CHIA-HSIEN SHEN

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POSITION

Postdoctoral Fellow, UC San Diego	2020-Present
Mossman Fellow, Yale Univeristy (declined)	
Five-year Fellow, DESY Hamburg (declined)	
Postdoctoral Fellow, UC Los Angeles	2017-2020
Mani L. Bhaumik Institute for Theoretical Physics	

EDUCATION

California Institute of Technology	2011 – 2017
Doctor of Philosophy in Physics; thesis advisor: Prof. Clifford Cheung	*June 2017*
National Taiwan University	2005–2009
Bachelor of Science in Physics	*June 2009*

HONORS AND AWARDS

Editors' Suggestion, Physical Review Letter	2016, 2021

- "Scattering Amplitudes and Conservative Binary Dynamics at $\mathcal{O}(G^4)$",
  Phys.Rev.Lett. 126, no.17, 171601 (2021)
- "On-Shell Recursion Relations for Effective Field Theories", Phys.Rev.Lett. 116 4, 041601 (2016)
  See introduction in *Physics Viewpoint*, "Extending an Alternative to Feynman Diagrams"

Gross Travel Award, Caltech	2014, 2015, 2016
Dean's Award, National Taiwan University	2009
Dr. Jenn-Lin Huang Scholarship	2007,2008
Presidential Award, National Taiwan University	Six times

PUBLICATION

"Inflationary Adler Conditions,"
Danial Green, Yiwen Huang, Chia-Hsien Shen, *to appear*

"Radiated Angular Momentum and Dissipative Effects in Classical Scattering,"
A. V. Manohar, A. K. Ridgway and C. H. Shen,
accepted by Phys. Rev. Lett., [arXiv:2203.04283 [hep-th]]

"Scattering Amplitudes, the Tail Effect, and Conservative Binary Dynamics at $O(G^4)$,"
Z. Bern, J. Parra-Martinez, R. Roiban, M. S. Ruf, C. H. Shen, M. P. Solon and M. Zeng,
Phys. Rev. Lett. **128**, no.16, 161103 (2022) [arXiv:2112.10750 [hep-th]]

"Scattering Amplitudes and Conservative Binary Dynamics at $\mathcal{O}(G^4)$,"
Z. Bern, J. Parra-Martinez, R. Roiban, M. S. Ruf, C. H. Shen, M. P. Solon and M. Zeng,
Phys. Rev. Lett. **126**, no.17, 171601 (2021) [2101.07254]

"Leading Nonlinear Tidal Effects and Scattering Amplitudes,"
Z. Bern, J. Parra-Martinez, R. Roiban, E. Sawyer and C. H. Shen,
JHEP **05**, 188 (2021) [2010.08559]

"Hidden Conformal Invariance of Scalar Effective Field Theories,"
C. Cheung, J. Mangan and C. H. Shen,
Phys. Rev. D **102**, no.12, 125009 (2020) [2005.13027]

"Spinning Black Hole Binary Dynamics, Scattering Amplitudes and Effective Field Theory,"
Z. Bern, A. Luna, R. Roiban, C. H. Shen and M. Zeng,
Phys. Rev. D **104**, no.6, 065014 (2021) [2005.03071]

"Black Hole Binary Dynamics from the Double Copy and Effective Theory"
Z. Bern, C. Cheung, R. Roiban, C. H. Shen, M. P. Solon and M. Zeng.
JHEP **1910**, 206 (2019) [1908.01493]

"Scattering Amplitudes and the Conservative Hamiltonian for Binary Systems at Third
Post-Minkowskian Order"
Z. Bern, C. Cheung, R. Roiban, C. H. Shen, M. P. Solon and M. Zeng.
Phys. Rev. Lett. **122**, no. 20, 201603 (2019) [1901.04424]

"Gravitational Radiation from Color-Kinematics Duality"
Chia-Hsien Shen.
JHEP **1811**, 162 (2018) [1806.07388]

"Dual Conformal Structure Beyond the Planar Limit"
Z. Bern, M. Enciso, C. H. Shen and M. Zeng.
Phys. Rev. Lett. **121**, no. 12, 121603 (2018) [1806.06509]

"Vector Effective Field Theories from Soft Limits"
C. Cheung, K. Kampf, J. Novotny, C. H. Shen, J. Trnka and C. Wen.
Phys. Rev. Lett. **120**, no. 26, 261602 (2018) [1801.01496]

"Pions as Gluons in Higher Dimensions"
C. Cheung, G. N. Remmen, C. H. Shen and C. Wen.
JHEP **1804**, 129 (2018) [1709.04932]

"Unifying Relations for Scattering Amplitudes"
C. Cheung, C. H. Shen and C. Wen.
JHEP **1802**, 095 (2018) [1705.03025]

"Symmetry and Action for Flavor-Kinematics Duality"
C. Cheung and C. H. Shen.
Phys. Rev. Lett. **118**, no. 12, 121601 (2017) [1612.00868]

"A Periodic Table of Effective Field Theories"
C. Cheung, K. Kampf, J. Novotny, C. H. Shen and J. Trnka.
JHEP **1702**, 020 (2017) [1611.03137]

"On-Shell Recursion Relations for Effective Field Theories"
C. Cheung, K. Kampf, J. Novotny, C. H. Shen and J. Trnka.
Phys. Rev. Lett. **116**, no. 4, 041601 (2016) [1509.03309]

"Nonrenormalization Theorems without Supersymmetry"
C. Cheung and C. H. Shen.
Phys. Rev. Lett. **115**, no. 7, 071601 (2015) [1505.01844]

"Simple Recursion Relations for General Field Theories"
C. Cheung, C. H. Shen and J. Trnka.
JHEP **1506**, 118 (2015) [1502.05057]

"Computing decay rates for new physics theories with FeynRules and MadGraph 5 _aMC@NLO"
J. Alwall, C. Duhr, B. Fuks, O. Mattelaer, D. G. Öztürk and C. H. Shen.
Comput. Phys. Commun. **197**, 312 (2015), [1402.1178]

"Long-Distance Contribution to $\Delta\Gamma s/\Gamma s$ of the $B_s - \bar{B}_s$ System"
C. K. Chua, W. S. Hou and C. H. Shen.
Phys. Rev. D **84**, 074037 (2011) [1107.4325]

"Leading Effect of CP Violation with Four Generations"
W. S. Hou, Y. Y. Mao and C. H. Shen.
Phys. Rev. D **82**, 036005 (2010) [1003.4361]

TALKS

Facts and Fantasies of Angular momentum
invited talk at Aspen "Effective Field Theories: From Quarks to the Cosmos", August 2022.

Amplitudes, Angular Momentum, and the Binary Inspiral Problem
invited talk at Amplitudes 2022, August 2022.

Poincare Invariance, Soft Theorems, and Dissipative Dynamics
invited talk at Niels Bohr Institute and Queen Mary University of London, June 2022.

Facts and Fantasies of Angular momentum
invited talk at Humboldt University, Berlin, June 2022.

Inflationary Adler Conditions
invited talk at Simons symposium "Amplitudes meet cosmology", May 2022.

Solving Dissipative Dynamics from Poincare Invariance and Soft theorems
invited talk at KITP conference "Storming the Gravitational Wave Frontier", Apr. 2022.

Amplitudes, Effective Field Theory, and New Frontiers in Gravity
invited colloquium at DESY Zeuthen (virtual), Mar. 2022.

Poincare Symmetry, Soft theorem, and Radiation Reaction
invited talk at CA Amplitudes Meeting, Davis, Mar. 2022.

Solving Spacetime without Einstein
invited colloquium at DESY Hamburg (virtual), Feb. 2022.

Tail Effect in Binary Scattering
invited talk at QCD meets gravity 2021 (virtual), Dec. 2021.

Post-Minkowskian gravity from scattering amplitudes
invited lecture series at Amplitudes School 2021 (virtual), Aug. 2021.

Amplitudes, Effective field theory, and Conservative Two-body Dynamics
invited talk at "Gravitational scattering, inspiral, and radiation", Galileo Galilei Institute (virtual), May 2021.

Binary Dynamics at G^4
invited talk at California Amplitudes Meeting (virtual), Mar. 2021.

Unraveling Classical Gravity from Quantum Field Theory
Invited seminar at UC San Diego (virtual), Oct. 2020.

Two-body dynamics and spin effects
Session convener in Rethinking the Relativistic Two-Body Problem, AEI (virtual), July 2020.

Amplitudes Meet LIGO
invited talk in Recent Developments in S-matrix Theory, ICTS (virtual), July 2020.

Spinning Binaries, Effective Theory and Hidden Simplicity
invited talk at Amplitudes 2020 (virtual), May 2020.

Exponentiation in Effective Field Theory
invited talk in QCD Meets Gravity, UCLA, Dec. 2019.

From Scattering to Inspiral
invited talk in From Scattering to Expansion Workshop, Northwestern University, Oct. 2019.

Ideas in Amplitudes for Non-amplitude people
invited talk in Scattering Amplitudes and Conformal Bootstrap, Aspen, Aug. 2019.

Precise Hamiltonian for Compact Binaries from Scattering in LHC
invited talk in IGC@25: The Multimessenger Universe, Penn State University, Jun. 2019.

Reloading S-matrix: From Hidden Simplicity to Gravitational Waves
invited talk in Theory Meeting, Carnegie Mellon University, Apr. 2019.

Precision Gravity for LIGO from Scattering in LHC
invited seminar, NTNU, Taiwan, Jan. 2019

Gravitational Radiation from Color-kinematics Duality
invited talk in QCD Meets Gravity, NORDITA, Dec. 2018.

From LHC to LIGO: Gravitational Radiation as Yang-Mills Squared
invited seminar, SLAC, Oct. 2018.

Gravitational Radiation from Color-kinematics Duality
invited talk in CA Amplitudes Meeting, SLAC, May 2018.

Unifying Relations for Scattering Amplitudes
invited student talk in Amplitudes 2018, Edingburgh

The Kinematic Algebra of the Nonlinear Sigma Model
invited talk in "Scattering Amplitudes and Beyond",
KITP Program, 2017.

Symmetry and Action of Flavor-Kinematics Duality
Gongshow in Recent Developments in Fields, Strings, and Gravity,
UC Davis, 2016.

Symmetry and Action of Flavor-Kinematics Duality
invited talk in QCD Meets Gravity, UCLA, Dec. 2016.

Kinematic Algebra of Effective Field Theories
invited talk in CA Amplitudes Meeting, UCLA, Oct. 2016.

Carving out the Space of EFTs
invited talk in Aspects of Amplitudes, Nordita, Jul. 2016.

What are the Simplest EFTs?
invited talk in CA Amplitudes Meeting, Davis, Jun. 2016.

Non-renormalization Theorems without Supersymmetry,
invited talk in Amplitudes in Asia, NTU, Nov. 2015.

Non-renormalization Theorems without Supersymmetry,
contributed talk in RadCor-Loopfest 2015, UCLA, Jun. 2015

Non-renormalization Theorems without Supersymmetry,
invited talk in SoCal Grad String, UCLA, May 2015

Leading Effect of CP Violation with Four Generations,
invited talk at Second Workshop Beyond 3 Generation Standard Model, Taipei, Jan. 2010.

TEACHING EXPERIENCE

Post-Minkowskian gravity from scattering amplitudes *a invited 4-lecture series at Amplitudes School 2021 (virtual),*	2021
Ph1, General Physics	2011
Ph2, Wave, Quantum Mechanics, and Statistical Mechanics	2012
Ph101, Order of Magnitude Physics	2012, 2014
Ph125, Quantum Mechanics	2013-2016