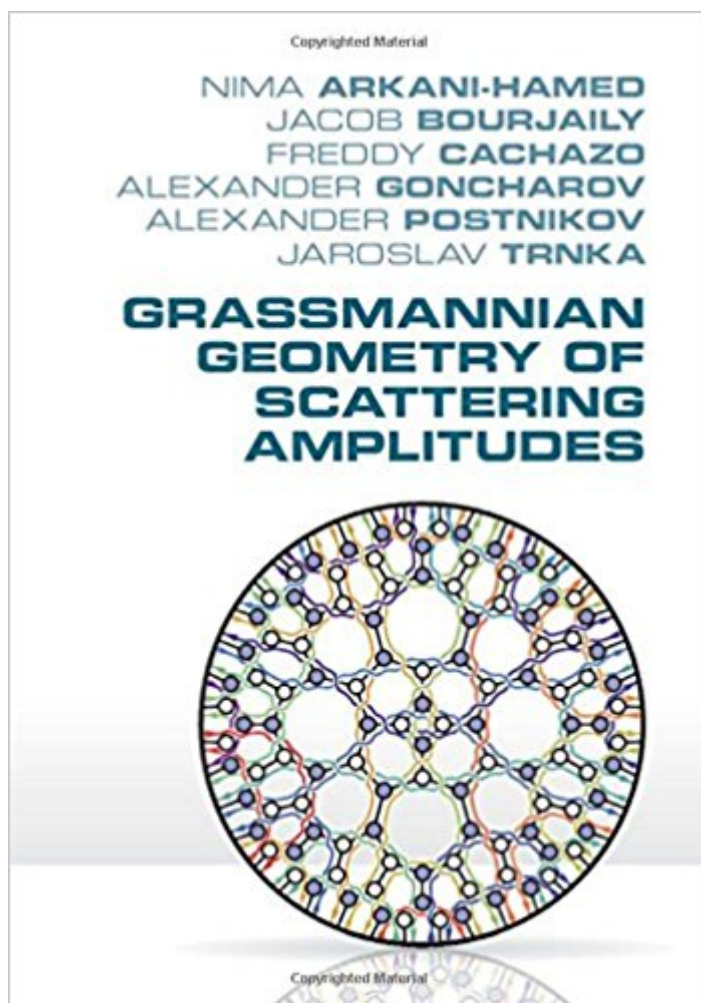


The book was found

Grassmannian Geometry Of Scattering Amplitudes



Synopsis

Outlining a revolutionary reformulation of the foundations of perturbative quantum field theory, this book is a self-contained and authoritative analysis of the application of this new formulation to the case of planar, maximally supersymmetric Yang-Mills theory. The book begins by deriving connections between scattering amplitudes and Grassmannian geometry from first principles before introducing novel physical and mathematical ideas in a systematic manner accessible to both physicists and mathematicians. The principle players in this process are on-shell functions which are closely related to certain sub-strata of Grassmannian manifolds called positroids - in terms of which the classification of on-shell functions and their relations becomes combinatorially manifest. This is an essential introduction to the geometry and combinatorics of the positroid stratification of the Grassmannian and an ideal text for advanced students and researchers working in the areas of field theory, high energy physics, and the broader fields of mathematical physics.

Book Information

Hardcover: 201 pages

Publisher: Cambridge University Press; 1 edition (June 17, 2016)

Language: English

ISBN-10: 1107086582

ISBN-13: 978-1107086586

Product Dimensions: 7.1 x 0.6 x 10 inches

Shipping Weight: 1.2 pounds (View shipping rates and policies)

Average Customer Review: 5.0 out of 5 stars 1 customer review

Best Sellers Rank: #897,955 in Books (See Top 100 in Books) #153 in [Books > Science & Math > Mathematics > Geometry & Topology > Algebraic Geometry](#) #514 in [Books > Science & Math > Physics > Nuclear Physics](#) #530 in [Books > Textbooks > Science & Mathematics > Mathematics > Geometry](#)

Customer Reviews

"This book describes the interesting mathematical structures behind scattering amplitudes, which have led to important simplifications for explicit computations. A must-read for people interested in this active and fast-moving field." Juan Maldacena, Institute for Advanced Study, Princeton
"In the continuing revolution in our understanding of scattering amplitudes in gauge theories, the emerging importance of Grassmannian geometry has been a considerable surprise. The consequences would have astonished the pioneers of quantum theory. This wonderful book, written by six of the field's

leading pioneers, presents the new developments so clearly and eloquently that it will enable everyone with a basic knowledge of field theory to enter this hugely exciting branch of theoretical physics. Warmly recommended." Graham Farmelo, University of Cambridge "This book is the 'Diagrammar' of the twenty-first century. Just as Gerard 't Hooft and Martinus Veltman laid out in 1973 the then-new calculus of Feynman diagrams for scattering processes in non-abelian gauge theories, so now have Nima Arkani-Hamed and his co-authors set forth a new perspective on scattering amplitudes, which leads away from locality and unitarity toward other principles, and they have provided a detailed and elegantly illustrated how-to manual for the practitioner." Lance Dixon, Stanford University

An essential resource examining the ongoing revolution in our understanding of perturbative quantum field theory and its connection to Grassmannian geometry. This book outlines the foundations of this important new formulation, with a self-contained and authoritative analysis of its application to planar maximally supersymmetric Yang-Mills theory.

There is something fantastically deep here. While NAH's treatment is $N=4$ supersymmetric YM theory the amplituhedron method reproduces BCFW as just one of many ways to triangulate the amplituhedron. This method makes no mention of spacetime or unitarity yet they emerge nicely from the ideas presented by NAH et al. The future of emergent spacetime is very bright and it appears the amplituhedron may play a prime role in a different form as a route towards a non-supersymmetric YM theory or even a unified theory. Well done

[Download to continue reading...](#)

Grassmannian Geometry of Scattering Amplitudes Polymers and Neutron Scattering (Oxford Series on Neutron Scattering in Condensed Matter) Optical Scattering: Measurement and Analysis, Third Ed. (Press Monograph) The Scattering of All: Tales From Extraordinary Survivors of Suicide Loss (The Survivor Series Book 1) Inverse Acoustic and Electromagnetic Scattering Theory (Applied Mathematical Sciences) Principles and Applications of Ion Scattering Spectrometry: Surface Chemical and Structural Analysis (Wiley Series on Mass Spectrometry) Elementary Scattering Theory: For X-ray and Neutron Users Elements of Slow-Neutron Scattering: Basics, Techniques, and Applications Neutron Scattering in Layered Copper-Oxide Superconductors (Physics and Chemistry of Materials with Low-Dimensional Structures) Wave Scattering from Rough Surfaces (Springer Series on Wave Phenomena) Light Scattering, Size Exclusion Chromatography and Asymmetric Flow Field Flow Fractionation: Powerful Tools for the Characterization of Polymers,

Proteins and Nanoparticles Electromagnetic Wave Propagation, Radiation, and Scattering: From Fundamentals to Applications (IEEE Press Series on Electromagnetic Wave Theory) Multiple Scattering of Light by Particles: Radiative Transfer and Coherent Backscattering Methods of X-ray and Neutron Scattering in Polymer Science (Topics in Polymer Science) Dynamic Light Scattering: The Method and Some Applications (Monographs on the Physics and Chemistry of Materials) Geometry for Students and Parents: Geometry problems and solutions Modern Geometry $\tilde{\phi} \rightarrow \phi$ Methods and Applications: Part I: The Geometry of Surfaces, Transformation Groups, and Fields (Graduate Texts in Mathematics) (Pt. 1) Taxicab Geometry: An Adventure in Non-Euclidean Geometry (Dover Books on Mathematics) Order In Chaos: How The Mandelbrot Set & Fractal Geometry Help Unlock the Secrets of The Entire Universe! (Mandelbrot Set, Fractal Geometry) Spectral Geometry of the Laplacian: Spectral Analysis and Differential Geometry of the Laplacian

[Contact Us](#)

[DMCA](#)

[Privacy](#)

[FAQ & Help](#)