



# Morgan O. Wascko

The Blackett Laboratory  
Imperial College London  
London, SW7 2BW  
+44 207 594 3465 (office)  
[m.wascko@imperial.ac.uk](mailto:m.wascko@imperial.ac.uk)  
<https://www.imperial.ac.uk/people/m.wascko>  
<https://orcid.org/0000-0002-8348-444>

## Professional Interests:

My research is in the field of experimental fundamental particle physics, especially:

- Understanding the level and origin of the matter-antimatter asymmetry in the universe;
- Accelerator-based experiments that probe neutrino mass and flavour oscillations, searches for leptonic CP violation, and neutrino-nucleus scattering;
- Technology development for advanced neutrino detectors, and novel data analysis techniques.

I am working to improve the diversity of physics, and STEM fields more generally. I chair the Imperial College Physics Department's [Juno Transparency and Opportunity Committee](#).

## Employment:

2019–present: Professor of Physics, Imperial College London, UK.  
2016–2019: Reader in High Energy Physics, Imperial College London, UK.  
2016: Long Term Invited Fellow, High Energy Accelerator Research Lab (KEK), Japan.  
2011–2016: Lecturer & Senior Lecturer, Imperial College London, UK.  
2008–2013: [STFC Advanced Fellow](#), Imperial College London, UK.  
2006–2008: Fixed Term Research Lecturer, Imperial College London, UK.  
2001–2006: Postdoctoral Research Associate, Louisiana State University, USA.  
1990–1992: Undergraduate research technician, University of Chicago, USA.

## Education:

2001: Ph.D. (Physics) University of California, Riverside;  
Thesis: “[Study of the Moon Shadow in VHE Cosmic Rays with Milagrito](#)”  
1996: M.S. (Physics) University of California, Riverside  
1993: B.A. (Physics) University of Chicago

## Awards:

2015: Breakthrough Prize for Fundamental Physics (Laureate, as T2K member).  
2007: DOE P2 Star Award (SciBooNE, Fermilab).  
1998: American Physical Society Prize, APS Four Corners Sectional Meeting.

## External Funding:

2020: ERC AIDAInnova gas TPC R&D.	2014: STFC (Hyper-K, Institutional PI).
2019: STFC (DUNE, Institutional PI).	2012: STFC (Consolidated Grant, co-I).
2017: STFC (Special Grant, PI)	2010: Royal Society (Travel Grant, PI).
2015: STFC (Project R&D (HPgTPC), PI).	2009: STFC (Consolidated Grant, co-I).
2015: STFC (Special Grant, PI)	2007: Daiwa Foundation (Small Grant, PI).
2015: STFC (Consolidated Grant, co-I).	

## Research :

### *Neutrino Oscillation Physics*

Search for  $\bar{\nu}_\mu \rightarrow \bar{\nu}_e$  oscillation and search for CP violation with T2K. Discovery of  $\nu_\mu \rightarrow \nu_e$  neutrino oscillation with T2K. World-leading  $\nu_\mu$  and  $\bar{\nu}_\mu$  disappearance searches in  $\sim 1 \text{ eV}^2$  region (sterile neutrino searches) with SciBooNE and MiniBooNE.

Global oscillation analysis techniques; effects of neutrino-nucleus interactions on neutrino oscillation measurements, optimisation of neutrino detection technology for neutrino oscillation measurements.

### *Neutrino Detector R&D, Design, Construction*

Development of new high-pressure gas time-projection-chamber (HPgTPC) technology for near detector and neutrino interactions measurements, with application to DUNE (previously also Hyper-Kamiokande). Data acquisition development for DUNE.

### *Neutrino-Nucleus Interaction Physics*

Measurements of  $\nu$  and  $\bar{\nu}$  interaction cross sections on various target nuclei with T2K, MINERvA, DUNE, SciBooNE, MiniBooNE.

Development of novel data analysis techniques, especially model-independent measurements.

### *Study of the Shadow of the Moon in Cosmic Rays*

Analysis of the moon and sun shadows in cosmic rays with Milagro. First model-independent energy calibration of air showers using geomagnetic field as spectrometer. Search for antimatter in TeV cosmic rays.

### *Leadership positions held*

*T2K*: Executive Committee [2019–present];

**International Co-Spokesperson of T2K Collaboration [2015–2019];**

Neutrino Interactions Working Group (NIWG) Convener [2009–2014]; Near detector Convener (ND280 G4) [2010–2014]; Publication Board Chair [2012–2014].

*SciBooNE*: **Founder and Co-Spokesperson of SciBooNE Collaboration [2005–2014].**

*MiniBooNE*: Convener of Detector Calibration Working Group; Deputy Detector and Operations Coordinator.

### Scientific Collaboration Memberships:

2006–present: **T2K** (J-PARC, Japan)

[ 2015–2019: International Co-Spokesperson;

2009–2014: Neutrino Interaction Working Group Convener]

2018–present: **DUNE** (USA) [Code of Conduct Committee Chair]

2020–present: **MINERvA** (USA)

2015–present: **HPgTPC** (UK)

2013–present: **Hyper-Kamiokande** (Japan)

2005–2015: **SciBooNE** (FNAL, USA) [co-Spokesperson]

2003–2005 **FINeSSE** (FNAL, USA)

2001–2012: **MiniBooNE** (FNAL, USA)

1996–2003: **Milagro** (LANL, USA)

### Students :

2020–present: Supervising Ms Anežka Klustová, Imperial College (Ph.D. Candidate).

2020–present: Supervising Mr Yassine Alj Hakim, Imperial College (Ph.D. Candidate).

2018–present: Supervising Mr Edward Atkin, Imperial College (Ph.D. Candidate).  
2017–2020: Supervised Dr Toby Nonnenmacher, Imperial College (Ph.D. 2020).  
2015–2018: Supervised [Dr Clarence Wret](#), Imperial College (Ph.D. 2018, now at the University of Rochester, USA).  
2014–2017: Supervised Dr Wing Ma, Imperial College (Ph.D. 2017, now at DESY, DE).  
2012–2015: Supervised Dr Philip Hamilton, Imperial College (Ph.D. 2015, now at Imperial College London, UK).  
2011–2014: Supervised Dr Peter Sinclair, Imperial College (Ph.D. 2014, now at Commerzbank AG).  
2010–2013: Supervised Dr Samantha Short, Imperial College (Ph.D. 2013, now at [Moneyed](#), London, UK).  
2009–2012: Supervised Dr Patrick Masliah, Imperial College (Ph.D. 2012, now at BP, London, UK).  
2008–2011: Supervised Dr Pawel Guzowski, Imperial College (Ph.D. 2011, now at the University of Manchester, UK).  
2006–10: Supervised Dr Joseph Walding (Imperial, Ph.D. 2010; now at Royal Holloway University of London, UK ).

2021: Supervised Mr Ezequiel Badgen, Imperial College (BSc).  
2020: Supervised Mr Pietro Capuozzo, Imperial College (UROP).  
2019: Supervised Mr Keyu He, Imperial College (MSci).  
2019: Supervised Mr Shengan Shi, Imperial College (MSci).  
2019: Supervised Mr Ziv Zhou, Imperial College (UROP).  
2019: Supervised Mr Samuel Dobson, Imperial College (UROP).  
2019: Supervised Ms Sophie Devoe, Caltech (UROP).  
2018: Supervised Ms Maria Mironova, Imperial College (MSc).  
2018: Supervised Mr Talla Babou, MIT (IROP).  
2018: Supervised Mr Jonathan Zhang, UBC (IROP).  
2017: Supervised Ms Anisha Kadri, Imperial College (MSci).  
2017: Supervised Mr Alastair Lutton, Imperial College (MSci).  
2017: Supervised Ms Priyanka Sadhwani, Imperial College (MSci).  
2017: Supervised Mr Xiyuan Xia, Imperial College (MSci).  
2017: Supervised Ms Clara Bachorz, Imperial College (UROP).  
2017: Supervised Mr Seungho Han, Seoul National University (fIROP).  
2017: Supervised Ms Eshita Joshi, Imperial College (UROP).  
2015: Supervised Ms Eunice Chen, Imperial College (MSci).  
2015: Supervised Mr Azeem Khan, Imperial College (MSci).  
2015: Supervised Ms Georgina Sanjana, Imperial College (UROP).  
2015: Supervised Mr Alexander Leonard, Imperial College (UROP).  
2015: Supervised Mr Jacob Calcutt, Michigan State University (UROP).  
2014: Supervised Ms Tessa Carver, Imperial College (UROP).  
2014: Supervised Mr Timothee Gregoire, University of Paris Sud (UROP).  
2014: Supervised Mr Martin Nicole, Imperial College (UROP).  
2014: Supervised Mr Kiseong Lim, Seoul National University (IROP).  
2014: Supervised Mr Jasminder Sidhu, Imperial College (MSci).  
2014: Supervised Mr Muhsin Ali, Imperial College (MSci).  
2013: Supervised Mr Alex Hild, Imperial College (MSc).  
2013: Supervised Mr Mahesh Vidhyadharan, Imperial College (MSc).  
2013: Supervised Ms Pueh Leng Tan, Imperial College (MSc).  
2012: Supervised Mr Jan Greis, Imperial College (MSci).

2012: Supervised Mr Samuel Kessler, Imperial College (MSci).  
2012: Supervised Mr John Walker, Imperial College (MSc).  
2011: Supervised Mr Samuel Coquereau, Imperial Erasmus student (MSc).  
2007: Supervised Dr Daniel Orme (MSci).  
2002–06: Mentored Dr Serge Ouedraogo, (LSU Ph.D.).  
2005: Mentored Dr Ruth Toner (UROP).  
2003: Mentored Dr Jim Thome (UROP).  
2002: Mentored Dr Grady Schofield (UROP).

#### External Committees:

2019–present: [IPPP Steering Committee](#).  
2019–2020: [AIDAInnova Committee \(ERC\)](#).  
2018–2019: [STFC Particle Astrophysics Priority Evaluation Panel](#).  
2014–2017: [STFC Particle Physics Advisory Panel \(PPAP\)](#).  
2013–2017: [ICFA Neutrino Panel](#).  
International Organising Committee Member for 29th Int’l Conf on Neutrinos ([Neutrino 2020](#)).  
Chair, 9th Int’l Workshop on  $\nu$ -Nucleus Interactions in the Few GeV Region ( [NuInt14](#) ).  
Scientific Program Committee, 5th–8th Int’l Workshops on  $\nu$ -Nucleus Interactions ( [NuInt07](#),  
[NuInt09](#), [NuInt11](#), [NuInt12](#), [NuInt15](#) ).

#### External Teaching:

2014: [Lecturer, International Neutrino Summer School](#), St Andrews, Scotland.  
2011–2013: [Tutor, STFC HEP Summer School](#), Somerville College, Oxford and University of Warwick.  
2011: [Lecturer, International Neutrino Summer School](#), CERN.  
2009: Lecturer, “[Man-made Neutrinos](#),” [NEPPSR 2009](#), Cape Cod, MA, USA.  
2009: Lecturer, [45th Karpacz Winter School in Theoretical Physics](#).  
2001–2004: Organised and/or lectured in MiniBooNE summer student lecture series.

#### Internal Teaching:

2020–21: 1st Year Tutorials; Lecturer, PhD course on neutrino physics.  
2019–20: 3rd Year Lab (Wind Turbulence and Solar Radiation), 1st Year Tutorials; Research Interfaces; Lecturer, PhD course on neutrino physics.  
2018–19: 2nd Year Tutorials; Lecturer, PhD course on neutrino physics.  
2017–18: 3rd Year Tutorials, 1st Year Tutorials; Lecturer, PhD course on neutrino physics.  
2016–17: 2nd Year Tutorials, 3rd year lab Head of Experiment (Hall Effect/Photoelectric Effect).  
2015–16: Lecturer, PhD course on neutrino physics; 3rd Year Tutorials; Head of Experiment for 2nd year physics lab (Waves and Propagation).  
2014–15: Lecturer, PhD course on neutrino physics; Head of Experiment for 2nd year physics lab (Waves and Propagation); Lecturer, Advanced Particle Physics (4th year).  
2013–14: Lecturer, PhD course on neutrino physics; Lecturer, Advanced Particle Physics (4th year).  
2012–13: Lecturer, PhD course on neutrino physics; Lecturer, Advanced Particle Physics (4th year); Head of Experiment for 2nd year physics lab (Interferometry and Holography).  
2011–12: Lecturer, PhD course on neutrino physics; Head of Experiment for 2nd year physics lab (Interferometry and Holography).  
2007–11: Lecturer, PhD course on neutrino physics.

### External Service:

Editorial Board Member for [MDPI instruments](#), an open access journal.

Ad-hoc referee for European Journal of Physics C, Nuclear Instrumentation and Methods A, Modern Physics Letters A, Physical Review Letters, Physical Review C, Physical Review D, Physics Letters B, and Nature Communications.

Grant application reviewer for the Ministry of Science, Education, and Sports (Croatia), National Science Centre (Poland), ETH Zurich (CH), Science and Technology Facilities Council (UK).

2018: PhD viva external examiner for Dr Pratiksha Paudyal, University of Liverpool.

2017: PhD viva external examiner for Dr Enrico Scantamburlo, Geneva University.

2012: PhD viva external examiner for Dr Eike Frank, Bern University.

2011: PhD viva external examiner for Dr Jessica Mitchell, Cambridge University.

2011: PhD viva external examiner for Dr Chris Backhouse, Oxford University.

2010: PhD tribunal for Dr Jose Alcaraz, IFAE (Barcelona).

2010: PhD viva committee for Dr Antony Carver, University of Warwick.

### Internal Service:

2019–present: Chair of Physics Department’s Juno Opportunity and Transparency Committee.

2018–2019: member of Physics Department’s Juno Opportunity and Transparency Committee.

2020: PhD viva internal examiner for Albert Dow, Imperial College London.

2019: PhD viva internal examiner for Oliver Lantwin, Imperial College London.

2018: PhD viva internal examiner for Christian Laner, Imperial College London.

2017: PhD viva internal examiner for Adam Elwood, Imperial College London.

2015: Physics Department undergraduate admissions interviews (UCAS).

2012–present: Co-organiser of HEP postgraduate lecture course.

2014: PhD viva internal examiner for Edward Santos, Imperial College London.

2014: PhD viva internal examiner for Matthew Kenzie, Imperial College London.

2013: PhD viva internal examiner for Chris Parkinson, Imperial College London.

2012–present: HEP Group on-site First Aider.

2012: PhD viva internal examiner for Dr Robin Nandi, Imperial College London.

2012: PhD viva internal examiner for Dr Andri Alekou, Imperial College London.

2008–9: Imperial College Physics Department Exams Committee.

2007–10: Imperial College [HEP Seminar](#) Organiser.

### Outreach:

[My work has appeared in the popular press many times.](#)

2017: Appeared in University of Geneva video about T2K (<https://vimeo.com/271826403>).

2016: Appeared in Youtube video explaining J-PARC physics programme (<https://www.youtube.com/watch?v=QYUqiSjSuSY>).

2016: Appeared on Economist Science blog (<https://goo.gl/AtVmhe>).

2009–12 Imperial College Particle Physics Masterclass (Organiser & Lecturer).

2008 Imperial College Particle Physics Masterclass (Lecturer).

2007 Judge, Imperial College Centenary Science Challenge.

2005 Judge, Illinois State Science Fair.

2004–present Tour guide and host for school science class visits to Fermilab.

2003 “[Particle Physics in Plain English](#)”, for 2003 Lepton Photon Conference.

2001–2004 Young Particle Physicists.



### Experiment/Collaboration Proposals:

1. J. Monroe, *et al.*, [CERN P355] “[Proposal to Measure Hadron Scattering with a Gaseous High Pressure TPC for Neutrino Oscillation Measurements](#)” (APPROVED).
2. P. Hammacher-Baumann, *et al.*, “EOI: Near Detectors based on gas TPCs for neutrino long baseline experiments,” submitted to CERN SPSC, Jan. 2017.
3. K. Abe *et al.*, [T2K Collaboration], “[Proposal for an Extended Run of T2K to 20×1021 POT](#),” submitted to J-PARC PAC, June, 2016. (Stage 1 Status)
4. P. Beltrame *et al.*, [UK Hyper-K Collaboration], “UK Strategy for Long Baseline Neutrino Oscillation Experiments,” submitted to STFC PPRP, May 2014. (APPROVED)
5. A. Grant, *et al.*, [T2KUK Collaboration], “UK Contributions to the T2K Experiment: Case for Support”, submitted to PPARC PPRP Jan, 2006. (APPROVED)
6. SciBooNE Collaboration, “Bringing the SciBar Detector to the Booster Neutrino Beam”, submitted to FNAL PAC Nov 2005, [arXiv:hep-ex/0601022v1](https://arxiv.org/abs/hep-ex/0601022v1). (APPROVED)
7. MiniBooNE Collaboration, “Addendum to the MiniBooNE Run Plan: MiniBooNE Physics in 2006”, submitted to FNAL PAC, Oct 2004, <http://www-boone.fnal.gov/publicpages/loi.ps.gz>. (APPROVED)
8. FINeSSE collaboration, “A proposal for a Near Detector in the Booster Neutrino Beamline: FINeSSE”, hep-ex/0402007.

### Selected Peer Reviewed Publications:

(Full list of publications available from [INSPIRE](#).)

1. S.B. Jones, *et al.* [HPTPC Collaboration], “Off-Axis Characterisation of the CERN T10 Beam for low Momentum Proton Measurements with a High Pressure Gas Time Projection Chamber”, [Instruments 4 \(2020\) 3, 21](#).
2. K. Abe, *et al.*, [T2K Collaboration], “Constraint on the matter-antimatter symmetry-violating phase in neutrino oscillations”, [Nature 580, 339–344\(2020\)](#), [arXiv:1910.03887](https://arxiv.org/abs/1910.03887) [hep-ex].
3. L. Wan, *et al.* [Super-Kamiokande Collaboration], "Measurement of the neutrino-oxygen neutral-current quasielastic cross section using atmospheric neutrinos at Super-Kamiokande", [Phys.Rev. D99 \(2019\) no.3, 032005](#).
4. E.S. Pinzon Guerra, *et al.*, "Using world charged  $\pi^{\pm}$ -Nucleus scattering data to constrain an intranuclear cascade model", [Phys.Rev. D99 \(2019\) no.5, 052007](#).
5. K. Abe, *et al.*, [T2K Collaboration], "Search for CP violation in Neutrino and Antineutrino Oscillations by the T2K experiment with  $2.2 \times 10^{21}$  protons on target", [Phys. Rev. Lett. 121 \(2018\), 171802](#).
6. K. Abe, *et al.*, [T2K Collaboration], "Characterisation of nuclear effects in muon-neutrino scattering on hydrocarbon with a measurement of final-state kinematics and correlations in charged-current pionless interactions at T2K", [Phys.Rev. D98 \(2018\) no.3, 032003](#), [arXiv:1802.05078](https://arxiv.org/abs/1802.05078) [hep-ex].
7. A.A. Aguilar-Arevalo, *et al.*, [MiniBooNE Collaboration], "First Measurement of Monoenergetic Muon Neutrino Charged Current Interactions", [Phys.Rev.Lett. 120 \(2018\) no.14, 141802](#).
8. K. Abe, *et al.*, [T2K Collaboration], "Measurement of neutrino and antineutrino oscillations by the T2K experiment including a new additional sample of  $\nu_e$  interactions at the far detector", [Phys.Rev. D96 \(2017\) no.9, 092006](#).
9. J. Cao, *et al.*, [ICFA-Neutrino Panel], "Roadmap for the international, accelerator-based neutrino programme", [arXiv:1704.08181](https://arxiv.org/abs/1704.08181) [hep-ex].
10. K. Abe, *et al.* [T2K Collaboration], "Combined analysis of neutrino and antineutrino oscillations at T2K," [Phys. Rev. Lett. 118, 151801](#), [arXiv:1701.00432](https://arxiv.org/abs/1701.00432) [hep-ex].

11. P. Stowell, *et al.*, “NUISANCE: a neutrino cross-section generator tuning and comparison framework,” [arXiv:1612.07393 \[hep-ex\]](#), [JINST 12 P01016 2017](#).
12. C. Patrignani, *et al.*, [Particle Data Group], “Review of Particle Physics, §34.10 Accelerator Neutrino Detectors,” <http://pdg.lbl.gov>, [Chin.Phys. C40 \(2016\) no.10, 100001](#).
13. K. Abe, *et al.* [T2K Collaboration], “Measurement of Coherent  $\pi^+$  Production in Low Energy Neutrino-Carbon Scattering,” [Phys.Rev.Lett. 117 \(2016\) no.19, 192501](#), [arXiv:1604.04406 \[hep-ex\]](#).
14. K. Abe, *et al.* [T2K Collaboration], “Measurement of double-differential muon neutrino charged-current interactions on C8H8 without pions in the final state using the T2K off-axis beam,” [Phys.Rev. D93 \(2016\) no.11, 112012](#), [arXiv:1602.03652 \[hep-ex\]](#).
15. C. Wilkinson, *et al.*, “Testing charged current quasi-elastic and multinucleon interaction models in the NEUT neutrino interaction generator with published datasets from the MiniBooNE and MINERvA experiments,” [Phys.Rev. D93 \(2016\) no.7, 072010](#), [arXiv:1601.05592 \[hep-ex\]](#).
16. X.-G. Lu, *et al.* “Measurement of nuclear effects in neutrino interactions with minimal dependence on neutrino energy,” [Phys.Rev. C94 \(2016\) no.1, 015503](#), [arXiv:1512.05748 \[nucl-th\]](#).
17. K. Abe, *et al.* [T2K Collaboration], “Measurement of muon antineutrino oscillations with an accelerator-produced off-axis beam,” [Phys. Rev. Lett. 116, 181801](#), [arXiv:1512.02495 \[hep-ex\]](#).
18. K. Abe, *et al.* [Hyper-K Collaboration], “Physics potential of a long-baseline neutrino oscillation experiment using a J-PARC neutrino beam and Hyper-Kamiokande,” [PTEP 2015 \(2015\) 053C02, 10.1093/ptep/ptv061](#), [arXiv:1502.05199 \[hep-ex\]](#).
19. K. Abe, *et al.*, [T2K Collaboration], “Measurements of neutrino oscillation in appearance and disappearance channels by the T2K experiment with  $6.6 \times 10^{20}$  protons on target,” [Phys Rev D91 \(2015\), 072010](#).
20. K. Abe, *et al.*, [T2K Collaboration], “Search for short baseline  $\nu_e$  disappearance with the T2K near detector,” [Phys Rev D91 \(2015\) 5, 051102](#).
21. K. Abe, *et al.*, [T2K Collaboration], “Neutrino oscillation physics potential of the T2K experiment,” [PTEP 2015 \(2015\) no.4, 043C01](#), [arXiv:1409.7469 \[hep-ex\]](#).
22. K. Abe, *et al.*, [T2K Collaboration], “Measurement of the inclusive electron neutrino charged-current cross section on carbon with the T2K near detector,” [Phys. Rev. Lett. 113, 241803 \(2014\)](#), [arXiv:1407.7389 \[hep-ex\]](#).
23. K. Abe, *et al.*, [T2K Collaboration], “Precise Measurement of the Neutrino Mixing Parameter  $\theta_{23}$  from Muon Neutrino Disappearance in an Off-axis Beam,” [Phys Rev Lett 112 181801 \(2014\)](#).
24. D. Allan, *et al.*, [T2KUK Collaboration], “The Electromagnetic Calorimeter for the T2K Near Detector ND280,” [JINST 8 \(2013\) P10019](#).
25. K. Abe, *et al.*, [T2K Collaboration], “Evidence of Electron Neutrino Appearance in a Muon Neutrino Beam,” [Phys. Rev. D 88 032002 \(2013\)](#).
26. K. Abe, *et al.*, [T2K Collaboration], “Measurement of the inclusive  $\nu_\mu$  charged-current cross section on carbon in the near detector of the T2K experiment,” [Phys.Rev.D 87 092003 \(2013\)](#).
27. G. Cheng, *et al.*, [SciBooNE Collaboration], “Dual baseline search for muon antineutrino disappearance at  $0.1 \text{ eV}^2 < \Delta m^2 < 100 \text{ eV}^2$ ,” [Phys. Rev. D 86, 052009 \(2012\)](#).
28. A.A. Abdo, *et al.*, [Milagro Collaboration], “Observation and Spectral Measurements of the Crab Nebula with Milagro,” [Astrophys.J. 750 63 \(2012\)](#).
29. K.B.M. Mahn, *et al.*, [SciBooNE Collaboration], “Dual baseline search for muon neutrino disappearance at  $0.5 < \Delta m^2 < 40 \text{ eV}^2$ ,” [Phys.Rev. D 85 032007 \(2012\)](#).
30. K. Abe, *et al.*, [T2K Collaboration], “Indication of Electron Neutrino Appearance from an Accelerator-produced Off-axis Muon Neutrino Beam”, [Phys.Rev.Lett. 107 041801 \(2011\)](#).

31. G. Cheng, *et al.*, [SciBooNE Collaboration], “Measurement of K<sup>+</sup> production cross section by 8 GeV protons using high energy neutrino interactions in the SciBooNE detector”, [Phys.Rev.D. 84 012009 \(2011\)](#).
32. A.A. Aguilar-Arevalo, *et al.*, [MiniBooNE Collaboration], “Measurement of the neutrino component of an antineutrino beam observed by a non-magnetized detector”, [Phys.Rev.D 84 072005 \(2011\)](#).
33. Y. Nakajima, *et al.*, [SciBooNE Collaboration], “Measurement of Inclusive Charged Current Interactions on Carbon in a Few GeV Neutrino Beam”, [Phys.Rev.D. 83 012005\(2011\)](#).
34. A.A. Aguilar-Arevalo, *et al.*, [MiniBooNE Collaboration], “Measurement of  $\nu_{\mu}$ -induced charged-current charged pion production cross sections on mineral oil at  $E_{\nu} \sim 1$  GeV”, [Phys.Rev.D 83 052007 \(2011\)](#).
35. K. Abe, *et al.*, [T2K Collaboration], “The T2K Experiment ”, [Nucl. Instr. and Meth. A 659 106 \(2011\)](#).
36. Y. Kurimoto, *et al.*, [SciBooNE Collaboration], “Improved Measurement of Neutral Current Coherent  $\pi^0$  Production on Carbon in a Few GeV  $\nu$  Beam”, [Phys.Rev.D. 81 111102\(R\) \(2010\)](#).
37. A.A. Aguilar-Arevalo, *et al.*, [MiniBooNE Collaboration], “First Measurement of the Muon Neutrino Charged Current Quasielastic Double Differential Cross Section”, [Phys. Rev. D 81, 092005 \(2010\)](#).
38. Y. Kurimoto, *et al.*, [SciBooNE Collaboration], “Measurements of Neutral Current  $\pi^0$  Production on Carbon in a Few GeV  $\nu$  Beam”, [Phys.Rev.D 81 033004 \(2010\)](#).
39. A.A. Aguilar-Arevalo, *et al.*, [MiniBooNE Collaboration], “Measurement of the  $\nu_{\mu}$  Charged Current  $\pi^+$  to Quasi-Elastic Cross Section Ratio on Mineral Oil in a 0.8 GeV Neutrino Beam”, [Phys.Rev.Lett. 103 081801 \(2009\)](#).
40. A.A. Aguilar-Arevalo, *et al.*, [MiniBooNE Collaboration], “A Search for Electron Antineutrino Appearance at the  $\Delta m^2 \sim 1$  eV<sup>2</sup> Scale”, [Phys.Rev.Lett. 103 111801 \(2009\)](#).
41. A.A. Aguilar-Arevalo, *et al.*, [MiniBooNE Collaboration], “A Search for Muon Neutrino and Antineutrino Disappearance in MiniBooNE”, [Phys.Rev.Lett. 103 061802 \(2009\)](#).
42. A.A. Aguilar-Arevalo, *et al.*, [MiniBooNE Collaboration], “Unexplained Excess of Electron-Like Events From a 1-GeV  $\nu$  Beam”, [Phys.Rev.Lett.102, 101802 \(2009\)](#).
43. K. Hiraide, *et al.*, [SciBooNE Collaboration], “Search for Charged Current Coherent  $\pi$  Production on Carbon in a Few GeV  $\nu$  Beam”, [Phys.Rev.D.78, 112004 \(2008\)](#).
44. A.A. Aguilar-Arevalo, *et al.*, [MiniBooNE Collaboration], “The MiniBooNE Detector”, [NIM A 599 \(2009\) 28-46](#).
45. A.A. Aguilar-Arevalo, *et al.*, [MiniBooNE Collaboration], “First Observation of Coherent  $\pi^0$  Production in Neutrino Nucleus Interactions with  $E_{\nu} < 2$  GeV,” [Phys.Lett. B664:41-46, 2008, arXiv:0803.3423 \[hep-ex\]](#).
46. A.A. Aguilar-Arevalo, *et al.*, [MiniBooNE Collaboration], “Measurement of Muon Neutrino Quasi-Elastic Scattering on Carbon,” [Phys.Rev.Lett. 100, 032301 \(2008\), arXiv:0706.0926 \[hep-ex\]](#).
47. A.A. Aguilar-Arevalo, *et al.*, [MiniBooNE Collaboration], “A Search for Electron Neutrino Appearance at the  $\Delta m^2 \sim 1$  eV<sup>2</sup> scale,” [Phys.Rev.Lett. 98, 231801 \(2007\), arXiv:0704.1500v2 \[hep-ex\]](#).
48. Atkins, R. *et al.*, [Milagro Collaboration], “Observation of TeV Gamma Rays from the Crab Nebula with Milagro Using a New Background Rejection Technique,” [Astrophys. J. 595 \(2003\) 803-811, arXiv:astro-ph/0305038](#).
49. K. Wang *et al.*, [Milagro Collaboration], “A Survey of the Northern Sky for TeV Point Sources,” [Astrophys. J. 558 \(2001\) 477-481, arXiv:astro-ph/0103353](#).



50. Atkins, R. *et al.*, [Milagro Collaboration], “Milagrito, a TeV Air Shower Array,” NIM A449 (2000) 478, [arXiv:astro-ph/9912456](https://arxiv.org/abs/astro-ph/9912456).

### Technical Notes and Memoranda

1. I.S.J. Brice, et al., “Accelerator/Experiment Operations-FY2008,” [FERMILAB-TM-2421-DO](#), October 2008.
2. I.S.J. Brice, et al., “Accelerator/Experiment Operations-FY2007,” [FERMILAB-TM-2401-DO](#), October 2007.

*The following are internal documents. To obtain copies, contact the appropriate spokespersons.*

1. T2K Technical Note #193, “Implementation of additional NIWG cross section parameterizations for 2014 analyses”.
2. T2K Technical Note #192, “Cross section parameters for 2014 oscillation analysis”.
3. T2K Technical Note #113, “Implementation of the NIWG cross section parameterization”.
4. T2K Technical Note #108, “Cross section parameters for the 2012a oscillation analysis”.
5. T2K Technical Note #32, “NEUT systematic studies for T2K 2010a analysis”.
6. T2K Technical Note #30, “T2K 2010a neutrino interaction systematic error choices”.
7. T2K Technical Note #20, “T2K 2010a neutrino event rate predictions”.

1. SciBooNE Memo, “SciBooNE High Voltage Requirements”.

1. MiniBooNE Memo “Review of Low Energy Excess Studies”.
2. MiniBooNE Memo “Review of Dirt and Cosmic Backgrounds”.
3. MiniBooNE Technical Note #161, “ $CC1\pi^+$  Cross Section Measurement Using CCQE Flux Extraction”.
4. MiniBooNE Technical Note #157, “ $CC1\pi^+$  Analysis Using Single Ring Fitters”.
5. MiniBooNE Technical Note #131, “Proposal to Create A Charged Current Pion Open Box”.
6. MiniBooNE Technical Note #106, “Energy Scale of Muons in MiniBooNE”.
7. MiniBooNE Technical Note #105, “Commissioning the Scintillating Calibration Cubes”.
8. MiniBooNE Technical Note #101, “Light Scattering with Bare Fiber Events”.
9. MiniBooNE Technical Note #99, “Angular Resolution of Muons in MiniBooNE”.
10. MiniBooNE Technical Note #98, “Design and Commissioning of the Muon Tracker”.
11. MiniBooNE Technical Note #95, “BooNE Detector MC Baseline Parameters and Variants”.
12. MiniBooNE Technical Note #93, “The Supernova Trigger Hotspot”.
13. The MiniBooNE Exotic Physics Book.
14. MiniBooNE Memo “Calibration Laser Study: NHIT Spikes”.
15. MiniBooNE Memo “Calibration Laser Timing Study”.
16. MiniBooNE Memo, “400nm Laser Power Output Study”.

1. Milagro Memo 8-10-00, “Second Look at Delta Theta Systematic and the Moon Shadow”.
2. Milagro Memo #54, “Delta(theta) vs. theta systematic and the Moon Shadow”, June 1999.
3. Milagro Memo #18, “Electronic Drifts in the Igloos”, December 1997.
4. Milagro Memo #7, “Igloo Studies”, August 1997.

### Selected Conference Proceedings

1. Wascko, M.O., “Recent Measurements of Neutrino-Nucleus Quasi-Elastic Scattering,” XXIV International Conference on Neutrino Physics and Astrophysics, [arxiv:1107.3400 \[hep-ex\]](https://arxiv.org/abs/1107.3400).
2. Morfin, J.G., et al., “The Path Forward: Neutrino Induced Coherent Pion Production,” Sixth International Workshop on Neutrino-Nucleus Interactions (NuInt09), [doi:[10.1063/1.3274173](https://doi.org/10.1063/1.3274173)].

3. Wascko, M.O., “Measurements of Neutrino Cross Sections Near 1 GeV,” *45th Karpacz Winter School in Theoretical Physics, Acta Physica Polonica B, Vol 40, No 9, p 2421*, [arXiv:0908.1979\[hep-ex\]](#).
4. Wascko, M.O., “Nu Physics With SciBooNE,” *Neutrino 2008, J. Phys.: Conf. Ser. 136 042028*.
5. Wascko, M.O., “MiniBooNE’s First Neutrino Oscillation Result”, *PASCOS 07, AIP Conf.Proc.957:283-286*, 2007.
6. Wascko, M.O., “MiniBooNE CC1 $\pi$ + / CCQE Cross Section Ratio”, 2006, [hep-ex/0602050](#).
7. Wascko, M.O., “Prospects for MiniBooNE Antineutrino Running”, 2006, [hep-ex/0602051](#).
8. Wascko, M.O., “Prospects for MiniBooNE Antineutrino Running”, 2005, [hep-ex/0511002](#).
9. Wascko, M.O., “Measuring Charged-Current  $\nu_{\mu}$  Interactions in MiniBooNE”, 2004, [hep-ex/0412008](#).
10. Wascko, M.O., “Study of the Moon & Sun Shadows in VHE Cosmic Rays,” *Proc. 26th ICRC, (1999)*, [astro-ph/9906388](#).
11. Wascko, M.O., “First Results From Milagrito: A Prototype Gamma Ray Observatory,” *American Astronomical Society Meeting #193, Austin, Texas, January 1999*.

### Conference Presentations

1. “Neutrino physics, with a view of heavy neutral leptons,” invited talk, *17th SHiP Collaboration Meeting (Open Session)*, NIKHEF, NL, 5 June, 2019.
2. “T2K Results, Status, and Plans,” plenary talk, *XXVIII International Conference on Neutrino Physics and Astrophysics*, 4-9 June, 2018.
3. “R&D Towards High Pressure Gas TPC Neutrino Detector,” NNN17, 18th International Workshop on Next generation Nucleon Decay and Neutrino Detectors (NNN17), University of Warwick, UK, October 26, 2017.
4. “Data releases and complications. Do we need unfolding?”, 11th International Workshop on Neutrino-Nucleus Scattering in the Few-GeV Region (NuInt17), Toronto, CA, June 24, 2017.
5. “T2K Status and Neutrino Interaction Measurements,” *Neutrino Frontier Workshop*, Nov 29 2016, Kanazawa, Japan.
6. “HPTPC R&D in the UK for CPV,” *Workshop on Neutrino Near Detectors based on gas TPCs*, CERN, Nov 9, 2016.
7. “Neutrino-Nucleus Cross-Section Experiments,” *PhyStat-nu*, Kavli-IPMU, Kashiwa, Japan, 2016.
8. “Current Program at J-PARC and Projections,” *Third International Meeting for Large Neutrino Infrastructures*, KEK, Tsukuba, Japan, 2016.
9. “Towards a High Pressure Gas TPC” *5th Open Hyper-Kamiokande Meeting*, UBC, CA, 2014.
10. “High Pressure Gas TPC R&D,” *2nd Hyper-Kamiokande EU Meeting*, CERN, CH, 2014.
11. “Future Long Baseline Neutrino Experiments and Detectors,” invited talk, *Institute of Physics Joint APP and HEPP Meeting*, 9 April 2014, RHUL, UK.
12. “Neutrino-Nucleus Interaction Models and Measurements,” *GDR Neutrinos 2013*, Nov 11, 2013, IPNL, Lyon, France.
13. “Overview of, and Motivations for Studying, Neutrino Interactions,” invited talk, *American Physical Society April Meeting*, 15 April 2013, Denver, CO, USA.
14. “Other Opportunities in Neutrino Physics,” invited talk, *PPAP UK Community Meeting*, Birmingham University, 18 September, 2012.
15. “Neutrino Physics with SciBooNE”, poster presentation, *IOP HEPP Meeting*, Queen Mary University of London, April 2-4 2012.
16. “Search for Sterile Neutrinos with MiniBooNE,” invited talk, *IOP Half Day Meeting on Neutrino Physics*, Queen Mary University of London, 18 April, 2011.

17. "[Neutrino and Antineutrino Cross Section Measurement Issues](#)," invited talk, [NuInt11](#), Dehradun, India, 11 March, 2011.
18. "[Neutrino and Antineutrino Oscillation Results from MiniBooNE](#)," invited talk, [Workshop on Neutrino Physics](#), Institute for the Physics and Mathematics of the Universe (IPMU), University of Tokyo, 8 November, 2010.
19. "A Novel Approach to the Search for CP Violation in Neutrinos: DAE $\delta$ ALUS," [UK Neutrino Network Meeting](#), University of Manchester, 29 September 2010.
20. "[Quasi-Elastic Scattering Measurements](#)," plenary talk, [XXIV International Conference on Neutrino Physics and Astrophysics](#), 14-19 June, 2010.
21. "Cross Sections After SciBooNE and T2K," invited talk, [CERN PS Neutrino Workshop](#), 17-18 March, 2010.
22. "The Path Forward," invited talk, [NuInt09](#), Sitges, Spain, May 2009.
23. "[The State of the Neutrino Mass Spectrum](#)," invited talk, [APS April Meeting](#), Denver, CO, USA, May 2009.
24. "[Neutrino Physics with SciBooNE](#)," submitted talk, APS April Meeting, Denver, CO, USA, May 2009.
25. "[Working on an Experiment Half a World Away](#)," invited talk, APS April Meeting, Denver, CO, USA, May 2009.
26. "Update on MiniBooNE Low Energy Excess", plenary talk, [Neutrino Frontiers 2008](#), Minneapolis, MN, USA, October 2008.
27. "Physics from the BooneEs," plenary talk, [Fermilab User's Meeting 2008](#), FNAL, Batavia, IL, USA, June 2008.
28. "Nu Physics with SciBooNE", plenary talk, Elba Workshop on Electron-Nucleus Scattering ([Elba X](#)), Elba, Italy, June 2008.
29. "Nu Physics with SciBooNE", XXIII International Conference on Neutrino Physics and Astrophysics ([Neutrino2008](#)), Christchurch, NZ, May 2008.
30. "[Update on MiniBooNE Neutrino Oscillation Result](#)", Beams for European Neutrino Experiments Meeting ([BENE 07](#)), CERN, Geneva, CH, Oct 2007.
31. "First Data from SciBooNE", European Physical Society Conference on High Energy Physics ([EPS HEP 07](#)), Manchester, UK, Jul. 2007.
32. "First Oscillation Results from MiniBooNE", 13<sup>th</sup> International Symposium on Particles, Strings and Cosmology ([PASCOS'07](#)), Imperial College, Jul. 2007.
33. "Searching for New Physics In Neutrino Experiments", plenary talk, [Aspen Winter Conference 2007](#), Aspen CO, Jan. 2007.
34. "First Look At MiniBooNE Antineutrino Data", plenary talk, [Neutrino Beams and Instrumentation Workshop](#), CERN, Sep 2006.
35. "Neutrino Cross Section Experiments," plenary talk, [NuFact06](#) Workshop, Irvine, CA, Aug 2006.
36. "[Antineutrino Measurements with MiniBooNE](#)," parallel talk, [PANIC05](#), Santa Fe, NM, October, 2005.
37. "Antineutrino Measurements with MiniBooNE," plenary talk, [NuInt05](#) Workshop, Okayama, Japan, September, 2005.
38. "MiniBooNE  $CC1\pi^+$ /CCQE Cross Section Ratio," plenary talk, [NuInt05](#) Workshop, Okayama, Japan, September, 2005.
39. "Antineutrino Measurements with MiniBooNE," parallel talk, [NuFact05](#) Workshop, Frascati, Italy, June, 2005.
40. "Measuring  $CC1\pi^+$  Events in MiniBooNE," [DNP 2004](#), Chicago, IL, October, 2004.
41. "Measuring Charged-Current  $CC1\pi^+$  Interactions in MiniBooNE," [DPF 2004](#), Riverside, CA, August, 2004.

42. "The Latest from MiniBooNE," plenary talk, The Tevatron Connection Symposium, FNAL, August, 2004.
43. "Quo Vadis, MiniBooNE?" plenary talk, [Fermilab Users Meeting 2004](#), FNAL, May, 2004.
44. "Short-baseline Accelerator Neutrinos," plenary talk, Aspen Winter Conf. 2004, Aspen, CO, January, 2004.
45. "Neutrino Physics with FINeSSE," invited talk, CIPANP 2003, NY, NY, May, 2003.
46. "MiniBooNE: Up and Running," plenary talk, [Neutrinos and Implications for Physics Beyond the Standard Model](#), Stony Brook, NY, 11 October, 2002.
47. "MiniBooNE Update," plenary talk, XVI Rencontre de Physique, LaThuile, Italy, 5 March, 2002.
48. "Results from Milagrito on TeV Emission from AGN," [American Physical Society Four Corners Sectional Meeting](#), Tucson, AZ, 1 October, 1999
49. "Study of The Shadow of the Moon and Sun in VHE Cosmic Rays," 26th ICRC, Salt Lake City, UT, USA, August, 1999.
50. "First Results from Milagrito," UNM/LANL Astrophysics Symposium, Albuquerque, NM, USA, 30 April, 1999.
51. "First Results from Milagrito," [American Astronomical Society Meeting #193](#), Austin, TX, USA, January, 1999.
52. "Study of the Shadow of the Moon with Milagro," IGPP Annual Meeting, Los Alamos, NM, USA, September 1998.
53. "The Milagro Gamma Ray Observatory," [American Physical Society Four Corners Sectional Meeting](#), Albuquerque, NM, 4 April, 1998, Note: Won APS Prize for Best Student Presentation.

#### Colloquia and Seminars

1. "Using Neutrino Oscillation to Study the Matter/Antimatter Asymmetry of the Universe" Physics Colloquium University of Lancaster, May 2018.
2. "Neutrino Interaction Studies and Issues at T2K," Particle and Nuclear Theory Seminar, J-PARC, Oct 20, 2016.
3. "Using Neutrino Oscillation to Study the Matter/Antimatter Asymmetry of the Universe" Special Seminar at University of California, Irvine, Feb 2016.
4. "Neutrino Scattering Results From T2K," Joint Theoretical and Experimental Seminar (Wine and Cheese Seminar), FNAL, 7 November, 2014.
5. "Using Neutrino Oscillation to Study the Matter-Antimatter Asymmetry of the Universe," [Physics Colloquium, University of Chicago](#), 6 Jun 2013.
6. "Search for Sterile Antineutrinos with  $\Delta m^2 \sim 1\text{eV}^2$  with SciBooNE and MiniBooNE," HEP Seminar, University of Birmingham, 16 Jan 2013.
7. "Search for Sterile Neutrinos with  $\Delta m^2 \sim 1\text{eV}^2$  with SciBooNE and MiniBooNE," LHEP Seminar, University of Bern, 14 March 2012.
8. "First Nue Appearance Results from T2K," HEP Seminar, University College London, 17 Feb 2012.
9. "Search for Sterile Neutrinos with  $\Delta m^2 \sim 1\text{eV}^2$  with SciBooNE and MiniBooNE," HEP Seminar, Queen Mary University of London, 21 Oct 2011.
10. "Search for Sterile Neutrinos with  $\Delta m^2 \sim 1\text{eV}^2$  with SciBooNE and MiniBooNE," HEP Seminar, Royal Holloway University of London, 12 Oct 2011.
11. "First Nue Appearance Results from T2K," Particle Physics Seminar, Nevis Labs, Columbia University, 15 Jun 2011.
12. "Search for Sterile Neutrinos with  $\Delta m^2 \sim 1\text{eV}^2$  with SciBooNE and MiniBooNE," HEP Seminar, Imperial College London, 1 June 2011.
13. "First Nue Appearance Results from T2K," Particle Physics Seminar, Caltech, 25 April 2011.

14. "A Novel Approach to the Search for CP Violation in Neutrinos: DAE $\delta$ ALUS," Particle Physics Seminar, University of Sheffield, 12 January 2011.
15. "Using Neutrino Oscillation to Study the Matter-Antimatter Asymmetry of the Universe," [Physics Colloquium, Northeastern University](#), 29 Nov 2010.
16. "[Quasi-Elastic Scattering Measurements](#)," PPD/Neutrino Department Seminar, Fermilab, 16 September, 2010.
17. "A Novel Approach to the Search for CP Violation in Neutrinos: DAE $\delta$ ALUS," Seminar, Cockcroft Institute for Accelerator Research, 10 June 2010.
18. "Measurements of Neutral Current Neutral Pion Production by Neutrinos with SciBooNE," HEP Seminar, Imperial College London, 9 June 2010.
19. "Measurements of Neutral Current Neutral Pion Production by Neutrinos with SciBooNE," PPD Seminar, Rutherford Appleton Lab, 26 May 2010.
20. "Measurements of Neutral Current Neutral Pion Production by Neutrinos with SciBooNE," [High Energy Physics Seminar](#), Tufts University, 8 Mar 2010.
21. "[Measurements of Neutral Current Neutral Pion Production by Neutrinos with SciBooNE](#)," [High Energy Experimental Seminar](#), Boston University, 5 Mar 2010.
22. "The Hunt For the Last Neutrino Mixing Angle," [Physics Colloquium, Northeastern University](#), 18 Feb 2010.
23. "Measurements of Neutral Current Neutral Pion Production by Neutrinos with SciBooNE," Nuclear Physics Seminar, University of Kentucky, 11 Feb 2010.
24. "Measurements of Neutral Current Neutral Pion Production by Neutrinos with SciBooNE," [High Energy Experimental Seminar, Rutgers University](#), 2 Feb 2010.
25. "Measurements of Neutral Current Neutral Pion Production by Neutrinos with SciBooNE," [HEP Seminar, University College London](#), 22 Jan 2010.
26. "[Measurements of Neutral Current Neutral Pion Production by Neutrinos with SciBooNE](#)," HEP Seminar, Cambridge University, 19 Jan 2010.
27. "Searching for New Physics with the Fermilab Booster Neutrino Beam," HEP Seminar, University of Maryland, 14 Oct 2009.
28. "[The Hunt For the Last Neutrino Mixing Angle](#)," [Physics Colloquium](#), University of Wisconsin, 4 Sep 2009.
29. "Neutrino Physics with SciBooNE and T2K," [High Energy Physics Seminar, Columbia University](#), 10 Mar 2009.
30. "Neutrino Physics with SciBooNE and Beyond," High Energy Physics Seminar, Yale University, 16 Feb 2009.
31. "[Search For Charged Current Coherent Pion Production at SciBooNE](#)," [Particle Physics Seminar, University of Birmingham](#), 3 Dec 2008.
32. "First Neutrino Oscillation Results From MiniBooNE," [EPP Seminar](#), University of Edinburgh, 14 Dec 2007.
33. "First Neutrino Oscillation Results From MiniBooNE," [PPE Seminar](#), University of Glasgow, 13 Dec 2007.
34. "Neutrino Physics with SciBooNE," LNS Lunchtime Seminar, Massachusetts Institute of Technology, 4 Dec 2007.
35. "First Neutrino Oscillation Results From MiniBooNE," HEP Seminar, University of Liverpool, 15 Nov 2007.
36. "First Neutrino Oscillation Results From MiniBooNE," Particle Physics and Particle Astrophysics Seminar, University of Sheffield, 14 Nov 2007.
37. "First Neutrino Oscillation Results From MiniBooNE," HEP Seminar, Sapienza Università di Roma, 9 Nov 2007.



38. "First Neutrino Oscillation Results From MiniBooNE," HEP Seminar, Rutherford Appleton Laboratory, 16 May 2007.
39. "First Neutrino Oscillation Results From MiniBooNE," HEP Seminar, University College London, 11 May 2007.
40. "First Neutrino Oscillation Results From MiniBooNE," HEP Seminar, University of Warwick, 10 May 2007.
41. "First Neutrino Oscillation Results From MiniBooNE," HEP Seminar, Oxford University, 8 May 2007.
42. "First Neutrino Oscillation Results From MiniBooNE," Physics Department Colloquium, Cal State Long Beach, 30 April 2007.
43. "First Neutrino Oscillation Results From MiniBooNE," Physics Research Conference, Caltech, 26 April 2007.
44. "First Neutrino Oscillation Results From MiniBooNE," HEP Bohr Lunch Seminar, University of Manchester, 13 April 2007.
45. "First Neutrino Oscillation Results From MiniBooNE," HEP Seminar, Imperial College, 12 April 2007.
46. "Low Energy Neutrino Physics with SciBooNE: A New Experiment at Fermilab," UTeV Seminar, Fermilab, 7 July 2006.
47. "MiniBooNE  $CC1\pi^+$ /CCQE Cross Section Ratio," HEP Seminar, Imperial College, London, 17 November, 2005.
48. "MiniBooNE  $CC1\pi^+$ /CCQE Cross Section Ratio," HEP Seminar, University of Chicago, 7 November, 2005.
49. "MiniBooNE  $CC1\pi^+$ /CCQE Cross Section Ratio," Joint Theoretical and Experimental Seminar (Wine and Cheese Seminar), FNAL, 7 October, 2005.
50. "The Physics of Neutrino Oscillations and MiniBooNE," Physics Department Colloquium, Virginia Polytechnic Institute and State University, 2 September, 2005.
51. "Neutrino Oscillations & MiniBooNE," Phys. & Astro. Dept. Seminar, Univ. of Delaware, 28 February, 2005.
52. "Neutrino Oscillations & MiniBooNE," Phys. Dept. Colloquium, Texas A& M Univ., 19 November, 2004.
53. "Search for Antiprotons in VHE Cosmic Rays with Milagrito," Nuclear and Particle Physics Seminar, Columbia University, 22 October, 2001.
54. "Search for Antiprotons in VHE Cosmic Rays with Milagrito," HEP Seminar, The Ohio State University, 6 June, 2001.
55. "Search for Antiprotons in VHE Cosmic Rays with Milagrito," Joint Theoretical and Experimental Seminar (Wine and Cheese Seminar), FNAL, 4 May, 2001.
56. "Search for Antiprotons in VHE Cosmic Rays with Milagrito," High Energy Physics Seminar, Louisiana State University, November, 2000.
57. "Search for Antiprotons in VHE Cosmic Rays with Milagrito," High Energy Physics and Cosmology Seminar, University of Utah, November, 2000.
58. "Studying Very High Energy Astrophysics with the Milagro Gamma Ray Telescope," Los Alamos Student Association Colloquium, 24 September, 1999.