

PUBLICATIONS

Allena K. Opper

A. Refereed Journal Publications:

1. G. Warren, *et al.* (The E93-026 Collaboration), **Measurement of the Electric Form Factor of the Neutron at $Q^2 = 0.5$ and $1.0 \text{ GeV}^2/c^2$** . Accepted by Physical Review Letters, e-Print Archive: hep-ex/0308021.
2. S. Stepanyan, *et al.* (The CLAS Collaboration), **Observation of an exotic $S = +1$ baryon in exclusive photoproduction from the deuteron**. Phys. Rev. Lett. **91**, 252001 (2003).
3. **A.K. Opper**, E. Korkmaz, D.A. Hutcheon, R. Abegg, C.A. Davis, R.M. Finlay, P.W. Green, L.G. Greeniaus, D.V. Jordan, J.A. Niskanen, G.V. O'Rielly, T.A. Porcelli, S.D. Reitzner, P.L. Walden, and S. Yen. **A precision measurement of charge symmetry breaking in $np \rightarrow d\pi^0$** . Phys. Rev. Lett. **91**, 212302 (2003).
4. R. Madey, *et al.* **Measurements of G_E^n/G_M^n from the $^2H(\vec{e}, e')\vec{n}$ Reaction to $Q^2 = 1.45 \text{ (GeV/c)}^2$** . Phys. Rev. Lett. **91**, 122002 (2003).
5. M. Ripani, *et al.* (The CLAS Collaboration), **Measurement of $ep \rightarrow e'\pi^+\pi^-$ and baryon resonance analysis**. Phys. Rev. Lett. **91** 022002 (2003).
6. D.S. Carman, *et al.* (The CLAS Collaboration), **First measurement of transferred polarization in the exclusive $\vec{e}p \rightarrow e'K^+\vec{\Lambda}$ reaction**. Phys. Rev. Lett. **90** 131804 (2003).
7. K. Joo, *et al.* (The CLAS Collaboration), **Measurement of the polarized structure function $\sigma_{LT'}$ for $p(\vec{p}, e')\pi^0$ in the $\Delta(1232)$ region**. Phys. Rev. C, **68**, 032201 (2003).
8. M. Osipenko, *et al.* (The CLAS Collaboration), **A kinematically complete measurement of the proton structure function $F(2)$ in the resonance region and evaluation of its moments**. Phys. Rev. D **67**, 092001 (2003).
9. K.S. Egiyan *et al.* (The CLAS Collaboration), **Observation of nuclear scaling in the $A(e, e')$ at $x(B) > 1$** . Phys. Rev. C **68**, 014313 (2003).
10. J. Yun *et al.* (The CLAS Collaboration), **Measurement of inclusive spin structure functions of the deuteron with CLAS**. Phys. Rev. C **67**, 055204 (2003).

11. B.A. Mecking, *et al.* (The CLAS Collaboration), **The CEBAF Large Acceptance Spectrometer (CLAS)**. Nuclear Instruments and Methods **A503**, pp 513 - 553 (2003).
12. M. Battaglieri, *et al.* (The CLAS Collaboration), **Photoproduction of the Omega Meson on the Proton at Large Momentum Transfer**. Phys. Rev. Lett. **90** 022002 (2002).
13. M. Dugger, *et al.* (The CLAS Collaboration), **η Photoproduction on the Proton for Photon Energies from 0.75 to 1.95 GeV**. Phys. Rev. Lett. **89** 222002 (2002).
14. K. Joo, *et al.* (The CLAS Collaboration), **Q^2 Dependence of Quadrupole Strength in $\gamma^* \rightarrow \Delta^+(1232)$** . Phys. Rev. Lett. **88** 122001 (2002).
15. R. DeVita, *et al.* (The CLAS Collaboration), **First Measurement of the Double Spin Asymmetry in $\vec{e}\vec{p} \rightarrow e'\pi^+n$ in the Resonance Region**. Phys. Rev. Lett. **88**, 082001 (2002).
16. S. Stepanyan, *et al.* (The CLAS Collaboration), **Observation of Exclusive Deeply Virtual Compton Scattering in Polarized Electron Beam Asymmetry Measurements**. Phys. Rev. Lett. **87**, 182002 (2001).
17. M. Battaglieri, *et al.* (The CLAS Collaboration), **Photoproduction of the rho Meson on the Proton at Large Momentum Transfer**. Phys. Rev. Lett. **87**, 172002 (2001).
18. K. Lukashin, *et al.* (The CLAS Collaboration), **Corrected Article: Exclusive Electroproduction of Phi Mesons at 4.2 GeV**. Phys. Rev. C **64**, 059901 (2001).
19. S.P. Barrow, *et al.* (The CLAS Collaboration), **Electroproduction of the Lambda(1520) hyperon**. Phys. Rev. C **64**, 044601 (2001).
20. K. Lukashin, *et al.* (The CLAS Collaboration), **Exclusive Electroproduction of Phi Mesons at 4.2 GeV**. Phys. Rev. C **63**, 065205 (2001).
21. **A.K. Opper**, S.W. Wissink, A.D. Bacher, J. Lisantti, C. Olmer, R. Sawafta, E.J. Stephenson, and S.P. Wells. **Measurements of the Spin Observables D_{NN} , P , and A_y in Inelastic Proton Scattering from ^{12}C and ^{16}O at 200 MeV**. Phys. Rev. C **63**, 034614 (2001).
22. R. Thompson, *et al.* (The CLAS Collaboration), **The $ep \rightarrow e'p\eta$ reaction at and above the $S_{11}(1535)$ baryon resonance**. Phys. Rev. Lett. **86**, 1702 (2001).

23. D.A. Hutcheon, R. Abegg, E.G. Auld, R.M. Churchman, C.A. Davis, R.M. Finlay, P.W. Green, L.G. Greeniaus, R. Henderson, K.H. Hicks, D.V. Jordan, W. Kellner, E. Korkmaz, **A.K. Opper**, G.V. O’Rielly, T.A. Porcelli, S.D. Reitzner, G. Sheffer, P.L. Walden, and S. Yen. **Apparatus for a Measurement of Charge Symmetry Breaking in $np \rightarrow d\pi^0$** . Nuclear Instruments and Methods **A459**, pp 448 - 458 (2001).
24. E. Anciant, *et al.* (The CLAS Collaboration), **Photoproduction of $\phi(1020)$ Mesons on the Proton at Large Momentum Transfer**. Phys. Rev. Lett. **85**, pp 4682 - 4686 (2000).
25. **A.K. Opper**, E.G. Auld, R.M. Churchman, C.A. Davis, R.M. Finlay, P.W. Green, L.G. Greeniaus, D.A. Hutcheon, D.V. Jordan, E. Korkmaz, J.A. Niskanen, G.V. O’Rielly, T.A. Porcelli, S.D. Reitzner, P.L. Walden, and S. Yen. **Charge Symmetry Breaking in the reaction $np \rightarrow d\pi^0$** . Nuclear Physics **A663**, pp 505 - 508 (2000).
26. F. Sammarruca, E.J. Stephenson, K. Jiang, J. Liu, C. Olmer, **A.K. Opper**, and S.W. Wissink, **Testing microscopic medium effects on nucleons and mesons using polarization observables in high-spin, unnatural-parity (\vec{p}, \vec{p}') reactions at 200 MeV**, Phys. Rev. C **61**, 4309 (1999).
27. E. Korkmaz, N.R. Kolb, D.A. Hutcheon, G. O’Rielly, J.C. Bergstrom, G. Feldman, D. Jordan, **A.K. Opper**, R. Pywell, and D.M. Skopik, **Measurement of the $\gamma p \rightarrow n\pi^+$ Reaction Near Threshold**, Phys. Rev. Lett. **83**, 3609 (1999).
28. E. Korkmaz, G. O’Rielly, U. Giessen, D.A. Hutcheon, G. Feldman, D. Jordan, N.R. Kolb, R. Pywell, G. Retzlaff, B. Sawatzky, D.M. Skopik, J. Vogt, E.B. Cairns, L. Holm, **A.K. Opper**, F.M. Rozon, and J. Soukup, **Segmented detector for recoil neutrons in the $p(\gamma, n)\pi^+$ reaction**, Nuclear Instruments and Methods **431**, 446 (1999).
29. P.L. Walden, T.G. Walton, C.A. Miller, S. Yen, R. Abegg, E.G. Auld, J. Campbell, J. Chakhalyan, R. Churchman, F. Duncan, W. Falk, D. Frekers, A. Green, P.E.W. Green, M. Hartig, O. Hausser, C. Haddock, K. Hicks, D. Hutcheon, G. Jones, Y. Ke, E.J. Korkmaz, N. Khan, A. Ling, D.E. Lobb, S.I.H. Naqvi, W.C. Olsen, **A.K. Opper**, M. Punyasena, P. Reeve, and J. Zhao, **Optical Design and Performance of the SASP Spectrometer at TRIUMF**. Nuclear Instruments and Methods **A 421**, 142 (1999).
30. J. Zhao, R. Abegg, A.R. Berdoz, J. Birchall, J.R. Campbell, C.A. Davis, P.P.J. Delheij, L. Gan, P.W. Green, L.G. Greeniaus, D. Healy, R. Helmer, N. Kolb, E. Korkmaz, L. Lee, P. Levy, J. Li, C.A. Miller, **A.K. Opper**, S.A. Page, H. Postma, W.D. Ramsay, J. Soukup, G.M. Stinson, W.T.H. van Oers, and A.N. Zelenski, **Precision measurement of charge symmetry breaking in np elastic scattering at 347 MeV**, Phys. Rev. C **57**, (1998) pp 2126 - 2141.

31. M.A. Quran, E.D. Hackett, E. Korkmaz, W.J. McDonald, **A.K. Opper**, N.L. Rodning, G. Feldman, N.R. Kolb, G.V. O'Reilly, R.E. Pywell, and D.M. Skopik, **Final State Interactions in $^2\text{H}(\gamma, pp\pi^-)$ Near the $\Delta(1232)$ Resonance**, Phys. Rev. C **57** (1998) pp 2118 - 2125.
32. C.A. Davis, R. Abegg, A.R. Berdoz, J. Birchall, J.R. Campbell, L. Gan, P.W. Green, L.G. Greeniaus, R. Helmer, E. Korkmaz, L. Lee, J. Li, C.A. Miller, **A.K. Opper**, S.A. Page, W.D. Ramsay, A.M. Sekulovich, V. Sum, W.T.H. van Oers, and J. Zhao. **The Zero-Crossing Angle of the $n - p$ Analyzing Power**. Phys. Rev. C **53**, 2052 (1996).
33. E.D. Hackett, W.J. McDonald, **A.K. Opper**, M.A. Quraan, N.L. Rodning, F.M. Rozon, G. Feldman, N.R. Kolb, R.E. Pywell, D.M. Skopik, D.E. Tiller, J.M. Vogt, E. Korkmaz, G.V. O'Rielly. **Reaction Mechanisms in $^{12}\text{C}(\gamma, pp)$ Near 200 MeV**. Phys. Rev. C **53**, R1047 – R1051 (1996).
34. L. Gan, R. Abegg, A.R. Berdoz, J. Birchall, J.R. Campbell, C.A. Davis, P.W. Green, L.G. Greeniaus, R. Helmer, E. Korkmaz, L. Lee, J. Li, C.A. Miller, **A.K. Opper**, S.A. Page, W.D. Ramsay, J. Soukup, W.T.H. van Oers, and J. Zhao. **Properties of the TRIUMF Neutron Beam**. Nucl. Inst. Meth. **A 365** , 185 (1995).
35. R. Abegg, A.R. Berdoz, J. Birchall, J.R. Campbell, C.A. Davis, P.P.J. Delheij, L. Gan, P.W. Green, L.G. Greeniaus, D.D. Healey, R. Helmer, N.R. Kolb, E. Korkmaz, L. Lee, C.D.P. Levy, J. Li, C.A. Miller, **A.K. Opper**, S.A. Page, H. Postma, W.D. Ramsay, J. Soukup, G.M. Stinson, W.T.H. van Oers, A.N. Zelenski, and J. Zhao. **Precision Measurement of Charge Symmetry Breaking in np Elastic Scattering at 347 MeV**. Phys. Rev. Lett. **75**, 1711 (1995).
36. N.R. Kolb, E.B. Cairns, E.D. Hackett, E. Korkmaz, T. Nakano, **A.K. Opper**, M.A. Quraan, A.L. Rodning, F.M. Rozon, A. Asai, G. Feldman, E. Hallin, G.V. O'Rielly, R.E. Pywell, and D.M. Skopik. **$^3\text{He}(\gamma, pd)$ Cross Sections With Tagged Photons Below the Δ Resonance**. Phys. Rev. C **49**, 2586 (1994).
37. R. Abegg, C.A. Davis, P.P. Delheij, R. Helmer, C.A. Miller, A.R. Berdoz, J. Birchall, J.R. Campbell, S.A. Page, W.D. Ramsay, W.T.H. van Oers, J. Zhao, P.W. Green, L.G. Greeniaus, N. Kolb, E. Korkmaz, J. Li, and **A.K. Opper**. **Search for Charge Symmetry Violation in np Elastic Scattering**. Nucl. Inst. Meth. **B79** , 318 (1993).
38. S.P. Wells, S.W. Wissink, A.D. Bacher, S.M. Bowyer, S. Chang, J. Lisantti, J. Liu, C. Olmer, **A.K. Opper**, T. Rinckel, and E.J. Stephenson. **An In-beam Polarimeter for Intermediate Energy Protons Using $p + d$ Elastic Scattering**. Nucl. Inst. Meth. **A325**, 205 (1993).
39. S.W. Wissink, S.P. Wells, E.J. Stephenson, J. Sowinski, A.D. Bacher, P. Li, J. Lisantti, C. Olmer, **A.K. Opper**, R. Sawafta, and P. Schwandt. **Determination of Analyzing Powers for 189 MeV Proton Elastic Scattering on ^{12}C** . Phys. Rev. C **45** , R504 (1992).
40. D.A. Low, E.J. Stephenson, C. Olmer, **A.K. Opper**, B.K. Park, P. Schwandt, and S.W. Wissink. **Measurement of the A_{yy} Tensor Analyzing Power for the $^1\text{H}(\vec{d}, pp)n$ Reaction in the Symmetric Constant Relative Energy Geometry**. Phys. Rev. C **44**, 2276 (1991).

41. E.J. Stephenson, A.D. Bacher, G.P.A. Berg, V.R. Cupps, C.C. Foster, N. Hodiwalla, P. Li, J. Lisantti, D.A. Low, D.W. Miller, C. Olmer, **A.K. Opper**, B.K. Park, R. Sawafta, S.W. Wissink, J.A. Tostevin, D.A. Coley, and R.C. Johnson. **Enhancement of the Near-side Component in Quasi-adiabatic Calculations of the $^{66}\text{Zn}(d,p)^{67}\text{Zn}$ Reaction.** *Phys. Rev. C* **42**, 2562 (1990).
42. E.J. Stephenson, R.C. Johnson, J.A. Tostevin, V.R. Cupps, J.D. Brown, C.C. Foster, J.A. Gering, W.P. Jones, D.A. Low, D.W. Miller, H. Nann, C. Olmer, **A.K. Opper**, P. Schwandt, J.W. Seubert, and S.W. Wissink. **Implications of Far-side Dominance for the Disagreement between Distorted Wave Theory and Well-matched Intermediate Energy (d,p) Reactions.** *Phys. Lett. B* **171**, 358 (1986).

B. Published Conference Proceedings

1. R. Madey, *et al.*, **Neutron Electric Form Factor up to $Q^2 = 1.47$ (GeV/c) 2 .** *Electron-Nucleus Scattering VII* Elba, Italy (June 2002). *Eur. Phys. J. A* **17**, pp 323 - 327 (2003).
2. **A.K. Opper Charge Symmetry Violation in $np \rightarrow d\pi^0$.** *Symmetries in Subatomic Physics: 3rd Int'l Symp.* Adelaide, Australia, pp 238 - 234 (2000).
3. **A.K. Opper Charge Symmetry Breaking in Inelastic Nucleon-Nucleon Scattering.** *Few-Body Problems in Physics '99, Asian-Pacific Few-Body Conference.* Tokyo, Japan, pp 177 - 182 (1999).
4. *The LEGS-Spin Collaboration:* D. Babusci, H. Baghaei, M. Blecher, M. Breuer, A. Caraccappa, A. Cichocki, C. Commeaux, A. D'Angelo, J.-P. Didelez, Q. Fan, R. W. Finlay, G. Giordano, V. Gladeshev, K. Hicks, S. Hoblit, P. Hoffmann-Rothe, A. Honig, M. Khandaker, O. C. Kistner, A. Lewis, Z. L, R. Lindgren, M. Lowry, M. A. Lucas, G. Matone, L. Miceli, B. Norum, **A.K. Opper**, B. M. Preedom, M. Rigney, A. M. Sandorfi, C. Schaerf, U. Schöffmann, C. Smith, H. Ströher, C. E. Thorn, J. Tonnison, K. Wang, X. Wei, and C. S. Whisnant. **SASY: The Spin ASYmmetry Detector for the Measurement of the Spin Structure of the Nucleon.** *SPIN '96.* Vrije Universiteit Amsterdam (1996).
5. **A.K. Opper**, K. Hicks, D.A. Hutcheon, R. Abegg, C.A. Davis, P.L. Walden, S. Yen, E. Korkmaz, G.V. O'Rielly, P.W. Green, L.G. Greeniaus, J.A. Niskanen. **A Measurement of Charge Symmetry Breaking in Inelastic np Scattering XIVth Intl. Conf. on Particles and Nuclei.** Williamsburg, VA (1996).
6. N.R. Kolb, G. Feldman, E. Hallin, G.V. O'Rielly, R.E. Pywell, D.M. Skopik, D.E. Tiller, J.M. Vogt, E. D. Hackett, E. Korkmaz, W.J. McDonald, T. Nakano, **A.K. Opper**, M. Quraan, N.L. Rodning, and F.M. Rozon. **Absorption mechanisms for the (γ,pp) reaction in light nuclei XIVth Intl. Conf. on Particles and Nuclei.** Williamsburg, VA (1996).
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8. C.A. Davis, R. Abegg, A.R. Berdoz, J. Birchall, J.R. Campbell, L. Gan, P.W. Green, L.G. Greeniaus, R. Helmer, E. Korkmaz, J. Li, C.A. Miller, **A.K. Opper**, S.A. Page, W.D. Ramsay, A. Sekulovich, V. Sum, W.T.H. van Oers, and J. Zhao **Zero-crossing Angle of the $n \rightarrow p$ Analyzing Power Below 300 MeV**. *8th Intl. Symp. of Polarization Phenomena in Nuclear Physics – SPIN '94*. Bloomington, IN (1994).
9. J. Zhao, R. Abegg, A.R. Berdoz, J. Birchall, J.R. Campbell, C.A. Davis, P.P.J. Delheij, L. Gan, P.W. Green, L.G. Greeniaus, D.C. Healey, R. Helmer, N. Kolb, E. Korkmaz, L. Lee, C.D.P. Levy, J. Li, C.A. Miller, **A.K. Opper**, S.A. Page, H. Postma, W.D. Ramsay, J. Soukup, G.M. Stinson, W.T.H. van Oers, and A.N. Zelenski. **A Preliminary Result of the Second n-p Charge Symmetry Breaking Experiment at TRIUMF**. *5th Intl. Conf. on the Intersections of Particle and Nuclear Physics*. St. Petersburg, FL (1994).
10. R. Abegg, A.R. Berdoz, J. Birchall, J.R. Campbell, C.A. Davis, P.P.J. Delheij, P.W. Green, L.G. Greeniaus, D.C. Healey, R. Helmer, N. Kolb, E. Korkmaz, L. Lee, C.D.P. Levy, J. Li, C.A. Miller, **A.K. Opper**, S.A. Page, H. Postma, W.D. Ramsay, J. Soukup, G.M. Stinson, W.T.H. van Oers, A.N. Zelenski, and J. Zhao. **Measurement of Charge Symmetry Breaking in n-p Elastic Scattering at 350 MeV**. *Particles and Nuclei 13th Intl. Conf.* Perugia, Italy, 670 (1993).
11. N.R. Kolb, E.B. Cairns, E.D. Hackett, E. Korkmaz, T. Nakano, **A.K. Opper**, M. Quraan, N.L. Rodning, F.M. Rozon, J. Asai, G. Feldman, E. Hallin, G.V. O'Rielly, R.E. Pywell, and D.M. Skopik. **Photodisintegration of ^3He in a Large Acceptance Detector**. *Particles and Nuclei 13th Intl. Conf.* Perugia, Italy, 482 (1993).
12. L.G. Greeniaus, E.D. Hackett, F.C. Khanna, N.R. Kolb, E. Korkmaz, E. Korkmaz, W.J. McDonald, T. Nakano, **A.K. Opper**, M. Quraan, N.L. Rodning, M. Rozon, D. Hutcheon, J. Asai, H.S. Caplan, G. Feldman, E.L. Hallin, G.V. O'Reilly, R.E. Pywell, D.M. Skopik, J.M. Vogt, **Physics with the Saskatchewan-Alberta Large Acceptance Detector**. *Physics with Internal Target and the Blast Detector*, World Scientific, 265 (1993).
13. S.W. Wissink, S.P. Wells, **A.K. Opper**, T. Rinckel, and E.J. Stephenson. **Development of an In-beam Polarimeter for Intermediate Energy Protons Using p+d Elastic Scattering**. *7th Intl. Symp. of Polarization Phenomena in Nuclear Physics*. Paris, France, 557 (1990).

C. Other Professional Papers

1. Reports to The TRIUMF Experiment Evaluation Committee, 1996, 1997, 1998, and 1999. <http://www.triumf.ca/e704/publications.html>
2. TRIUMF Annual Report Contributions, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, and 2002. <http://www.triumf.ca/e704/publications.html>

D. Contributed Papers

1. G. MacLachlan for The JLab E93-038 Collaboration, **A Measurement of The Electric Form Factor of the Proton at $Q^2 = 1.14(\text{GeV}/c)^2$** , American Physical Society Meeting (East Lansing, MI: Oct 2002) BAPS **BD.003**.

2. L. Todor for the JLab CLAS Collaboration, **Helicity Asymmetry of the γ p Cross Section for Photon Energies Between 2.5 and 5.3 GeV,** American Physical Society Meeting (East Lansing, MI: Oct 2002) BAPS **BD.006**.
3. P. Ambrozewicz for the JLab CLAS Collaboration, **Measurement of A'_{LT} for $K\Sigma$ Electroproduction with CLAS,** American Physical Society Meeting (East Lansing, MI: Oct 2002) BAPS **BD.007**.
4. S. Niccolai for the JLab CLAS Collaboration, **Search for the effects of three-body forces in the $\gamma^3\text{He} \rightarrow ppn$ reaction measured with the CLAS detector,** American Physical Society Meeting (East Lansing, MI: Oct 2002) BAPS **BD.011**.
5. M. Nozar for the JLab CLAS Collaboration, **Meson spectroscopy in photo-production at CLAS,** American Physical Society Meeting (East Lansing, MI: Oct 2002) BAPS **CB.004**.
6. L. Guo for the JLab CLAS Collaboration, **Photo-production of mesons decaying to $K^-K^+\pi^+$ at CLAS,** American Physical Society Meeting (East Lansing, MI: Oct 2002) BAPS **CB.005**.
7. M. Bellis for the JLab CLAS Collaboration, **Two charged pion photo-production at CLAS,** American Physical Society Meeting (East Lansing, MI: Oct 2002) BAPS **CB.009**.
8. S. Tajima for the JLab E93-038 Collaboration, **A New Measurement of the Electric Form Factor of the Neutron at $Q^2 = 0.45(\text{GeV}/c)^2$,** American Physical Society Meeting (Albuquerque, New Mexico: April 2002) BAPSX**10.007**.
9. B. Plaster for the JLab E93-038 Collaboration, **The Electric Form Factor of the Neutron at $Q^2 = 1.15(\text{GeV}/c)^2$,** American Physical Society Meeting (Albuquerque, New Mexico: April 2002) BAPSX**10.008**.
10. A. Aghalaryan for the JLab E93-038 Collaboration, **The Electric Form Factor of the Neutron at $Q^2 = 1.47(\text{GeV}/c)^2$,** American Physical Society Meeting (Albuquerque, New Mexico: April 2002) BAPSX**10.009**.
11. W. Tireman for the JLab E93-038 Collaboration, **The Electric Form Factor of the Neutron at $Q^2 = 1.47(\text{GeV}/c)^2$ - Part II,** American Physical Society Meeting (Albuquerque, New Mexico: April 2002) BAPSX**10.010**.
12. E. Korkmaz, G.V. O'Rielly, T.A. Porcelli, A.K. Opper, S.D. Reitzner, R.W. Finlay, D.A. Hutcheon, R. Abegg, P.W. Green, L.G. Greeniaus, D.V. Jordan, P.L. Walden, C.A. Davis, S. Yen, E.G. Auld, J.A. Niskanen, **Charge Symmetry Breaking in $np \rightarrow d\pi^0$ Close to Threshold,** American Physical Society Meeting (Maui, Hawaii: Oct 2001) BAPS **KG011**.
13. R. Madey for the JLab E93-038 Collaboration, **Measurements of the Electric Form Factor of the Neutron from the ${}^2\text{H}(\vec{e}, e'\vec{n}){}^1\text{H}$ Reaction at Jefferson Lab,** American Physical Society Meeting (Maui, Hawaii: Oct 2001) BAPS **DB010**.
14. D. Lawrence for The CLAS Collaboration, **Study of the Axial Anomaly in the $\gamma\pi^+ \rightarrow \pi^+\pi^0$ Reaction,** American Physical Society Meeting (Maui, Hawaii: Oct 2001) BAPS **KJ001**.
15. H. Avakian for The CLAS Collaboration, **Single-Spin Azimuthal Asymmetries with CLAS,** American Physical Society Meeting (Maui, Hawaii: Oct 2001) BAPS **KD011**.

16. A. Biselli for The CLAS Collaboration, **Study of the $\Delta^+(1232)$ using Double-polarization Asymmetries**, American Physical Society Meeting (Maui, Hawaii: Oct 2001) BAPS **KD010**.
17. T. Forest for The CLAS Collaboration, **Measurements of the Q^2 Dependence of Polarized Structure Functions**, American Physical Society Meeting (Maui, Hawaii: Oct 2001) BAPS **KD003**.
18. L. Guo for The CLAS Collaboration, **Strangeonium photo-production at CLAS**, American Physical Society Meeting (Maui, Hawaii: Oct 2001) BAPS **FE007**.
19. B. Zhang for The CLAS Collaboration, **Searching for NN Correlations in ${}^3\text{He}$** , American Physical Society Meeting (Maui, Hawaii: Oct 2001) BAPS **FD003**.
20. B. Raue, R. Nasseripour for The CLAS Collaboration, **Measurement of beam-helicity dependent asymmetries for $p(\vec{e}, e'K^+)\Lambda^0$ with CLAS**, American Physical Society Meeting (Maui, Hawaii: Oct 2001) BAPS **DC009**.
21. D.S. Carman for The CLAS Collaboration, **Double-Polarization Observables in Ground-State Hyperon Electroproduction**, American Physical Society Meeting (Maui, Hawaii: Oct 2001) BAPS **DC008**.
22. H. Egiyan for The CLAS Collaboration, **Pion Electroproduction in the Resonance Region Using CLAS**, American Physical Society Meeting (Maui, Hawaii: Oct 2001) BAPS **BB004**.
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24. R. Schumacker for The CLAS Collaboration, **Strangeness Photo- and Electro-Production with CLAS at Jefferson Lab**, American Physical Society Meeting (Maui, Hawaii: Oct 2001) BAPS **BB001**.
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90. E.J. Stephenson, J.D. Brown, V.R. Cupps, C.C. Foster, J.A. Gering, W.P. Jones, D.A. Low, D.W. Miller, H. Nann, C. Olmer, **A.K. Opper**, P. Schwandt, S.W. Wissink, J.W. Seubert, J.A. Tostevin, and R.C. Johnson. **Empirical Investigation of Far-side Dominance in $j = l - 1/2$ Transfer (d, p) Reactions at Intermediate Energy.** *6th Intl. Symp. of Polarization Phenomena in Nuclear Physics.* Osaka, Japan (1985).
91. E.J. Stephenson, A.D. Bacher, J.D. Brown, M.S. Cantrell, V.R. Cupps, D.L. Friesel, J.A. Gering, D.A. Low, R.S. Moore, C. Olmer, **A.K. Opper**, P. Schwandt, and S.W. Wissink. **Horizontally Polarized Proton Beams at IUCF.** *10th Intl. Conf. on Cyclotrons Applications.* East Lansing, MI, USA (1984).

E. Seminars, Colloquia, and Invited Talks

1. **A.K. Opper, Charge Symmetry Breaking – from nuclei to quarks.** Arizona State University (Phoenix, Arizona: November 2003), **seminar**.
2. **A.K. Opper, Measuring Charge Symmetry Breaking in $np \rightarrow d\pi^0$.** Institute for Nuclear Theory, University of Washington (Seattle, WA: October, 2003), **seminar**.
3. **A.K. Opper, Charge Symmetry Breaking – from nuclei to quarks.** The College of William and Mary (Williamsburg, Virginia: October 2003), **colloquium**.
4. **A.K. Opper, Charge Symmetry Breaking – from nuclei to quarks.** Notre Dame University (South Bend, Indiana: October 2003), **seminar**.
5. **A.K. Opper, Measuring Charge Symmetry Breaking in $np \rightarrow d\pi^0$.** *Workshop on Hadron Physics at COSY*, (Bad Honnef, Germany: July 2003), **invited talk**.
6. **A.K. Opper, Measuring Charge Symmetry Breaking in $np \rightarrow d\pi^0$.** *2003 Canadian Association of Physics Congress*, (Charlottetown, Prince Edward Island, Canada: June 2003), **invited plenary talk**.
7. **A.K. Opper, Measuring Charge Symmetry Breaking in $np \rightarrow d\pi^0$.** *April Meeting of the APS*, (Philadelphia, Pennsylvania: April 2003), **invited talk**.
8. **A.K. Opper, Measuring Charge Symmetry Breaking in $np \rightarrow d\pi^0$.** *40th Western Regional Nuclear and Particle Physics Conference.* (Lake Louise, Alberta, Canada: February 2003), **invited talk**.
9. **A.K. Opper, Charge Symmetry Breaking in $np \rightarrow d\pi^0$.** Indiana University (Bloomington, Indiana: December 2002), **colloquium**.
10. **A.K. Opper, Measuring Charge Symmetry Breaking in $np \rightarrow d\pi^0$.** University of Kentucky (Lexington, Kentucky: March 2002), **seminar**.
11. **A.K. Opper, Measuring Charge Symmetry Breaking in $np \rightarrow d\pi^0$.** Institute for Nuclear Theory, University of Washington (Seattle, WA: August, 2001), **seminar**.
12. **A.K. Opper, Measuring Charge Symmetry Breaking to Investigate the Strong Interaction.** Ohio University (Athens, OH: November, 2000), **colloquium**.

13. **A.K. Opper, Measuring Charge Symmetry Breaking to Investigate the Strong Interaction.** Ball State University (Muncie, IN: October, 2000), **colloquium.**
14. **A.K. Opper, Charge Symmetry Breaking in $np \rightarrow d\pi^0$.** Indiana University Cyclotron Facility (Bloomington, IN: May, 2000), **seminar.**
15. **A.K. Opper, Search for the d^* Dibaryon at COSY,** Jülich Laboratory (Jülich, Germany: April, 2000), **invited talk.**
16. **A.K. Opper, Charge Symmetry Breaking in $np \rightarrow d\pi^0$.** Jülich Laboratory (Jülich, Germany: April, 2000), **invited talk.**
17. **A.K. Opper, Charge Symmetry Violation in $np \rightarrow d\pi^0$** *Symmetries in Subatomic Physics: 3rd Int'l Symm.* (Adelaide, Australia: March, 2000), **invited talk.**
18. **A.K. Opper, Charge Symmetry Breaking in $np \rightarrow d\pi^0$.** Department of Physics, New Mexico State University (Las Cruces, NM: February, 2000), **colloquium.**
19. **A.K. Opper, Charge Symmetry Breaking in Inelastic Nucleon–Nucleon Scattering,** Department of Physics and Astronomy, Ohio University, (Athens, OH: Sep, 1999), **seminar.**
20. **A.K. Opper for the E704 Collaboration, Charge Symmetry Breaking in Inelastic Nucleon-Nucleon Scattering** *Asian-Pacific Few-Body Conference.* (Tokyo, Japan: August, 1999) **invited talk.**
21. **A.K. Opper,** E.G. Auld, R.M. Churchman, C.A. Davis, R.W. Finlay, P.W. Green, L.G. Greeniaus, D.A. Hutcheon, D.V. Jordan, E. Korkmaz, J.A. Niskanen, G.V. O’Rielly, T. Portcelli, S.D. Reitzner, P.L. Walden, and S. Yen, **Charge Symmetry Breaking in the Reaction $np \rightarrow d\pi^0$** *XVth Intl. Conf. on Particles and Nuclei,* (Uppsala Sweden, June, 1999), **invited talk.**
22. **A.K. Opper for the E704 Collaboration, Charge Symmetry Breaking in $np \rightarrow d\pi^0$ Close to Threshold: E704.** TRIUMF Experiment Evaluation Committee, May, 1999.
23. **A.K. Opper, Charge Symmetry Breaking in Inelastic np Scattering,** Department of Physics, CAL Tech, (Pasadena, CA: Feb, 1999), **seminar.**
24. **A.K. Opper for the E704 Collaboration, Charge Symmetry Breaking in $np \rightarrow d\pi^0$ Close to Threshold: E704.** TRIUMF Experiment Evaluation Committee, December, 1998.
25. **A.K. Opper for the E704 Collaboration, Charge Symmetry Breaking in $np \rightarrow d\pi^0$ Close to Threshold: E704.** TRIUMF Experiment Evaluation Committee, July, 1998.
26. **A.K. Opper, Measuring Charge Symmetry Breaking in the np System at TRIUMF.** TRIUMF Summer School for Undergraduate Students (Vancouver, BC: July 1998), **invited talk.**
27. **A.K. Opper for the E704 Collaboration, Charge Symmetry Breaking in $np \rightarrow d\pi^0$ Close to Threshold: E704.** TRIUMF Experiment Evaluation Committee, December, 1997.

28. **A.K. Opper** for the E704 Collaboration, **Charge Symmetry Breaking in $np \rightarrow d\pi^0$ Close to Threshold: E704.** TRIUMF Experiment Evaluation Committee, July, 1997.
29. **A.K. Opper**, **A Measurement of Charge Symmetry Breaking in Inelastic np Scattering**, Department of Physics, Kent State University (Kent, OH: May 1997), **seminar**.
30. **A.K. Opper**, **Experimental Investigations of Charge Symmetry Breaking in the Nucleon–Nucleon System**, Department of Physics, University of Manitoba (Winnipeg, MN Canada: November 1997), **colloquium**.
31. **A.K. Opper** for the E704 Collaboration, **Charge Symmetry Breaking in $np \rightarrow d\pi^0$ Close to Threshold: E704.** TRIUMF Experiment Evaluation Committee, July, 1996.
32. **A.K. Opper**, **Measuring Charge Symmetry Breaking in the N–N system with SASP.** SASP Workshop, TRIUMF, July 1995, **invited talk**.
33. **A.K. Opper**, **Experimental Investigations of Charge Symmetry Breaking in the n–p System.** Ohio University, March 1995, **colloquium**.
34. **A.K. Opper**, **The SASP CHARGEX Program and the SASP CSB Experiment.** Part of the SASP Scientific Review. TRIUMF, December 1994, **invited talk**.
35. **A.K. Opper**, **The Physics Program of the DASS/SASP Facility at TRIUMF: From the Expected to the Exotic.** University of Alberta, May 1994, **colloquium**.
36. **A.K. Opper**, **Experimental Investigations of Charge Symmetry Breaking in the n–p System.** University of Kentucky, March 1994, **colloquium**.
37. **A.K. Opper**, **Commissioning Highlights and the Continuing Program of the DASS/SASP System.** *31th Western Regional Nuclear and Particle Physics Conference.* Lake Louise, Alberta, Canada (1994), **invited talk**.
38. **A.K. Opper**, **Experimental Investigations of Charge Symmetry Breaking in the n–p System.** University of Alberta, November 1993, **seminar**.
39. **A.K. Opper**, **Charge Symmetry Breaking in $np \rightarrow d\pi^0$.** University of Colorado, November 1993, **seminar**.
40. **A.K. Opper**, **Experimental Investigations of Charge Symmetry Breaking in the n–p System.** University of Pennsylvania, September 1993, **colloquium**.
41. **A.K. Opper**, **The (\vec{p}, \vec{p}') Spin Transfer Program at the Indiana University Cyclotron Facility.** University of New Hampshire, February 1991, **seminar**.
42. **A.K. Opper**, **Inelastic Proton–Scattering Spin Observables.** The George Washington University, February 1991, **seminar**.
43. **A.K. Opper**, **The (\vec{p}, \vec{p}') Spin Transfer Program at the Indiana University Cyclotron Facility.** Los Alamos Meson Physics Facility, January 1991, **seminar**.
44. **A.K. Opper**, **The (\vec{p}, \vec{p}') Spin Transfer Program at the Indiana University Cyclotron Facility.** University of Alberta, November 1990, **seminar**.

45. **A.K. Opper**, S.W. Wissink, A.D. Bacher, J. Lisantti, C. Olmer, R. Sawafta, E.J. Stephenson, and S.P. Wells. **The (\vec{p}, \vec{p}') Spin Transfer Program at the Indiana University Cyclotron Facility.** *7th Intl. Symp. of Polarization Phenomena in Nuclear Physics.* Paris, France, 607 (1990), **invited talk.**
46. **A.K. Opper**, **Inelastic Proton Scattering Spin Observables at 200 MeV.** Indiana University, June 1989, **seminar.**

F. Work in Progress

1. **A.K. Opper**, D.A. Hutcheon, E. Korkmaz, R. Abegg, C.A. Davis, R.M. Finlay, P.W. Green, L.G. Greeniaus, D.V. Jordan, G.V. O’Rielly, T.P. Porcelli, S.D. Reitzner, P.L. Walden, and S. Yen. **A precision measurement of charge symmetry breaking in $np \rightarrow d\pi^0$.** To be submitted to Physical Review C.