

Laurentiu Rodina

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Research Interests

Quantum Field Theory, Scattering Amplitudes, S-matrix/CFT/Cosmological bootstrap, Machine Learning approaches to the bootstrap

Academic Positions

Associate Professor	03/2025-present
Beijing Institute of Mathematical Science and Applications (BIMSA), Beijing, China	
Assistant Professor	09/2023-03/2025
Beijing Institute of Mathematical Science and Applications (BIMSA), Beijing, China	
Marie Skłodowska-Curie Action Postdoctoral Fellow	09/2022-09/2023
Queen Mary University of London, London, UK	
Postdoctoral Researcher	11/2020-07/2022
National Taiwan University, Taipei, Taiwan	
Postdoctoral Researcher	07/2017-07/2020
Institute of Theoretical Physics (IPhT), CEA, Saclay, France	

Education

Ph.D. in Physics, Princeton University, Princeton, USA Advisor: Nima Arkani-Hamed	09/2011-07/2017
BSc in Mathematical Physics, Brown University, Providence, USA Graduated <i>with honors, magna cum laude</i>	09/2007-05/2011

Funding and Grants (as sole PI or Project Leader)

Postdoctoral Introduction Program (博士后海外引才专项), Ministry of Education, China, Award amount 600,000 RMB/3 years, 2026

Beijing Talent Program, 2025

General Program No.12475070, National Natural Science Foundation of China (国自然-面上), Award amount 520,000 RMB/4 years, 2024

Beijing International Scientist Project No.IS24014, Beijing Natural Science Foundation (北自然-外国学者), Award amount 200,000 RMB/2 years, 2024

Horizon 2020 Marie Skłodowska-Curie Action, Individual Fellowship, European Commission, Award amount 225.000 euro (1,700,000 RMB)/2 years, 2021

Publications

Full publication list: <https://inspirehep.net/authors/1607940>.

1. J. Backus, L. Rodina “*Emergence of Unitarity and Locality from Hidden Zeros at One-Loop Order*”, **Phys. Rev. Lett.** 135 (2025), 131601,
2. A. Hillman, Y.-t. Huang, L. Rodina, J. Rumbutis, “*Spectral Constraints on Theories of Colored Particles and Gravity*”, **Phys. Rev. Lett.** 135 (2025), 061604,
3. L. Rodina, “*Hidden zeros are equivalent to enhanced ultraviolet scaling and lead to unique amplitudes in $\text{Tr}(\phi^3)$ theory*”, **Phys. Rev. Lett.** 134 (2025), 031601,
4. G. Chen, L. Rodina, C. Wen, “*Kinematic Hopf algebra and BCJ numerators at finite α'* ”, **Phys. Rev. D** 110 (2024) 4, L041902,
5. G. Chen, L. Rodina, C. Wen, “*Kinematic Hopf algebra for amplitudes from higher-derivative operators*, **JHEP** 02 (2024) 096,
6. L-Y. Chiang, T.-C. Huang, Y.-t. Huang, W. Li, L. Rodina, H-C. Weng, “*The Geometry of the Modular Bootstrap*”, **JHEP** 02 (2024) 209,
7. L-Y. Chiang, Y.-t. Huang, L. Rodina, H-C. Weng, “*De-projecting the EFThedron*”, **JHEP** 05 (2024) 102,
8. L-Y Chiang, Y.-t. Huang, W. Li, L. Rodina, H-C. Weng, “*(Non)-projective bounds on gravitational EFT*,”
9. L-Y Chiang, Y.-t. Huang, W. Li, L. Rodina, H-C. Weng, “*Into the EFThedron and UV constraints from IR consistency*,” **JHEP** 03 (2022) 063,
10. J. J. M. Carrasco, L. Rodina, S. Zekioglu, “*Composing effective prediction at five points*,” **JHEP** 06 (2021) 169,
11. L. Rodina, Z. Yin, “*Exploring the landscape for soft theorems of nonlinear sigma models*,” **JHEP** 08 (2021) 096,
12. I. Low, L. Rodina and Z. Yin, “*Double Copy in Higher Derivative Operators of Nambu-Goldstone Bosons*,” **Phys. Rev. D** 103 (2021) 2, 025004,
13. Y. t. Huang, J. Y. Liu, L. Rodina and Y. Wang, “*Carving out the Space of Open-String S-matrix*,” **JHEP** 04 (2021) 195,
14. L. Rodina, “*UV consistency conditions for Cachazo-He-Yuan integrands*,” **Phys. Rev. D** 102 (2020) no.4, 045012,
15. J. J. M. Carrasco, L. Rodina, Z. Yin and S. Zekioglu, “*Simple encoding of higher derivative gauge and gravity counterterms*,” **Phys. Rev. Lett.** 125 (2020) 251602 ,
16. J. J. M. Carrasco and L. Rodina, “*UV considerations on scattering amplitudes in a web of theories*,” **Phys. Rev. D** 100 (2019) no.12, 125007,
17. L. Rodina, “*Scattering Amplitudes from Soft Theorems and Infrared Behavior*,” **Phys. Rev. Lett.** 122 (2019) no.7, 071601,
18. L. Rodina, “*Uniqueness from gauge invariance and the Adler zero*,” **JHEP** 1909 (2019) 084,
19. L. Rodina, “*Uniqueness from locality and BCFW shifts*,” **JHEP** 1909 (2019) 078,
20. N. Arkani-Hamed, J. Trnka, and L. Rodina, “*Locality and Unitarity of Scattering Amplitudes from Singularities and Gauge Invariance*,” **Phys. Rev. Lett.** 120 (2018) no.23, 231602,
21. D. A. McGady and L. Rodina, “*Recursion relations for graviton scattering amplitudes from Bose symmetry and bonus scaling laws*,” **Phys. Rev. D** 91 (2015) no.10, 105010,

22. D. A. McGady and L. Rodina, “*Higher-spin massless S -matrices in four-dimensions*,” **Phys. Rev. D** (2014) no.8, 084048,

Talks

Conference Talks

The 5th Symposium of Quantum Field Theory and its Applications, Beijing, China, 10/2025

ICBS, Beijing, China, 07/2025

Amplitudes Conference, Taipei, 07/2025

The 42nd International Conference on High Energy Physics, Prague, Czech Republic, 20/07/2024

Amplitudes 2022, Charles University, Czech Republic, 11/08/2022

Amplitudes 2020, Brown University, USA, 15/05/2020

QCD Meets Gravity 2019, UCLA, USA, 12/12/2019

Infrared Physics: Asymptotic BMS symmetry, soft theorems, memory, information paradox and all that, Solvay Institutes, Brussels, Belgium, 17/05/2018

Workshop Talks

Algebra Geometry and Gravity, SIMIS, Shanghai, 09/2025

Effective field theory, gravity and cosmology workshop, Hangzhou IAS, China, 06/2025

Algebra Geometry and Gravity, YMSC-Tsinghua University, China, 03/2024

Prague Spring Amplitudes Workshop, Charles University, Czech Republic, 15/05/2023

Annual Taiwan Theorists Interdisciplinary Workshop, NSYSU, Taiwan, 09/01/2022

NTU-Kyoto High energy theory workshop, NTU-Kyoto University, Taiwan-Japan, 02/12/2020

Symmetries of S-matrix and Infrared Physics, University of Edinburgh, UK, 18/07/2018

Selected Seminar Talks

BIMSA, Beijing, China, 14/11/2024

Institute of Theoretical Physics, CAS, Beijing, China, 07/05/2024

Kavli Institute for Theoretical Sciences, UCAS, Beijing, China, 26/04/2024

Uppsala University, Uppsala, Sweden, 28/03/2024

Rencontres Theoriciennes, Ecole Normale Supérieure, Paris, France, 08/12/2022

ETH Zurich, Switzerland, 18/10/2022

Queen Mary University of London, London, UK, 10/02/2022

National Tsing Hua University, Hsinchu, Taiwan, 1/04/2021

National Taiwan University, Taipei, Taiwan, 30/11/2020

Ecole Polytechnique, Palaiseau, France, 26/11/2019

Humboldt University, Berlin, Germany, 29/05/2019

Zhejiang University, Hangzhou, China, 05/12/2018

Brown University, Providence, USA, 07/11/2018

Northwestern University, Evanston, USA, 22/10/2018

University of Geneva, Geneva, Switzerland, 12/07/2018

Johannes Gutenberg University, Mainz, Germany 14/03/2018

ITP CAS, Beijing, China, 15/11/2017

ITP CAS, Beijing, China, 13/11/2017

NBIA University of Copenhagen, Copenhagen, Denmark, 12/09/2017

Awards

Ruolin Best Paper Award "Emergence of Unitarity and Locality from Hidden Zeros at One-Loop Order", BIMSA, 2025

Ruolin Best Paper Award "The Geometry of Modular Bootstrap", BIMSA, 2024

Teaching Award, Department of Physics, Princeton University, 2017

R. Bruce Lindsay Prize for Excellence in Physics, Brown University, 2011

S. C. Rosenberger Prize, Brown University, 2011

Shoman Fellowship, Brown University, 2010-2011

Undergraduate Teaching and Research Award, Brown University, 2009, 2010

Teaching

Conformal Field Theory, Qiuzhen College, Tsinghua University, 2025

Quantum Field Theory II, Qiuzhen College, Tsinghua University, 2025

The S-matrix program, BIMSA, 2024

Two directions in scattering amplitudes, BIMSA, 2024

The geometry of scattering amplitudes, BIMSA, 2023

Assistant Instructor, Princeton University, 2012-2017

Introductory Physics, 2013, 2015, 2016

Quantum Mechanics, 2012

Introductory Physics (laboratory), 2016, 2017

General Physics (laboratory), 2013, 2014

Advanced Physics (laboratory), 2014

Trainer for Physics Olympiad, Tudor Vianu National High School, 2008 - 2015

Conference Organization

International Congress of Basic Science 2026, Group Manager for Frontier of Science Award

Journal Refereeing

Physical Review Letters, Physical Review B, Physical Review D, Journal of High Energy Physics, Science China Physics Mechanics and Astronomy