

## Paul E. Reimer

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### Education:

Ph.D.	1996	University of Illinois at Urbana-Champaign
M.S.	1987	University of Illinois at Urbana-Champaign
B.S.	1985	Bethel College, Kansas

### Employment History:

2004 - Present	Physicist, Argonne National Laboratory
1999-2004	Assistant Physicist, Argonne National Laboratory
1996-1999	Postdoctoral Research Assoc. Los Alamos National Laboratory

### Research Interests and Projects:

*Anti-quarks in the nucleon and nuclei:* My research involves the study of the properties of the nucleon and of nuclei at the quark level. In this research, the [Drell-Yan process](#) is exploited to probe selectively the antiquark distributions of the target nuclei. I am a co-spokespersons of Fermilab [E-906/SeaQuest](#), which is using this technique to determine the ratio of anti-d to anti-u quarks in the proton. E906 will also examine the antiquark distributions in nuclei, looking for an antiquark excess which would signal the presence of nuclear pions; absolute Drell-Yan cross sections as a measurement of the absolute magnitude of the sea quark distributions; and partonic energy loss in cold nuclear matter. As a member of the [HERMES collaboration](#), I participate in the study of the longitudinal and transverse spin distributions of quarks in the nucleon.

*Parity violation and the Electroweak Standard Model:* Parity violation measurements can probe electroweak couplings and QCD structure. Precision measurements in Møller scattering and DIS can be used to elucidate QCD phenomena and the Standard Model. These can be accessed at low energies using the CEBAF accelerator at the [Thomas Jefferson National Accelerator Facility \(JLab\)](#). I am co-spokesperson on two proposals, the 6 GeV [PV-DIS E08-011](#) and the 12 GeV [PVDIS \(E12-07-102\)](#) that will together use Parity Violating Deep Inelastic Scattering to measure  $\sin^2\theta_W$  and the quark-electron  $C_{2q}$  coupling constants.

### Recent Professional Activities:

NSERC Subatomic Physics Panel (Canada), 2010-2014, Chair Theory Section 2013-2014.  
SeaQuest/Fermilab E-906 experiment, Spokesperson, 2001-present.  
Member, American Physical Society, Division of Nuclear Physics, Division of Particles and Fields,  
Topical Group on Hadronic Physics, Forum on Physics and Society  
Fermilab *ad hoc* committee on The Future of PREP (Physics Research Equipment Pool) 2011.  
Review Panel Member, DOE Relativistic Heavy Ion National Laboratory Review, May 2008, DOE  
Science Review of the PHENIX FVTX and NCC, July 2007.  
Lecturer, HUGS (Hampton University Graduate Studies summer school at Thomas Jefferson National  
Accelerator Facility, JLab) Newport News, Virginia, June 2012.  
Large Acceptance Spectrometer in JLab Hall A Steering Committee, 2008-present.

### Recent Conference Organization:

**Opportunities for Polarized Physics at Fermilab**, Organizing Committee, 2013  
**PXPS** Study group on **Hadronic Physics**, Fermilab, Co-Convener, 2012

ECT\* workshop on **Drell-Yan Scattering and Hadronic Structure**, Lead Organizer 2012  
PAVI (Parity Violating Interactions) Organizing Committee, member 2008-present  
Baryons, International Advisory Committee 2013

### Selected Publications:

1. *Measurement of parity violation in electron-quark scattering*, D. Wang *et al.* (The Jefferson Lab PVDIS Collaboration) [Nature 506, 67-70 \(06 February 2014\)](#).
2. *Exploring the Partonic Structure of Hadrons through the Drell-Yan Process*, P.E. Reimer, [J. Phys. G34, S107 \(2007\)](#), [arXiv:0704.3621](#).
3. *Reevaluation of the Parton Distribution of Strange Quarks in the Nucleon*, A. Airapetian, *et al.* (HERMES Collaboration) [Phys. Rev. D89 \(2014\) 097101](#), [arXiv:1312.7028](#) and *Measurement of Parton Distributions of Strange Quarks in the Nucleon from Charged-Kaon Production in Deep-Inelastic Scattering on the Deuteron*, A. Airapetian, *et al.* (HERMES Collaboration) [Phys. Lett. B666, 446 \(2008\)](#), [arXiv:0803.2993](#).
4. *Measurement of the Flavor Asymmetry in the Nucleon Sea*, E.A. Hawker *et al.* (Fermilab E866/NuSea Collaboration) [Phys. Rev. Lett. 80 3715 \(1998\)](#), [arXiv:hep-ex/9803011](#) and *Improved Measurement of the anti-d/anti-u Asymmetry in the Nucleon Sea*, R.S. Towell *et al.* (Fermilab E866/NuSea Collaboration) [Phys. Rev. D 64, 052002 \(2001\)](#), [arXiv:hep-ex/0103030](#).
5. *Measurement of  $J/\psi$  and  $\psi'$  Suppression in  $p$ -A Collisions at 800 GeV/c*, M.J. Leitch *et al.* (Fermilab E866/NuSea Collaboration) [Phys. Rev. Lett. 84, 3256 \(2000\)](#), [arXiv:nucl-ex/9909007](#).
6. *Anti-d/anti-u Asymmetry and the Origin of the Nucleon Sea*, J.C. Peng *et al.* (Fermilab E866/NuSea Collaboration) [Phys. Rev. D 58, 092004 \(1998\)](#), [arXiv:hep-ph/9804288](#).
7. *Measurement of Angular Distributions of Drell-Yan Dimuons in  $p + d$  interactions at 800 GeV/c*, L.Y. Zhu *et al.* (Fermilab E866/NuSea Collaboration) [Phys. Rev. Lett. 99, 082301 \(2007\)](#), [arXiv:hep-ex/0609005](#).
8. *The Pion Parton Distribution Function in the Valence Region*, K. Wijesooriya, P.E. Reimer and R.J. Holt, [Phys. Rev. C 72 065203 \(2005\)](#), [arXiv:nucl-ex/0509012](#).
9. *Parton Energy Loss Limits and Shadowing in Drell-Yan Dimuon Production*, M.A. Vasilev *et al.* (Fermilab E866/NuSea Collaboration) [Phys. Rev. Lett. 83, 2304 \(1999\)](#), [arXiv:hep-ex/9906010](#).
10. *A High Resolution Lead Scintillating Fiber Electromagnetic Calorimeter*, D.W. Hertzog, P.T. Debevec, R.A. Eisenstein, M.A. Graham, S.A. Hughes, P.E. Reimer, R.L. Tayloe, [Nucl. Instrum. Meth. A294 446 \(1990\)](#).