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EDUCATION

- **Michigan State University**, East Lansing, Michigan, 1996-2001

Ph. D. in Physics, area of specialization: physics of elementary particles

- **Institute for High Energy Physics**, Protvino, Russia, 1992-1996

Candidate of Physical and Mathematical Sciences (Russian equivalent of Ph. D.); area of specialization: high energy physics

- **Moscow State University, Department of Physics**, Moscow, Russia, 1986-1992

M. S. in Physics; diploma with honors

RESEARCH EXPERIENCE

Postdoctoral Researcher in the High Energy Physics Theory Group at Argonne National Laboratory, August 2004 – present

Postdoctoral Research Associate at the Department of Physics at Southern Methodist University, Dallas, TX, 2001-July 2004

- Calculated next-to-leading order fully differential distributions for vector boson production with polarized proton beams at the Relativistic Heavy Ion Collider (RHIC) at the lepton level [1-2]; performed all-order summation of soft radiation effects and proposed a method for determination of spin-dependent quark distributions from the analysis of lepton-level observables
- Performed the first global analysis of transverse momentum distributions in vector boson production [3] and demonstrated the Gaussian nature of nonperturbative contributions in

this process

- Developed a method for simultaneous summation of mass and transverse momentum logarithms in heavy quark production within a massive variable flavor number factorization scheme [4]; determined effect on the measurement of W boson mass due to the presence of charm-initiated contributions
- Calculated higher-order coefficients in resummed distributions for photon pair background to Higgs boson production at hadron-hadron colliders [5]
- Determined empirical limits on the asymmetry of distributions of strange and antistrange quarks from a global fit of hadronic data [16]
- Proposed and developed a method to impose independent limits on masses of strongly interacting supersymmetric partners based on the global analysis of hadronic data [17]
- Suggested a dynamical mechanism that may lead to non-trivial rapidity dependence of transverse momentum distributions at small partonic momentum fractions [18]; predicted a potential strong impact of this new mechanism on production of W , Z , and Higgs bosons at the Large Hadron Collider and proposed a procedure to look for such a mechanism in the Tevatron Run-2

Doctoral research in the High Energy Physics Theory Group, Department of Physics and Astronomy, Michigan State University, 1996-2001

Ph. D. thesis: *Multiple parton radiation in hadroproduction at lepton-hadron colliders*

Research advisers: Profs. C.-P. Yuan and W.-K. Tung

- Improved libraries for global analysis within the Coordinated Theoretical-Experimental project on Quantum Chromodynamics (CTEQ); wrote a paper on the new generation of parton distribution functions with estimated uncertainties [6]
- Evaluated theory uncertainty due to the parton distribution functions for associated production of weak and Higgs bosons and single top quark production at the Fermilab Tevatron collider [16-17]
- Applied resummation formalism to describe soft parton radiation in semi-inclusive deep inelastic scattering at lepton-hadron colliders [7-9]; found a way to compare resummed distributions with data on transverse energy flow and charged particle production at

Hadron-Electron Ring Accelerator (HERA); made a first comparison of the resummation to data at small Bjorken x

- Calculated $O(\alpha_{EM}^2\alpha_s^3)$ cross section for photon pair production [10] using string-inspired methods for higher-order perturbative calculations
- Developed an efficient C/C++/FORTRAN program for resummation in vector boson production and semi-inclusive deep inelastic scattering
- Wrote a Perl-CGI Internet interface for the resummation program (<http://hep.pa.msu.edu/wwwlegacy>)
- Calculated parity-violating asymmetry in top quark pair production due to the presence of light superparticles; repeated the CTEQ global analysis in the presence of superlight gluinos [11]

Research in the Theory Group at the Institute for High Energy Physics (Protvino, Russia), 1989-1996 (research advisers: N.E. Tyurin and S.M. Troshin)

- Proposed a unitary model to explain behavior of structure functions at Hadron-Electron Ring Accelerator (HERA) [12]
- Determined spin-dependent parton distributions from polarized deep inelastic scattering data [13]
- Calculated single-spin asymmetries for production of Drell-Yan pairs and weak bosons [14, 24]
- Wrote a review paper on the status of spin research [15]
- Calculated the crossing-odd Regge pole contribution to the total proton-proton cross section in the framework of an explicitly unitary model for forward scattering [25]

AWARDS and PROFESSIONAL ACTIVITIES

- Visitor at Brookhaven National Laboratory, 2002
- Visitor at Fermi National Accelerator Laboratory, 2001
- Graduate assistantship, high energy physics group, Michigan State University, 1998-2001

- Nominated for the “Teaching Assistant of the Year” award, Michigan State University, 1996-1997
- “Land Brandenburg” grant for participation in the 2nd Meeting on Possible Singly Polarized pp and pn Collisions at HERA (DESY-IfH, Zeuthen, 1995)
- Member of the American Physical Society
- Referee for Physical Review D, Physical Review Letters

TEACHING EXPERIENCE

Teaching Assistant, Michigan State University, 1996-1998

- Introductory physics laboratories in mechanics, electricity & magnetism (with Profs. H. Weerts, J. Linnemann, and M. Abolins)

Presented a theory introduction at the beginning of each lab; wrote and graded quizzes and final exams; helped individual students during the office hours; supervised preparation to the labs by other teaching assistants; reorganized the course pack and converted it to the electronic format

- Introductory laboratory for physics majors

Together with Prof. B. Golding, converted the course in a “cooperative learning” format and developed a new experiment to teach properties of percolation

“Blackboard” seminars with graduate students, Southern Methodist University, 2001-2004

- Introduction to the calculations of simple processes in high-energy physics

UNIVERSITY AND LABORATORY SERVICES

- Organization of theoretical physics seminars in High Energy Physics Division, Argonne National Laboratory, 2004
- CTEQ task force on W & Z physics, convener, 2003-present
- *Trofim Lysenko and biology in Soviet Russia*, a guest lecture in the undergraduate physics course “*The scientific method - critical and creative thinking*”, Southern Methodist University, 2003
- *Trofim Lysenko and biology in Soviet Russia*, a lecture to high school teachers, Quarknet

Workshop, Southern Methodist University, 2003

- *Status of high energy physics*, three hour lecture to high school teachers, Quarknet Workshop, Southern Methodist University, 2002
- Organization of the Graduate Student Journal Club, Michigan State University, 1998
- Organization of the journal club in High Energy Physics Theory Group, Michigan State University, 1999-2000

INVITED SEMINARS AND COLLOQUIA

1. *Resummation for transverse momentum distributions at hadron colliders*, Indiana University Cyclotron Facility, Sep. 14, 2004
2. *Factorization for transverse momentum distributions at hadron colliders*, Southern Methodist University, May 5, 2004
3. *Resummation for transverse momentum distributions at hadron colliders*, Baylor University, March 9, 2004
4. *Precise factorization methods for hadronic collisions*, University of Maryland, Feb. 2, 2004
5. *W boson physics at Relativistic Heavy Ion Collider*, Los Alamos National Laboratory, Nov. 19, 2003
6. *Resummation of large logarithms in heavy flavor production*, Fermilab, April 10, 2003
7. *Resummation of large logarithms in heavy flavor production*, Florida State University, Mar. 25, 2003
8. *Resummation of large logarithms in heavy flavor production*, Wayne State University, Jan. 24, 2003
9. *Multiple parton radiation in semi-inclusive deep inelastic scattering*, Brookhaven National Laboratory, Apr. 4, 2001
10. *Vector boson production with longitudinally polarized beams: lepton-level results*, Brookhaven National Laboratory/RIKEN, Apr. 3, 2001
11. *Multiple parton radiation in semi-inclusive deep inelastic scattering*, Southern Methodist University, Feb. 12, 2001
12. *Multiple parton radiation in polarized vector boson production*, Argonne National Laboratory, Feb. 5, 2001

13. *NLO soft gluon resummation: from Drell-Yan process to crossing channels*, University of Wisconsin, Jan. 26, 2000

14. *NLO soft gluon resummation: from Drell-Yan process to crossing channels*, Argonne National Laboratory, Jan. 2, 2000

Publications in refereed journals

1. P. M. Nadolsky and C.-P. Yuan: *Soft parton radiation in polarized vector boson production: theoretical issues*, Nucl. Phys. **B666**, 3 (2003).

2. P. M. Nadolsky and C.-P. Yuan: *Single-spin asymmetries with weak bosons at RHIC*, Nucl. Phys. **B666**, 35 (2003).

3. F. Landry, R. Brock, P. M. Nadolsky, and C.-P. Yuan: *Tevatron Run-1 Z boson data and Collins-Soper-Sterman resummation formalism*, Phys. Rev. **D67**, 073016 (2003).

4. P. M. Nadolsky, N. Kidonakis, F. I. Olness, and C.-P. Yuan: *Resummation of transverse momentum and mass logarithms in DIS heavy-quark production*, Phys. Rev. **D67**, 074015 (2003).

5. P. M. Nadolsky and C. R. Schmidt, *Diphoton production in gluon fusion at small transverse momentum*, Phys.Lett. **B558**, 63 (2003).

6. J. Pumplin, D. R. Stump, J. Huston, H.-L. Lai, P. M. Nadolsky, W.-K. Tung: *New generation of parton distribution with uncertainties from global QCD analysis*, JHEP **0207**, 012 (2002).

7. P. M. Nadolsky, D. R. Stump, and C.-P. Yuan: *Azimuthal asymmetries at HERA: theoretical aspects*, Phys. Lett. **B515**, 175 (2001).

8. P. M. Nadolsky, D. R. Stump, and C.-P. Yuan, *Phenomenology of multiple parton radiation in semi-inclusive deep inelastic scattering*, Phys. Rev. **D64**, 114011 (2001).

9. P. Nadolsky, D. R. Stump, and C.-P. Yuan: *Semi-inclusive hadron production at HERA: the effect of QCD gluon resummation*, Phys.Rev. **D61**, 014003 (2000).

10. C. Balazs, P. Nadolsky, C. Schmidt, and C.-P. Yuan: *Diphoton background to Higgs boson production at the LHC with soft gluon effects*, Phys.Lett. **B489**, 157 (2000).
11. C.-S. Li, P. M. Nadolsky, C.-P. Yuan, and Hong-Yi Zhou: *Signatures of the light gluino in top quark production*, Phys. Rev. **D58**, 095004 (1998).
12. P. M. Nadolsky, S.M. Troshin, and N.E. Tyurin: *Preasymptotic nature of hadron scattering versus small x HERA data*, Z. Phys. **C69**,131 (1995).
13. P. M. Nadolsky: *A set of polarized parton distributions*, Z. Phys. **C63**, 601 (1994).
14. P. M. Nadolsky: *Measurement of gluon polarization in lepton pair production*, Z. Phys. **C62**, 109 (1994).
15. P. M. Nadolsky, S. M. Troshin, and N. E. Tyurin, *Near future prospects of QCD spin studies*, Int. J. Mod. Phys. **A9**, 2505 (1994).

Preprints and conference contributions

- 16.E. L. Berger, P. M. Nadolsky, F. I. Olness, J. Pumplin: *Light Gluino Constituents of Hadrons and a Global Analysis of Hadron Scattering Data*, hep-ph/0406143, submitted to Phys. Rev. D.
- 17.F. Olness, J. Pumplin, D. Stump, J. Huston, P. Nadolsky, H.-L. Lai, S. Kretzer, J. F. Owens, and W.-K. Tung: *Neutrino dimuon production and the strangeness asymmetry of the nucleon*, hep-ph/0312323, submitted to Eur. Phys. J. C.
- 18.S. Berge, P. M. Nadolsky, F. I. Olness, and C.-P. Yuan, in *The QCD/SM working group: Summary report*, contribution to the 3rd Les Houches Workshop, hep-ph/0403100.
- 19.Z. Sullivan and P. M. Nadolsky: *Heavy quark parton distribution functions and their uncertainties*, in Proc. of APS / DPF / DPB Summer Study on the Future of Particle Physics (Snowmass 2001), hep-ph/0111358.
20. P. M. Nadolsky and Z. Sullivan, *PDF uncertainties in WH production at Tevatron*, in Proceedings of APS / DPF / DPB Summer Study on the Future of Particle Physics (Snowmass 2001), hep-ph/0110378.
21. P. M. Nadolsky and C.-P. Yuan: *Resummation for single spin asymmetries in W boson production*, hep-ph/0210190 (January 2002).

22. P. M. Nadolsky, N. Kidonakis, F. Olness, and C.-P. Yuan: *Soft and collinear parton radiation in heavy quark production*, hep-ph/0207332 (July 2002).
23. W. Giele et al.: *The QCD / SM working group: summary report*, contribution to the 2nd Les Houches Workshop, hep-ph/0204316.
24. E. Berger et al.: *Summary: working group on QCD and strong interactions*, hep-ph/0201146
25. P. M. Nadolsky, D. R. Stump, and C.-P. Yuan, *Soft parton resummation in the current region of semi-inclusive deep inelastic scattering*, hep-ph/0006176 (June 2000).
26. P. M. Nadolsky: *On the study of singly polarized lepton pair production at HERA*, in Proc. of 2nd Meeting on Possible Measurements of Singly Polarized pp and pn Collision at HERA (Zeuthen, Germany, 31 Aug - 2 Sep 1995); preprint IHEP-95-141.
27. P. M. Nadolsky: *Probing polarized valence quark distribution in W boson production*, hep-ph/9503419 (March 1995).
28. P. M. Nadolsky: *Odderon contribution in U -matrix method*, preprint IFVE-91-113 (1991).

INVITED CONFERENCE PRESENTATIONS

1. *Transverse momentum distributions: the Tevatron experience and LHC*, Tev4LHC Workshop, Fermilab, Sep. 16 2004.
2. *W boson physics with proton beams at the Relativistic Heavy Ion Collider*, Santa Fe PHENIX Workshop, Santa Fe, NM, June 21, 2004.
3. *Theory of W and Z boson production*, 15th International Topical Conference on Hadron Collider Physics, Michigan State University, June 15, 2004.
4. *CTEQ studies of W and Z boson physics*
Invited talk at the CDF W boson mass workshop, University of Toronto, Dec. 5, 2003
5. *Spin-dependent PDF's and W boson physics at Relativistic Heavy Ion Collider*
Invited talk at PHENIX large- x and W boson physics workshop, Urbana, IL, Nov. 8, 2003
6. *CTEQ studies of W and Z boson physics*
Invited talk at the Fermilab W boson mass workshop, FNAL, Nov. 6, 2003
7. *Unpolarized gluon distribution in CTEQ global analysis*
Invited talk at the 4th Circum Pan-Pacific Spin Symposium, Seattle, WA, Aug. 4, 2003

8. *Transverse momentum resummation in DIS production of light and heavy flavors*
Invited talk at the “Current and future directions at RHIC” workshop, Brookhaven National Laboratory, Aug. 12, 2002
9. *Azimuthal asymmetries in semi-inclusive DIS*
Invited talk at the “Current and future directions at RHIC” workshop, Brookhaven National Laboratory, Aug. 22, 2002
10. *Accurate tests of QCD factorization at Electron Ion Collider*
Invited talk at the Electron-Ion Collider workshop, Brookhaven National Laboratory, Jan. 3, 2002
11. *Semi-inclusive hadron production at HERA: the effect of QCD gluon resummation*
Invited talk at the 8th International workshop on deep-inelastic scattering (DIS2000), Liverpool, U.K., Apr. 23, 2000
12. *Production of vector bosons with small transverse momenta: spin-dependent case*
Invited talk at the workshop on predictions and uncertainties for RHIC spin physics, Brookhaven National Laboratory, Mar. 16, 2000
13. *Measurement of gluon polarization in single spin lepton pair production at HERA*
Invited talk at 2nd meeting on possible singly polarized pp and pn collisions at HERA, DESY-IfH Zeuthen, 1995

OTHER CONFERENCE PRESENTATIONS

1. *Constraints on the light gluino mass from a global analysis of hadronic data*
Talk at Pheno'2004 Symposium, University of Wisconsin, Apr. 26, 2004.
2. *Resummation methods in heavy flavor production*
Talk at LoopFest III, University of California at Santa Barbara, Apr. 2, 2004.
3. *Constraints on the light gluino mass from a global PDF analysis*
Talk at the CTEQ Meeting, Michigan State University, Oct. 17, 2003
4. *CSS+ACOT: a new type of resummation for heavy flavor production*
Poster presentation at XXI International Symposium on Lepton and Photon interactions at High Energies, FNAL, Aug. 11, 2003
5. *W-boson production in spin-dependent global analysis*
Talk at the 4th Circum Pan-Pacific Spin Symposium, Seattle, WA, Aug. 4, 2003
6. *Nonperturbative aspects of Collins-Soper-Sterman formalism,*
Talk at the CTEQ Meeting, Oct. 25, 2002
7. *Resummation for Single Spin asymmetries in W Boson Production*
Talk at 15th International Spin Physics Symposium, Brookhaven National Laboratory, Sep. 10, 2002
8. *The latest and greatest in High Energy Physics*
Lecture at the Quarknet Workshop, Southern Methodist University, June 2002
9. *Collinear and Soft Radiation in Heavy Quark Production*
Talk at 2002 Meeting of APS Division of Particles and Fields, Williamsburg, May 25, 2002
10. *Resummation of differential distributions in heavy flavor production,*
Talk at the CTEQ Meeting, Apr. 25, 2002
11. *Uncertainties in transverse momentum distributions of electroweak bosons*
Talk at Pheno 2002 Symposium, Madison, Apr. 23, 2002
12. *Fast resummation in vector boson production*
Talk at the Workshop on Monte-Carlo generator physics for Run II at the Tevatron, FNAL, 2001
13. *Resummation of large logarithms in the current region of semi-inclusive DIS*

Talk at the Pheno 99 Symposium, Madison, 1999

14. Parity-violating in top quark production and light gluino,

Talk at the Pheno 98 Symposium, Madison, 1998

REFERENCES

- Professor Edmond Berger (berger@anl.gov)
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