

Stanley Brodsky

Professor of Particle Physics and Astrophysics, Emeritus

SLAC General Program

 Curriculum Vitae available Online

Bio

BIO

Recipient of the Watkins Physics Award and Visiting Professorship by the Watkins Foundations at Wichita State University in November, 2017.

Awarded the International Pomeranchuk Prize for 2015.

The Pomeranchuk Prize is a major international award for theoretical physics, awarded annually since 1998 by the Institute for Theoretical and Experimental Physics (ITEP)

from Moscow to one international scientist and one Russian scientist, It is named after Russian physicist Isaak Yakovlevich Pomeranchuk, who together with Lev Landau,

established the Theoretical Physics Department of the Institute. The Laureates for 2015 were Professor Victor Fadin and myself.

Recipient of the 2007 J. J. Sakurai Prize in Theoretical Physics, awarded by the American Physical Society.

Honorary degree of doctor scientiarum honoris causa (dr.scient.h.c.) from Southern Denmark University

Alexander von Humboldt Distinguished U.S. Senior Scientist Award in 1987

Chair of the Hadron Physics Topical Physics Group (GHP) of the American Physical Society, 2010.

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, SLAC General Program

Publications

PUBLICATIONS

- **Scheme-independent determination of the QCD running coupling at all scales from jet observables using the principle of maximum conformality and infinite-order scale setting** *PHYSICS LETTERS B*
Di Giustino, L., Brodsky, S. J., Ratcliffe, P. G., Wang, S., Wu, X.
2025; 869
- **Advances for QCD and the standard model: color-confining light-front holography and the principle of maximum conformality** *EUROPEAN PHYSICAL JOURNAL-SPECIAL TOPICS*
Brodsky, S. J.
2025
- **Self-consistent analysis for the $\eta_c \rightarrow \gamma\gamma$ process** *PHYSICAL REVIEW D*
Wang, S., Ren, Z., Shen, J., Wu, X., Di Giustino, L., Brodsky, S. J.
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- **Intrinsic charm and the D^0 plus D^0 asymmetry produced in proton-proton collisions** *PHYSICAL REVIEW D*
Lykasov, G. I., Sorokovikov, M. N., Brodsky, S. J.
2025; 111 (7)

- **The Principle of Maximum Conformality Correctly Resolves the Renormalization-Scheme-Dependence Problem** *SYMMETRY-BASEL*
Yan, J., Brodsky, S. J., Di Giustino, L., Ratcliffe, P. G., Wang, S., Wu, X.
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- **Quantum chromodynamics resolution of the ATOMKI anomaly in 4He nuclear transitions** *PHYSICAL REVIEW C*
Kubarovsky, V., West, J., Brodsky, S. J.
2025; 111 (2)
- **QCD Running Coupling in the Nonperturbative and Near-Perturbative Regimes.** *Physical review letters*
de Téramond, G. F., Paul, A., Brodsky, S. J., Deur, A., Dosch, H. G., Liu, T., Sufian, R. S.
2024; 133 (18): 181901
- **NATURE'S STRONGEST FORCE** *SCIENTIFIC AMERICAN*
Brodsky, S. J., Deur, A., Roberts, C. D.
2024; 330 (5)
- **Color symmetry and confinement as an underlying superconformal structure in holographic QCD** *INTERNATIONAL JOURNAL OF MODERN PHYSICS A*
de Teramond, G. F., Brodsky, S. J.
2024; 39 (09N10)
- **Entropy from entangled parton states and high-energy scattering behavior** *PHYSICS LETTERS B*
Doscha, H., de Teramond, G. F., Brodskyc, S. J.
2024; 850
- **High precision tests of QCD without scale or scheme ambiguities** *PROGRESS IN PARTICLE AND NUCLEAR PHYSICS*
Di Giustino, L., Brodsky, S. J., Ratcliffe, P. G., Wu, X., Wang, S.
2024; 135
- **QCD running couplings and effective charges** *PROGRESS IN PARTICLE AND NUCLEAR PHYSICS*
Deur, A., Brodsky, S. J., Roberts, C. D.
2024; 134
- **Elimination of QCD Renormalization Scale and Scheme Ambiguities**
Di Giustino, L., Brodsky, S. J., Ratclie, P. G., Wu, X., Wang, S.
edited by Falcioni, G.
SISSA Medialab.2024
- **Extending the predictive power of perturbative QCD using the principle of maximum conformality and the Bayesian analysis** *EUROPEAN PHYSICAL JOURNAL C*
Shen, J., Zhou, Z., Wang, S., Yan, J., Wu, Z., Wu, X., Brodsky, S. J.
2023; 83 (4)
- **Detailed comparison of renormalization scale-setting procedures based on the principle of maximum conformality** *NUCLEAR PHYSICS B*
Huang, X., Yan, J., Ma, H., Di Giustino, L., Shen, J., Wu, X., Brodsky, S. J.
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- **Elimination of QCD Renormalization Scale and Scheme Ambiguities** *UNIVERSE*
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- **Heavy quark contribution to the electromagnetic properties of the nucleon** *PHYSICAL REVIEW D*
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- **Predictions for the Sivers single-spin asymmetry from holographic QCD** *PHYSICAL REVIEW D*
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- **Onset of Color Transparency in Holographic Light-Front QCD** *PHYSICS*

- Brodsky, S. J., de Teramond, G. F.
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Dosch, H., de Teramond, G. F., Liu, T., Sufian, R., Brodsky, S. J., Deur, A., HLFHS Collaboration
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 - **Novel corrections to the momentum sum rule for nuclear structure functions** *PHYSICS LETTERS B*
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 - **Reanalysis of the top-quark pair hadroproduction and a precise determination of the top-quark pole mass at the LHC** *CHINESE PHYSICS C*
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 - **QCD hidden-color hexadiquark in the core of nuclei** *NUCLEAR PHYSICS A*
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 - **Comparing light-front quantization with instant-time quantization** *PHYSICS REPORTS-REVIEW SECTION OF PHYSICS LETTERS*
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 - **Constraints on charm-anticharm asymmetry in the nucleon from lattice QCD** *PHYSICS LETTERS B*
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2020; 808
 - **Frame-independent spatial coordinate (z)-tilde: Implications for light-front wave functions, deep inelastic scattering, light-front holography, and lattice QCD calculations** *PHYSICAL REVIEW C*
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 - **Infinite-order scale-setting using the principle of maximum conformality: A remarkably efficient method for eliminating renormalization scale ambiguities for perturbative QCD** *PHYSICAL REVIEW D*
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- **Novel method for the precise determination of the QCD running coupling from event shape distributions in electron-positron annihilation** *PHYSICAL REVIEW D*
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IOP PUBLISHING LTD.2019
- **Supersymmetric and Conformal Features of Hadron Physics** *UNIVERSE*
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- **Exclusive production of $J/\psi + \eta(c)$ at the B factories Belle and BABAR using the principle of maximum conformality** *PHYSICAL REVIEW D*
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- **Hadron Spectroscopy and Dynamics from Light-Front Holography and Superconformal Algebra**
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- **Supersymmetry in the double-heavy hadronic spectrum** *PHYSICAL REVIEW D*
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 - **Novel all-orders single-scale approach to QCD renormalization scale-setting** *PHYSICAL REVIEW D*
Shen, J., Wu, X., Du, B., Brodsky, S. J.
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 - **Pre-Town Meeting on spin physics at an Electron-Ion Collider** *EUROPEAN PHYSICAL JOURNAL A*
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 - **Angular momentum conservation law in light-front quantum field theory** *PHYSICAL REVIEW D*
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 - **Supersymmetry across the light and heavy-light hadronic spectrum. II** *PHYSICAL REVIEW D*
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 - **Analysis of nucleon electromagnetic form factors from light-front holographic QCD: The spacelike region** *PHYSICAL REVIEW D*
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 - **QCD compositeness as revealed in exclusive vector boson reactions through double-photon annihilation: $e^+e^- \rightarrow \gamma\gamma^* \rightarrow \gamma V_0$ and $e^+e^- \rightarrow \gamma\gamma^* \rightarrow (VV_0)-V_0$** *PHYSICS LETTERS B*
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 - **Novel QCD physics at NICA** *EUROPEAN PHYSICAL JOURNAL A*
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 - **Light-Front Holography, Color Confinement, and Supersymmetric Features of QCD** *FEW-BODY SYSTEMS*
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- **The Light-Front Schrodinger Equation and the Determination of the Perturbative QCD Scale from Color Confinement: A First Approximation to QCD** *FEW-BODY SYSTEMS*
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- **Light-Front Holographic QCD and the Confinement Potential** *International Conference on Light-Cone Physics - Hadronic and Particle Physics (LC)*
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