1.11.4, with *specialist packages*: Principal Landau Determinants (PLD).

- Cluster Usage.....
- Apocrita, High Performance Computing (HPC) at Queen Mary University of London, SRM nodes, processor: Intel Xeon Gold 6150, 36 CPU cores, 768 GB RAM.
 - Max Planck Computing and Data Facility (MPCDF) at Max Planck Institute in Garching, *special partition nodes zt01*, processor: Intel(R) Xeon(R) Platinum 8160, 192 CPU cores, 6 TB RAM.

Trainings

- Learning portal of the Max Planck Society (LMS)
 - Basics of Science Communication - How to Communicate Complex Research Topics with a Non-Expert Audience (Class-ID: 92113) on 14 October 2025.
 - Discovering Your Ideal Job Field: How to Communicate the Value and Skills You Offer Any Employer (Class-ID: 72035) on 12 July 2025.
 - Efficiency Skills for Scientists: Get the Same Done in Less Time (Class-ID: 88039) on 24 March 2025.
- Writer’s workshop in scientific writing at Max Planck Institute for Physics on 25 November 2024, 2 December 2024, and 9 December 2024.

Services

- Referee for the *Journal of High Energy Physics (JHEP)*.