Memories 1983

- The Zakopane Schoolhouse
- Bialas & Czyz-- Jokes -- Speaking out against the system
- Russian Records at the Kiosks
- Climbing the Tatras
- Radio Yerevan Jokes

- Visiting the Bialas and Czyz Summer Homes with the Bjorkens)
- Traveling through Poland with the Sachrajdas -- Black Madonna

1) TRANSVERSE MOMENTUM IN e+ e- ---> A + B + X.
By John C. Collins & Davison E. Soper.
Acta Phys.Polon.B16:1047,1985,.

2) CP Violation: Status and Prospects.
By J.W. Cronin.
Acta Phys.Polon.B15:419-434,1984,.

3) REMARKS ON THE ROLE OF CHIRAL SYMMETRY BREAKING IN FIRST ORDER DECONFINING PHASE TRANSITIONS.
By V. Alessandrini.
Acta Phys.Polon.B15:979,1984,.

4) RECENT DEVELOPMENTS IN HIGH P(T) PHYSICS.
By Rasmus Moller.
Acta Phys.Polon.B15:989,1984,.

5) APPLIED CHROMODYNAMICS.
By Stanley J. Brodsky.
Acta Phys.Polon.B15:1059,1984,.

6) SUPERSYMMETRIC QUANTUM MECHANICS AND THE ATIYAH-SINGER INDEX THEOREM.
By Paul Windey.
Acta Phys.Polon.B15:435,1984,.

7) TESTING QCD WITH CURRENT ALGEBRA.
By H. Leutwyler.
Acta Phys.Polon.B15:383,1984,.

8) SOFT GLUON RADIATION AND A NEW SIMULATION SCHEME FOR QCD JETS.
By B.R. Webber.
Acta Phys.Polon.B15:617,1984,.

9) QCD SUM RULES: AN INTRODUCTION AND SOME APPLICATIONS.
By L.J. Reinders.
Acta Phys.Polon.B15:329,1984,.

10) FERMION MASSES IN POTENTIAL MODELS OF CHIRAL SYMMETRY BREAKING.
By T. Jaroszewicz.
Acta Phys.Polon.B15:169,1984,.

11) BINDING OF MATTER TO A MAGNETIC MONOPOLE.
By T.W. Ruijgrok.
Acta Phys.Polon.B15:305,1984,.

12) QUARKONIA.
By Seiji Ono.
Acta Phys.Polon.B15:201,1984,.

13) THE GENERATION PROBLEM.
By G. Ecker.
Acta Phys.Polon.B15:179,1984,.

14) LOW P(T) PHYSICS AT THE anti-P P COLLIDER.
By A. Capella.
Acta Phys.Polon.B15:1185,1984,.

SLAC-PUB-3263
November 1983
(T/E)

Applied Chromodynamics

STANLEY J. BRODSKY

Stanford Linear Accelerator Center

Stanford University, Stanford, California 94305

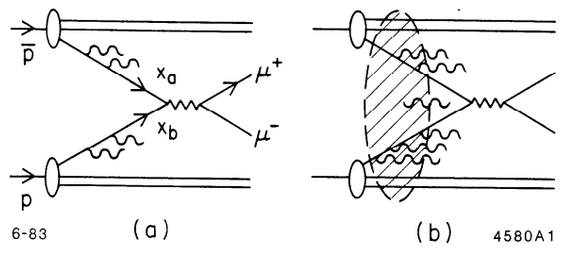
Invited lectures,
presented at the 23rd Cracow School Of Theoretical Physics:
Fundamental Interactions and Structure of Matter

29 May to June 1983 Zakopane, Poland

A number of novel features of QCD are reviewed, including the consequences of formation zone and color transparency phenomena in hadronic collisions, the use of automatic scale setting for perturbative predictions, null-zone phenomena as a fundamental test of gauge theory, and the relationship of intrinsic heavy colored particle Fock state components to new particle production. We conclude with a review of the applications of QCD to nuclear multiquark systems.

SJB:Topics 1983

- Factorization of Inclusive Reactions -- Conditions
- Initial and Final State Interaction Effects (with Bodwin & Lepage)
- Formation Zone
- Higher Twist



- Evolution Equations for Hard Exclusive Processes (with Lepage)
- Color Transparency (with Mueller)
- Hidden Color (With Lepage and Ji)
- Nuclear Chromodynamics (with Chertok)
- Intrinsic Heavy Quarks and Higher Fock States (Hoyer et al.)
- Renormalization Scale Setting (with Lepage and Mackenzie)
- Radiation Amplitude Zeroes (With Brown and Kowalski)

Cracow School of Theoretical Physics, XLI Course, 2001

Title: Fundamental Interactions
Date: 02.06.2001 - 11.06.2001
Place: ZAKOPANE, Hotel "Geovita", Wierchowa 4, tel./fax (++48) (1820) 66-041 (more infos)
Organized by: Institute of Physics, Jagellonian University, Cracow; Institute of Nuclear Physics, Cracow
Organizers:

A. Bialas, M. A. Nowak, M. Sadzikowski
Topics:

- Fundamental strings;
- Quark-Gluon Plasma;
- Bose-Einstein Correlations;
- Parton Cascades, Nonperturbative Effects;
- Diffraction and Small x Physics in DIS;
- Recent Experimental Results.

Cracow School of Theoretical Physics, XLI Course, 2001

M. Albrow	(Fermilab)	"Double Pomeron Exchange: from Glueballs to the Higgs
B. Andersson	(Lund)	"On the Three Particle Bose-Einstein Correlations", "Strin Fragmentation of a General Multigluon State"
J. Bartels	(Hamburg)	"The Dipol Picture in Deep Inelastic Scattering"
S. Brodsky	(SLAC)	"Recent Developments in QCD"
Z. Burda	(Bielefeld)	"Fermions on the Random Lattices"
W. Busza	(MIT)	"First Results from the Relativistic Heavy Ion Collider, RI
A. Czarnecki	(Alberta U.)	"Bound States and Asymptotic Expansion"
J. Greensite	(San Francisco)	"The Center Vortex Theory of Confinement"
M. Karliner	(Tel Aviv)	"Non-valence Degrees of Freedom as Probe of Nonperturl
W. Kittel	(Nijmegen)	"Status of Bose-Einstein Effect"
G. Korchemsky	(Orsay)	"Hidden Symmetries of QCD at High Energy"
P. Landshoff	(Cambridge)	"Pomeron Physics"
L. McLerran	(BNL)	"The Color Glass Condensate"
J. Namyslowski	(Warsaw U.)	"Hadrons from the Nonperturbative QCD"
G. Papp	(Eotvos U.)	"Discovery of Jet Quenching at RHIC and the Opacity of Gluon Plasma"
M. Rocek	(Stony Brook)	"Introduction to String Theory"
Th. Ruijgrok	(Utrecht)	"The Enigmatic Piston"
M. D. Scadron	(Arizona U.)	"Linear Sigma Model"
S. Todorova	(CERN)	"LEP Results on WW Events"
I. Zahed	(Stony Brook)	"Diffractive Scattering via Instantons"
M. Zralek	(Silesian U.)	"Absolute Neutrino Massess"

Memories 2001

- Zakopane -- Aspen
- Hotel Geovita
- Teahouse with Maria Czyz
- Krakow, Jagiellonian University -- Copernicus

- Kazimierz, Schindler's Factory, Memorial

QCD Phenomenology and Light-Front Wavefunctions *

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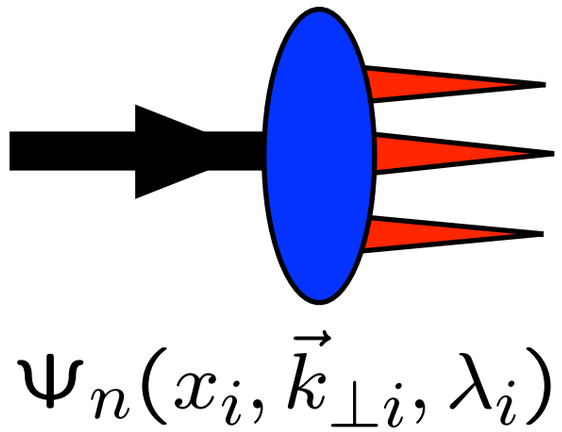

SLAC–PUB–9056
November 2001

Invited lectures, presented at the Cracow School Of Theoretical Physics: 41st Course: Fundamental Interactions Zakopane, Poland
2–11 June 2001

Abstract

A natural calculus for describing the bound-state structure of relativistic composite systems in quantum field theory is the light-front Fock expansion which encodes the properties of a hadrons in terms of a set of frame-independent $n-$particle wavefunctions. Light-front quantization in the doubly-transverse light-cone gauge has a number of remarkable advantages, including explicit unitarity, a physical Fock expansion, the absence of ghost degrees of freedom, and the decoupling properties needed to prove factorization theorems in high momentum transfer inclusive and exclusive reactions. A number of applications are discussed in these lectures, including semileptonic B decays, two-photon exclusive reactions, diffractive dissociation into jets, and deeply virtual Compton scattering. The relation of the intrinsic sea to the light-front wavefunctions is discussed. Light-front quantization can also be used in the Hamiltonian form to construct an event generator for high energy physics reactions at the amplitude level. The light-cone partition function, summed over exponentially-weighted light-cone energies, has simple boost properties which may be useful for studies in heavy ion collisions. I also review recent work which shows that the structure functions measured in deep inelastic lepton scattering are affected by final-state rescattering, thus modifying their connection to light-front probability distributions. In particular, the shadowing of nuclear structure functions is due to destructive interference effects from leading-twist diffraction of the virtual photon, physics not included in the nuclear light-cone wavefunctions.

SJB: Topics 2001

- DLCQ, Renormalization (with Hiller, Pauli, McCartor)
- ERBL Evolution
- Factorization Breakdown
- DVCS
- Higher Fock States
- Hard Exclusive Processes
- Nuclear Shadowing of DIS
- DDIS (with Hoyer, Marchal, Peigne, Sannino)
- Light-Front Amplitude Generator
- Light-Front Thermodynamics