

# ALAN W. P. POON

Lawrence Berkeley National Laboratory  
One Cyclotron Road, Berkeley, CA 94720, USA

EMAIL: [AWPoon@lbl.gov](mailto:AWPoon@lbl.gov) TEL: +1 (510) 495-2467 FAX: +1 (510) 486-6738

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## EDUCATION

*The University of British Columbia*

1991-1998 PhD, Neutrino Physics  
1987-1991 BSc (First Class Honours), Physics

## POSITIONS HELD

*Lawrence Berkeley National Laboratory*

2017-date Deputy Director – Nuclear Science Division  
2014-date Group Leader – Berkeley Low-Background Facility  
2009-date Group Leader – Neutrino Astrophysics  
2003-date Staff Scientist (Career)  
2001-2003 Staff Scientist (Term)  
1998-2001 Postdoctoral Fellow

*Current research:* Search for lepton-number violation and Weakly Interacting Massive Particles in the MAJORANA experiment; probe of the neutrino mass scale down to 200 meV in the KATRIN experiment; development of nuclear instrumentation, semiconductor detectors, electronics and ultrapure materials for non-accelerator underground experiments.

*Completed projects:* Neutrino oscillation and solar neutrino research in Sudbury Neutrino Observatory (SNO) and KamLAND experiments. Achievements of these experiments include the discovery of neutrino flavor transformation, the resolution of the Solar Neutrino Problem, and the first demonstration of the oscillatory signature of neutrino oscillations in reactor neutrinos, which were recognized in the 2016 Breakthrough Prizes in Fundamental Physics. SNO was also recognized in the Nobel Prize in Physics in 2015.

## HONORS & AWARDS

2015 Breakthrough Prizes in Fundamental Physics (SNO and KamLAND experiments)  
2014 Fellow, American Physical Society  
2008 Visiting Faculty Fellowship, Forschungszentrum Karlsruhe  
2006 John C. Polanyi Award (awarded to SNO Collaboration), Govt. of Canada  
2003 Center of Excellence Foreigner Research Fellowship, Govt. of Japan  
2000, 2001 Outstanding Performance Awards, LBNL  
1991 6<sup>th</sup> Prize in Canadian Association of Physicists National Prize Examination  
1991 Arthur Crooker Prize (top experimental graduate), UBC  
1988-1997 Gordon Merritt Schrum Memorial Scholarship, Thomas & Evelyn Hebb Memorial Scholarship, and other merit-based scholarships (5); Science Scholar (Top-20 student in Faculty); and University Graduate Fellowship (5 years), UBC

## **PROFESSIONAL SERVICES (SELECTED ACTIVITIES)**

### ***LEGEND Collaboration***

2018-date Member, Institutional Board  
2018-date Member, Technical Council  
2018-date Co-chair, Speakers' Bureau

### ***MAJORANA Collaboration***

2009-date Member, Executive Council (Chair, 2011-2012)  
2010-date Co-chair, Young Member Mentoring Committee  
2009-date Group Leader, Detector Group

### ***KATRIN Collaboration***

2010-date Chair, Publication Committee  
2009-date Member, Collaboration Board

### ***SNO Collaboration***

2003-date Management Board (Chair in 2008; elected junior rep in 2000)  
2000-2008 Physics Analysis Coordinator (2003-2008)  
2000-2003 Coordinator of various working groups: Data Reduction (2000-2001), Low Energy Background (2001-2003), Neutral-Current Detector Physics (2002-03)

### ***American Physical Society, Physics Teacher Education Coalition, American Association for the Advancement of Science***

2016-2017 Member, Program Committee of APS Division of Nuclear Physics  
2015 Chair, Selection Committee of APS Prize to a Faculty Member for Research in an Undergraduate Institution (vice-chair in 2014)  
2015-date Member, Education Committee of APS Division of Nuclear Physics  
2013 Member, Working Group to review the US Next Generation Science Standards  
2012-2014 Member, APS Committee on Education (and K12 Subcommittee)  
2013 Member, The Robert Noyce Teacher Scholarship Selection Committee

### ***Peer Review***

2017 Member, SuperCDMS SNOLAB Director's Review  
2014-2017 Member, LUX-ZEPLIN (LZ) conceptual, preliminary design and final design review committees, and CD2 and CD3 Director's review committees  
2009-2012 Member, SNOLAB Experimental Advisory Committee  
2006-date Reviewer, research proposal reviews for national funding agencies (including Canada, France, the Netherlands, Slovakia, and United States)  
2005-date Reviewer, nomination review for the Canada Research Chairs programs  
2004-2009 Panelist, US Civilian Research & Development Foundation review panels

### ***Conference, Workshop and Town Meeting Organization***

2017 Co-chair, International Workshop on Germanium Detector Technology 2017  
2014-date Member, International Scientific Advisory Committee, Low Radioactivity Techniques (LRT) 2015, 2017 and 2019 workshops  
2012 Member, Organizing Committees, Fundamental Symmetries and Neutrinos (FS&N) Workshop and pre-Town Meeting at DNP2012.  
2009-date Scientific Secretary, International Workshop on Double Beta Decay & Neutrinos

## **EDUCATION & OUTREACH (SELECTED ACTIVITIES)**

- 2013-2014 Member, Local Organizing Committee, Conference for Undergraduate Women in Physics 2014 in Berkeley
- 2011-date Chair, Organizing Committee of LBNL's annual Nuclear Science Day for Girl Scouts and Boy Scouts
- 2011-date Member, Advisory Council, Community Resources for Science (non-profit organization in Berkeley); local classroom visits as a volunteer since 2002
- 1997 Member, Evaluation Team of the International Physics Olympiad

## **PLENARY TALKS, PUBLIC LECTURES AND INVITED SEMINARS (SELECTED)**

- 2018 *Neutrinos: The Chameleon in the Elementary Particle Zoo*, after-dinner talk at the Northern California Chapter of Health Physics Society, Mountain View, CA, USA
- 2017 *Measuring the Neutrino Mass in the World's Largest Ultra-High Vacuum Chamber*, Physics Colloquium, Queen's University, Kingston, ON, Canada
- 2017 *Initial Results from MAJORANA DEMONSTRATOR*, Nuclear and Chemical Sciences Division Colloquium, Lawrence Livermore National Laboratory, CA, USA
- 2017 *Experimental Summary: Neutrinos*, summary plenary talk at Rencontres du Vietnam (Neutrinos), Quy Nhon, Vietnam
- 2016 *Low-Background Challenges and Solutions in Double-Beta Decay Experiments with Discrete Detectors*, plenary talk at 3<sup>rd</sup> Berkeley Workshop on the Direct Detection of Dark Matter, Berkeley Lab, Berkeley, CA, USA
- 2016 *Laboratory Measurements of Neutrino Mass*, invited talk at Neutrinos and Light Particles in Cosmology Workshop at UC Berkeley, Berkeley, CA, USA
- 2015 *SNO - Nobel Prize 2015*, plenary talk at Sino-German Germanium Detector Technology Symposium, Ringberg Castle, Bavaria, Germany
- 2014 *Erich Vogt: an Inspirational Physics Professor*, invited talk at the Erich Vogt memorial session at 2014 Canadian Association of Physicists Congress, Sudbury, ON, Canada
- 2014 *KATRIN*, invited talk at International Symposium on Advances in Astroparticle Physics, Kingston, ON, Canada
- 2013 *Solar Neutrinos and SNO*, invited talk at Perspectives in Neutrinos and Fundamental Symmetry Symposium, Seattle, WA, USA
- 2013 *Nuclear Physics Connections*, plenary talk at Intensity Frontier "Snowmass" Neutrino Subgroup Workshop 2013 at SLAC, Stanford, CA, USA
- 2012 *Fundamental Symmetries and Neutrinos*, summary plenary talk at APS DNP-2012 Town Meeting, Newport Beach, CA, USA
- 2012 *The MAJORANA Experiment*, plenary talk at Fundamental Symmetries and Neutrinos Long-Range Plan Workshop, Chicago, IL, USA
- 2008 *Backgrounds in Underground Experiments*, plenary talk at the Overseas Chinese Physics Association Underground Science Conference, Hong Kong
- 2005 *Review of Solar and Reactor Neutrino Experiments*, plenary talk at Lepton-Photon 2005, Uppsala, Sweden
- 2003 *The Nu Odyssey 2002 – SNO & KamLAND*, opening plenary talk at Institute of Physics Particle Physics Conference 2003, Durham, UK
- 2001 *Neutrino Observations from the Sudbury Neutrino Observatory*, plenary talk at the International Nuclear Physics Conference 2001, Berkeley, CA, USA

## POSTDOCTORAL FELLOWS AND STUDENTS

### CURRENT POSTDOCS:

Dr. Giovanni Benato  
Dr. Alexey Drobizhev  
Dr. Bjoern Lehnert  
Dr. Jordan Myslik  
Dr. Michael Willers (Alexander von Humboldt Foundation Feodor Lynen Fellow)

### FORMER POSTDOCS (ADVISED AND CO-ADVISED):

Dr. Nicolas Abgrall (Staff at Lawrence Berkeley National Laboratory)  
Dr. Adam Bradley (Staff at Rigetti Computing)  
Dr. Charles Currat (Senior Vice President of Risk Analysis at Wells Fargo)  
Prof. Jason Detwiler (Assistant Professor at U of Washington)  
Prof. Reyco Henning (Associate Professor at U of North Carolina, Chapel Hill)  
Dr. Lukas Hehn (small business operator, Tübingen, Germany)  
Prof. James Loach (Associate Professor at Shanghai Jiaotong U, China; now data scientist, Senseye, UK)  
Prof. Ryan Martin (Assistant Professor at Queen's University, Canada)  
Prof. Susanne Mertens (Tenure-track faculty at Max-Planck-Institut für Physik München and Technische Universität München)  
Dr. Gersende Prior (Associate Scientist at Laboratório de Instrumentação e Física Experimental de Partículas, Portugal)  
Prof. Nikolai Tolich (Lecturer at U of Washington)

### CURRENT & FORMER GRADUATE STUDENTS:

Dr. Marc Bergevin (PhD advisee, now staff at Lawrence Livermore National Lab)  
Dr. Joseph Ching (MSc advisee, now postdoc at Pacific Northwest National Lab)  
Dr. Stefan Groh (3-month Karlsruhe House of Young Scientists PhD exchange fellow)  
Mr. Martin Ha Minh (1-month DAAD exchange Diplom student from TU Munich)  
Mr. Zach Harvey (current PhD advisee)  
Dr. Alex Hegai (1-year DAAD exchange PhD student from U of Tuebingen)  
Dr. Markus Hoetzel (6-month Karlsruhe House of Young Scientists PhD exchange fellow)  
Mr. Go Ito (6-month JSPS exchange PhD student from Osaka University)  
Dr. Marco Kleesiek (6-month Karlsruhe House of Young Scientists PhD exchange fellow)  
Mr. Alex Pan (SFSU MSc advisee, now data scientist)  
Mr. Xingyu Pan (6-month exchange PhD student from Tsinghua University)  
Dr. Christopher Schmitt (6-month DAAD exchange PhD student from U of Tuebingen)  
Dr. Patrick Tsang (MSc advisee, now scientist at SLAC)  
Mr. Weihe Zeng (6-month exchange PhD student from Tsinghua University)

### CURRENT & FORMER UNDERGRADUATE RESEARCH STUDENTS:

Ms. Sarah Bennedsen (now Senior Physics Assistant at Mevion Medical Systems)  
Ms. Alyssa Bowes (now Research Engineer at VIP Sensors)  
Mr. Ankur Dhar (now PhD student at Okinawa Institute of technology)  
Mr. Kai Dolde (3-month DAAD fellowship student, now PhD at DKFZ Heidelberg)  
Ms. Sophia Elia (UCB Haas Scholar, now PhD student at Berlin Mathematical School)  
Ms. Erin Hansen (now PhD student at Drexel U)  
Mr. Anton Huber (3-month DAAD fellowship student, now PhD at KIT)

Dr. Kai Hudek (now research scientist at U of Maryland)  
Mr. Marc Korzeczek (3-month DAAD fellowship student, now PhD at KIT)  
Mr. James Mulligan (now PhD student at Yale)  
Mr. Fady Nakhla (current UCB undergraduate student)  
Mr. Khang Nguyen (now PhD student at U of Washington)  
Dr. Noah Oblath (now staff scientist at PNNL)  
Dr. Kathy Opachich (now Principal Scientist at National Security Technologies, LLC)  
Prof. Michelle Kuchera (now Assistant Professor of Physics at Davidson College)  
Ms. Julie Rolla (now MSc student at SFSU)  
Ms. Chiara Salemi (Goldwater Scholar, now PhD student at MIT)  
Mr. Sebastian Schams (3-month DAAD undergraduate exchange fellowship student)  
Mr. Harjit Singh (now science teacher at NYC Department of Education)  
Mr. Justin Tang (now PhD student at Yale)  
Ms. Sameen Yunas (now Science & Engineering Associate at SLAC National Lab)

## PUBLICATIONS (FULL LIST)

### *Refereed Publications*

1. M. Arenz *et al.* (KATRIN Collaboration), *The KATRIN Superconducting Magnets: Overview and First Performance Results*, submitted to JINST for publication, arXiv:1806.08312.
2. M. Kleesiek *et al.* *Beta-Decay Spectrum, Response Function and Statistical Model for Neutrino Mass Measurements with the KATRIN Experiment*, submitted to EPJ C for publication, arXiv:1806.00369.
3. M. Arenz *et al.* (KATRIN Collaboration), *Muon-induced background in the KATRIN main spectrometer*, submitted to Astropart. Phys. for publication, arXiv:1805.12173.
4. M. Arenz *et al.* (KATRIN Collaboration), *Reduction of stored-particle background by a magnetic pulse method at the KATRIN experiment*, Eur. Phys. J. C **78**, 778 (2018).
5. N. Abgrall *et al.*, *Pulse Shapes in High Purity Germanium Point Contact Detectors with Low Net Impurity Concentration*, submitted to Nucl. Instr. Meth. A for publication. arXiv:1803.06999.
6. M. Arenz *et al.* (KATRIN Collaboration), *Calibration of high voltages at the ppm level by the difference of  $^{83m}\text{Kr}$  conversion electron lines at the KATRIN experiment*, Eur. Phys. J. C **78**, 368 (2018).
7. M. Arenz *et al.* (KATRIN Collaboration), *First Transmission of Electrons and Ions through the KATRIN Beamline*, JINST **13**, P04020 (2018).
8. S. I. Alvis *et al.* (MAJORANA Collaboration), *First limit on the direct detection of lightly ionizing particles for electric charge as low as  $e/1000$  with the MAJORANA DEMONSTRATOR*, Phys. Rev. Lett. **120**, 211804 (2018).
9. C.E. Aalseth *et al.* (MAJORANA Collaboration), *Search for zero-neutrino double beta decay in  $^{76}\text{Ge}$  with the MAJORANA DEMONSTRATOR*, Phys. Rev. Lett. **120**, 132502 (2018).
10. N. Abgrall *et al.* (MAJORANA Collaboration), *The Processing of Enriched Germanium for the MAJORANA DEMONSTRATOR and R&D for a Possible Future Ton-Scale Ge-76 Double-Beta Decay Experiment*, Nucl. Instr. Meth. A **887**, 314 (2018).
11. B. Aharmim *et al.* (SNO Collaboration), *The search for neutron-antineutron oscillations at the Sudbury Neutrino Observatory*, Phys. Rev. **D96**, 092005 (2017).
12. N. Abgrall *et al.* (MAJORANA Collaboration), *The MAJORANA calibration system*, Nucl. Instr. Meth. A **872**, 16 (2017).
13. N. Abgrall *et al.* (MAJORANA Collaboration), *New Limits on Bosonic Dark Matter, Solar Axions, Pauli Exclusion Principle Violation, and Electron Decay from the Low-Energy Spectrum of the MAJORANA DEMONSTRATOR*, Phys. Rev. Lett. **118**, 161801 (2017).
14. N. Abgrall *et al.* (MAJORANA Collaboration), *Search for Pauli Exclusion Principle Violating Atomic Transitions and Electron Decay with a P-type Point Contact Germanium Detector*, Eur. Phys. J. C **76**, 619 (2016).
15. J.C. Loach *et al.*, *A Database for Storing the Results of Material Radio-purity Measurements*, Nucl. Instr. Meth. A **839**, 6 (2016).

16. N. Abgrall *et al.* (MAJORANA Collaboration), *Muon Flux Measurements at the Davis Campus of the Sanford Underground Research Facility with the MAJORANA DEMONSTRATOR Veto System*, arXiv:1602.07742 (2016); accepted for publication by *Astropart. Phys.* **93**, 70 (2017).
17. A. Bellerive, J.R. Klein, A.B. McDonald, A.J. Noble, A.W.P. Poon *for the SNO Collaboration*, *The Sudbury Neutrino Observatory*, invited article in Special Issue on Neutrino Oscillations to commemorate Nobel Prize in Physics 2015, *Nucl. Phys.* **B 908**, 30 (2016).
18. N. Abgrall *et al.* (MAJORANA Collaboration), *The MAJORANA DEMONSTRATOR Radioassay Program*, *Nucl. Instr. Meth.* **A 828**, 22 (2016).
19. M. Arenz *et al.* (KATRIN Collaboration), *Commissioning of the Vacuum System of the KATRIN Main Spectrometer*, *JINST* **11**, P04011 (2016).
20. N. Abgrall *et al.* (MAJORANA Collaboration), *High Voltage Testing for the MAJORANA DEMONSTRATOR*, *Nucl. Instr. Meth.* **A 823**, 83 (2016).
21. A. Dhar *et al.*, *A Low-Background Parylene Temperature Sensor*, *JINST* **10** P12002 (2015).
22. N. Abgrall *et al.* (MAJORANA Collaboration), *The MAJORANA DEMONSTRATOR Parts Tracking Database*, *Nucl. Instr. Meth.* **A 779**, 52 (2015).
23. S. Mertens *et al.*, *Wavelet Approach to Search for Sterile Neutrinos in Tritium Beta-Decay Spectra*, *Phys. Rev.* **D91**, 042005 (2015).
24. S. Mertens *et al.*, *Sensitivity of Next-Generation Tritium Beta-Decay Experiments for keV-Scale Sterile Neutrinos*, *JCAP* **02**, 020 (2015).
25. N. Abgrall *et al.* (MAJORANA Collaboration), *The MAJORANA DEMONSTRATOR Neutrinoless Double-Beta Decay Experiment*, *AHEP* **2014**, 365432 (2014).
26. B. Aharmim *et al.* (SNO Collaboration), *A Search for Astrophysical Burst Signals at the Sudbury Neutrino Observatory*, *Astropart. Phys.* **55**, 1 (2014).
27. E. Aguayo *et al.* (MAJORANA Collaboration), *Characteristics of Signals Originating Near the Lithium-Diffused N+ Contact of High Purity Germanium P-Type Point Contact Detectors*, *Nucl. Instr. Meth.* **A 701**, 176 (2013).
28. B. Aharmim *et al.* (SNO Collaboration), *Combined Analysis of all Three Phases of Solar Neutrino Data from the Sudbury Neutrino Observatory*, *Phys. Rev.* **C 88**, 025501 (2013).
29. B. Aharmim *et al.* (SNO Collaboration), *Measurement of the  $\nu_e$  and Total  $^8\text{B}$  Solar Neutrino Fluxes with the Sudbury Neutrino Observatory Phase-III Data Set*, *Phys. Rev.* **C 87**, 015502 (2013).
30. P. Barton *et al.*, *Low-noise low-mass front end electronics for low-background physics experiments using germanium detectors*. *IEEE Nucl. Sci. Symp. Conf. Rec.* **2011**, 1976 (2011).
31. R.D. Martin *et al.*, *Determining the Drift Time of Charge Carriers in P-Type Point Contact HPGe Detectors*, *Nucl. Instr. Meth.* **A 678**, 92 (2011).
32. R. Abruzzio *et al.*, *Calibration of Muon Reconstruction Algorithms Using an External Muon Tracking System at the Sudbury Neutrino Observatory*, *Nucl. Instr. Meth.* **A 648**, 92 (2011).

33. B. Beltran *et al.*, *A Monte Carlo simulation of the Sudbury Neutrino Observatory proportional counters*, *New J. Phys.* **13**, 073006 (2011).
34. H.M. O’Keeffe *et al.*, *Four Methods for Determining the Composition of Trace Radioactive Surface Contamination of Low-Radioactivity Metal*, *Nucl. Instr. Meth. A* **659**, 182 (2011).
35. B. Aharmim *et al.* (SNO Collaboration), *Low Multiplicity Burst Search at the Sudbury Neutrino Observatory*, *ApJ* **728**, 83 (2011).
36. C.E. Aalseth *et al.* (MAJORANA Collaboration), *Astroparticle Physics with a Customized Low-Background Broad Energy Germanium Detector*, *Nucl. Instr. Meth. A* **652**, 692 (2011).
37. K. Boudjemline *et al.*, *The calibration of the Sudbury Neutrino Observatory using uniformly distributed radioactive sources*, *Nucl. Instr. Meth. A* **620**, 171–181 (2010).
38. B. Aharmim *et al.* (SNO Collaboration), *Low Energy Threshold Analysis of the Phase I and Phase II Data Sets of the Sudbury Neutrino Observatory*, *Phys. Rev. C* **81**, 055504 (2010).
39. B. Aharmim *et al.* (SNO Collaboration), *Searches for High Frequency Variations in the  $^8\text{B}$  Solar Neutrino Flux at the Sudbury Neutrino Observatory*, *ApJ* **710**, 540 (2010).
40. B. Aharmim *et al.* (SNO Collaboration), *Measurement of the Cosmic Ray and Neutrino-Induced Muon Flux at the Sudbury Neutrino Observatory*, *Phys. Rev. D* **80**, 012001 (2009).
41. B. Aharmim *et al.* (SNO Collaboration), *An Independent Measurement of the Total Active  $^8\text{B}$  Solar Neutrino Flux Using an Array of  $^3\text{He}$  Proportional Counters at the Sudbury Neutrino Observatory*, *Phys. Rev. Lett.*, **101**, 111301 (2008).
42. D.B. Campbell *et al.*, *Evaluation of Radioactive Background Rejection in  $^{76}\text{Ge}$  Neutrinoless Double-Beta Decay Experiments Using a Highly Segmented HPGe Detector*, *Nucl. Instr. Meth. A* **587**, 60–67 (2008).
43. J.F. Amsbaugh *et al.*, *An Array of Low-Background  $^3\text{He}$  Proportional Counters for the Sudbury Neutrino Observatory*, *Nucl. Instr. Meth. A* **579**, 1054 (2007).
44. B. Aharmim *et al.* (SNO Collaboration), *Measurement of the  $\nu_e$  and Total  $^8\text{B}$  Solar Neutrino Fluxes with the Sudbury Neutrino Observatory Phase I Data Set*, *Phys. Rev. C* **75**, 045502 (2007)
45. B. Aharmim *et al.* (SNO Collaboration), *A Search for Neutrinos from the Solar  $^8\text{B}$  Reaction and the Diffuse Supernova Neutrino Background with the Sudbury Neutrino Observatory*, *ApJ* **653**, 1545 (2006).
46. T. Araki *et al.* (KamLAND Collaboration), *Search for the Invisible Decay of Neutrons with KamLAND*, *Phys. Rev. Lett.*, **96**, 101802 (2006).
47. T. Araki *et al.* (KamLAND Collaboration), *Experimental Investigation of Geologically Produced Antineutrinos with KamLAND*, *Nature*, **436**, 499 (2005).
48. B. Aharmim *et al.* (SNO Collaboration), *A Search for Periodicities in the  $^8\text{B}$  Solar Neutrino Flux Measured by the Sudbury Neutrino Observatory*, *Phys. Rev. D* **72**, 052010 (2005).

49. B. Aharmim *et al.* (SNO Collaboration), *Electron Energy Spectra, Fluxes, and Day-Night Asymmetries of  $^8\text{B}$  Solar Neutrinos from Measurements with NaCl Dissolved in the Heavy-Water Detector at the Sudbury Neutrino Observatory*, Phys. Rev. **C72**, 055502 (2005).
50. T. Araki *et al.* (KamLAND Collaboration), *Measurement of Neutrino Oscillation with KamLAND: Evidence of Spectral Distortion*, Phys. Rev. Lett., **94**, 081801 (2005).
51. B. Aharmim *et al.* (SNO Collaboration), *Electron Antineutrino Search at the Sudbury Neutrino Observatory*, Phys. Rev. **D70**, 093014 (2004).
52. S.N. Ahmed *et al.* (SNO Collaboration), *Measurement of the Total Active  $^8\text{B}$  Solar Neutrino Flux at the Sudbury Neutrino Observatory with Enhanced Neutral Current Sensitivity*, Phys. Rev. Lett., **92**, 181301 (2004).
53. S.N. Ahmed *et al.* (SNO Collaboration), *Constraints on Nucleon Decay via 'Invisible' Modes from the Sudbury Neutrino Observatory*, Phys. Rev. Lett., **92**, 102004 (2004).
54. K. Eguchi *et al.* (KamLAND Collaboration), *A High Sensitivity Search for  $\bar{\nu}_e$ s from the Sun and Other Sources at KamLAND*, Phys. Rev. Lett., **92**, 071301 (2003).
55. K. Eguchi *et al.* (KamLAND Collaboration), *First Results from KamLAND: Evidence for Reactor Anti-Neutrino Disappearance*, Phys. Rev. Lett., **90**, 021802 (2003).
56. Q.R. Ahmad *et al.* (SNO Collaboration), *Measurement of Day and Night Neutrino Energy Spectra at SNO and Constraints on Neutrino Mixing Parameters*, Phys. Rev. Lett., **89**, 011302 (2002).
57. Q.R. Ahmad *et al.* (SNO Collaboration), *Direct Evidence for Neutrino Flavor Transformation from Neutral-Current Interactions in the Sudbury Neutrino Observatory*, Phys. Rev. Lett., **89**, 011301 (2002).
58. Q.R. Ahmad *et al.* (SNO Collaboration), *Measurement of the Charged-Current Interactions Produced by  $^8\text{B}$  Solar Neutrinos at the Sudbury Neutrino Observatory*, Phys. Rev. Lett., **87**, 071301 (2001).
59. A.W.P. Poon, R.J. Komar, C.E. Waltham, M.C. Browne, R.G.H. Robertson, N.P. Kherani, and H.B. Mak, *A Compact  $^3\text{H}(p,\gamma)^4\text{He}$  19.8-MeV Gamma-Ray Source for Energy Calibration at the Sudbury Neutrino Observatory*, Nucl. Instr. Meth. **A452**, 115 (2000).
60. J. Boger *et al.* (SNO Collaboration), *The Sudbury Neutrino Observatory*, Nucl. Instr. Meth. **A449**, 172 (2000).
61. M.C. Browne *et al.*, *Low-background  $^3\text{He}$  Proportional Counters for Use in the Sudbury Neutrino Observatory*, IEEE Trans. Nucl. Sci., **46**, 873 (1999).
62. Alan W. Poon and Christopher E. Waltham, *Neutrino Electromagnetic Scattering in Astrophysical Systems*, Can. J. Phys., **70**, 140 (1992).
63. G. Ouellette, C.E. Waltham, R. Meijer Drees, A. Poon, R. Schubank, and L.A. Whitehead, *Nonimaging Light Concentration Using Total Internal Reflection Films*, Applied Optics, **31**, 2360 (1992).

*Conference Proceedings (selected)*

- N. Abgrall *et al.* (LEGEND Collaboration), *The Large Enriched Germanium Experiment for Neutrinoless Double Beta Decay (LEGEND)*, Proceedings of MEDEX'17 conference, Prague, Czech Republic, 29 May - 2 June, 2017. AIP Conf. Proc. 1894, 020027 (2017).
- S.R. Elliott *et al.* (MAJORANA Collaboration), *Initial Results from the MAJORANA DEMONSTRATOR*, Proceedings of Neutrino 2016, 4-9 July, 2016. arXiv:1610.01210 (2016).
- N. Abgrall *et al.* (MAJORANA Collaboration), *The MAJORANA Low-Noise Low-Background Front-end Electronics*, Proceedings of 13th International Conference on Topics in Astroparticle and Underground Physics (TAUP), Asilomar, California, 8-13 September, 2013. Phys. Procedia 61 (2015) 654.
- S. Mertens *et al.* (MAJORANA Collaboration), *Majorana Collaboration's Experience with Germanium Detectors*, Proceedings of 2nd Workshop on Germanium-Based Detectors and Technologies, 14-17 September, 2014, Vermillion, SD, USA. J. Phys. Conf. Ser. 606 (2015) no.1, 012005
- G.K. Giovanetti *et al.* (MAJORANA Collaboration), *A Dark Matter Search with MALBEK*, Proceedings of 13th International Conference on Topics in Astroparticle and Underground Physics (TAUP), Asilomar, California, 8-13 September, 2013. Phys.Procedia 61 (2015) 77.
- A.W.P. Poon *et al.* (MAJORANA Collaboration), *Detector Development for the MAJORANA DEMONSTRATOR Project*. Proceedings of the XXIV International Conference on Neutrino Physics and Astrophysics (Neutrino 2010), Athens, Greece, 14-19 June, 2010. Nucl. Phys. Proc. Suppl. 229-232 (2012) 520.
- C.E. Aalseth *et al.* (MAJORANA Collaboration), *The MAJORANA DEMONSTRATOR: An R&D Project towards a Tonne-Scale Germanium Neutrinoless Double-Beta Decay Search*. Proceedings of CIPANP 2009: 10th Conference on the Intersections of Particle and Nuclear Physics, San Diego, California, 26-31 May 2009. Published in AIP Conf.Proc.1182:88-91,2009.
- A.W.P. Poon, *Review of Solar and Reactor Neutrinos*, Proceedings of the XXII International Symposium on Lepton and Photon Interactions at High Energy (Lepton-Photon 2005), World Scientific, 2006 (arXiv:hep-ex/0509024).
- N. Tolich *et al.*, *A Geoneutrino Experiment at Homestake*, Proceedings of Neutrino Sciences 2005: Neutrino Geophysics (arXiv:physics/0607230).
- A.W.P. Poon for the SNO Collaboration, *Solving the Solar Neutrino Problem 2 km Underground—the Sudbury Neutrino Observatory in Astroparticle, Particle, Space Physics, Detectors and Medical Physics Applications*, ed. M. Barone, E. Borch, C. Leroy, P.-G. Rancoita, P.-L. Riboni, and R. Ruchti, pg. 121, World Scientific (2004).
- A.W.P. Poon for the SNO Collaboration, *Recent Results from the Sudbury Neutrino Observatory*, Proceedings to the International Europhysics Conference on High Energy Physics (EPS2003), Eur. Phys. J. C33, s01, s823-s825 (2004), arXiv:nucl-ex/0312002.
- A.W.P. Poon for the SNO Collaboration, *Solar Neutrino Observations at SNO*, Proceedings to the Topical Conference of the SLAC Summer Institute 2002, eConf C020805:TTH01, 2002 (hep-ex/0211013).
- A.W.P. Poon for the SNO Collaboration, *Neutrino Observations from the Sudbury Neutrino Observatory*, Proceedings to the International Nuclear Physics Conference (INPC2001), ed. E. Norman, L. Schroeder and G. Wozniak, pg 218, American Institute of Physics (2002).

- A.W.P. Poon, M.C. Browne, N.P. Kherani, R.G.H. Robertson and C.E. Waltham, *A Compact  ${}^3\text{H}(p,\gamma){}^4\text{He}$  20-MeV Gamma-Ray Source for Energy Calibration at the Sudbury Neutrino Observatory* in *Particles and Cosmology*, ed. E.N. Alexeev, V.A. Matveev, Kh. S. Nirov, V.A. Rubakov, p. 248, World Scientific (1996).

Plus over 100 additional conference proceedings as member of MAJORANA, KATRIN, KamLAND and SNO collaborations.

#### *Other Publications/Reports*

1. Michelle J. Dolinski, Alan W.P. Poon and Werner Rodejohann, *Current Status and Future Prospects for Neutrinoless Double-Beta Decay*, to appear in *Annu. Rev. Nuc. Part. Sci.* **68** (2018).
2. A.W.P. Poon, *Erich Vogt – an Inspirational Professor*, invited article, *Physics in Canada* **70**, 275 (2014).
3. R. N. Cahn *et al.*, *White Paper: Measuring the Neutrino Mass Hierarchy*, Report of the LBNL Mass Hierarchy Committee, arXiv:1307.5487 (2013).
4. V. Cianciolo *et al.*, *Discovering the New Standard Model: Fundamental Symmetries and Neutrinos*, Report of the Fundamental Symmetries and Neutrinos Workshop, August 10-11, 2012, Chicago, arXiv:1212.5190 (2012).
5. Nick Jelley and Alan Poon, *SNO: Solving the Mystery of the Missing Neutrinos*, CERN Courier, Vol. 47, No.4, Article 19 (2007).
6. M.J. Ramsey-Musolf *et al.*, *Nuclear Science and the New Standard Model: Fundamental Symmetries and Neutrinos in The Next Decade*, White Paper of the US Nuclear Science Advisory Committee Long Range Plan town meeting on neutrinos, neutrons and fundamental symmetries (May 2007).
7. Richard Gaitskell *et al.*, (MAJORANA Collaboration), *Proposal for the Majorana Zero-Neutrino Double-Beta Experiment*, arXiv:nucl-ex/0311013 (2003).
8. The Homestake Collaboration, *The National Underground Science and Engineering Laboratory at Homestake: Project Book, Reference Design Stage*, arXiv:nucl-ex/0308018 (2003).

## PRESENTATIONS (FULL LIST)

### *Invited Talks at Conferences and Public Lectures*

1. *Neutrinos: The Chameleon in the Elementary Particle Zoo*, after-dinner talk at the Northern California Chapter of Health Physics Society, Mountain View, CA, USA (January 2018)
2. *Experimental Searches for Neutrinoless Double-Beta Decays in  $^{76}\text{Ge}$* , International School of Nuclear Physics (39th course, Neutrinos in Cosmology, in Astro-, Particle- and Nuclear Physics), Erice-Sicily, Italy (September 2017)
3. *Experimental Summary: Neutrinos*, Rencontres du Vietnam (Neutrinos), Quy Nhon, Vietnam (July 2017)
4. *Direct Neutrino Mass Measurements*, Rencontres du Vietnam (Neutrinos), Quy Nhon, Vietnam (July 2017)
5. *A Community Material Radiopurity Database: Radiopurity.org*, Low Radioactivity Techniques 2017, Seoul, Korea (May 24, 2017)
6. *Recent Updates on the Black Hill State Underground Campus*, Low Radioactivity Techniques 2017, Seoul, Korea (May 24, 2017)
7. *Low-Background Challenges and Solutions in Double-Beta Decay Experiments with Discrete Detectors*, 3<sup>rd</sup> Berkeley Workshop on the Direct Detection of Dark Matter, Berkeley Lab, Berkeley, CA (December 5, 2016)
8. *Laboratory Measurements of Neutrino Mass*, Neutrinos and Light Particles in Cosmology Workshop at UC Berkeley, Berkeley, CA (June 22, 2016)
9. *Electronics Development for Future Large-Scale  $^{76}\text{Ge}$  based Neutrinoless Double-Beta Decay Experiments*, Workshop on the Next Generation  $^{76}\text{Ge}$  Experiment, Munich, Germany (April 26, 2016)
10. *SNO - Nobel Prize 2015*, Sino-German Germanium Detector Technology Symposium, Ringberg Castle, Bavaria, Germany (October 23, 2015)
11. *Low Background Electronics for Future Large-Scale  $^{76}\text{Ge}$ -Based Neutrinoless Double-Beta Decay Experiments*, Sino-German Germanium Detector Technology Symposium, Ringberg Castle, Bavaria, Germany (October 22, 2015)
12. *Challenges in a Future Tonne-Scale  $^{76}\text{Ge}$  Neutrinoless Double-Beta Decay Experiment*, Workshop on Germanium-Based Detectors and Technology, Vermillion, SD, USA (September 15, 2014)
13. *Erich Vogt: an Inspirational Physics Professor*, invited talk at Erich Vogt Memorial session at Canadian Association of Physicists Congress, Sudbury, ON, Canada (June 19, 2014)
14. *KATRIN*, invited talk at International Symposium on Advances in Astroparticle Physics, Kingston, ON, Canada (May 30, 2014)
15. *Solar Neutrinos and SNO*, invited talk at Perspectives in Neutrinos and Fundamental Symmetry Symposium, Seattle, WA (September 6, 2013).

16. *Nuclear Physics Connections*, plenary talk at Intensity Frontier Neutrino Subgroup Workshop 2013 at SLAC, Stanford, CA (March 7, 2013).
17. *Fundamental Symmetries and Neutrinos*, summary talk at APS DNP2012 Town Meeting, Newport Beach, CA (October 26, 2012).
18. *The MAJORANA Experiment*, plenary talk at Fundamental Symmetries and Neutrinos Workshop Long-Range Plan Workshop, Chicago, IL (August 10-11, 2012).
19. *Solar Neutrinos*, public lecture at the University of South Dakota, Vermillion, SD (November 1, 2011).
20. *Mixing of  $\nu_B$  Solar Neutrinos*, invited talk at the American Physical Society DNP2010 Conference, Santa Fe, NM, USA (November 2-6, 2010).
21. *Backgrounds in Underground Experiments*, invited talk at the Overseas Chinese Physics Association Underground Science Conference, Hong Kong (July 21-23, 2008).
22. *Review of Solar Neutrinos*, invited talk at the Overseas Chinese Physics Association Underground Science Conference, Hong Kong (July 21-23, 2008).
23. *MAJORANA Progress*, invited guest talk at the GERDA collaboration meeting, LNGS, Italy (June 9-11, 2008).
24. *Solar Neutrino Results from Phase III of the Sudbury Neutrino Observatory*, invited guest talk at the GERDA collaboration meeting, LNGS, Italy (June 9-11, 2008).
25. *SNO*, invited guest talk at the KATRIN collaboration meeting, Karlsruhe, Germany (October 8-10, 2007).
26. *Review of Solar and Reactor Neutrino Experiments*, plenary review talk at the XXII International Symposium on Lepton-Photon Interactions at High Energy (Lepton-Photon 2005), Uppsala, Sweden (June 30-July 5, 2005).
27. *Solving the Solar Neutrino Problem 2 km Underground—the Sudbury Neutrino Observatory*, plenary talk at the 8<sup>th</sup> International Conference on Advanced Technology and Particle Physics, Villa Erba, Como, Italy (October 6-10, 2003).
28. *Recent Results from the Sudbury Neutrino Observatory*, invited talk at the International Europhysics Conference on High Energy Physics, Aachen, Germany (July 17-23, 2003).
29. *The Nu Odyssey 2002 —SNO & KamLAND*, opening plenary talk at the Institute of Physics Particle Physics 2003 Conference, Durham, UK (April 14-16, 2003).
30. *Solar Neutrino Observations at the Sudbury Neutrino Observatory*, invited talk at the Topical Conference of the 2002 SLAC Summer Institute, Stanford Linear Accelerator Center, Stanford University, Menlo Park, CA, USA (August 15, 2002).
31. *Neutrino Observations from the Sudbury Neutrino Observatory*, plenary talk at the International Nuclear Physics Conference, Berkeley, CA, USA (July 30-August 3, 2001).
32. *Cavity Backgrounds at SNO and Kamioka*, invited talk at the Neutrino Workshop at the Institute of Nuclear Theory, University of Washington, Seattle, WA, USA (September 2000).

## Colloquia

1. *Measuring the Neutrino Mass in the World's Largest Ultra-High Vacuum Chamber*, Physics Colloquium, Queen's University, Kingston, ON, Canada (November 24, 2017).
2. *Initial Results from MAJORANA DEMONSTRATOR*, Nuclear and Chemical Sciences Division Colloquium, Lawrence Livermore National Laboratory, Livermore, CA, USA (August 16, 2017).
3. *Probing the Neutrino Mass Scale*, colloquium at Sichuan University, Chengdu, PRC (May 21, 2015).
4. *Neutrinoless Double Beta Decays*, colloquium at the University of British Columbia, Vancouver, BC, Canada (September 12, 2013).
5. *Solar Neutrinos: From their Discovery to the Precision Measurements of Lepton Mixing*, physics colloquium at Universität Karlsruhe, Karlsruhe, Germany (May 29, 2009).
6. *Disappearance of Reactor Anti-Neutrinos at KamLAND*, physics colloquium at Queen's University, Kingston, ON, Canada (August 18, 2004).
7. *Understanding Neutrino Mass and Mixing*, physics colloquium at Queen's University, Kingston, ON, Canada (May 3, 2004).
8. *Understanding Neutrino Mass and Mixing*, physics colloquium at the University of Guelph, Guelph, ON, Canada (April 29, 2004).
9. *Resolution of the Solar Neutrino Problem—Recent Results from KamLAND and the Sudbury Neutrino Observatory*, particle physics colloquium at Osaka University, Osaka, Japan (Dec. 5, 2003).
10. *Evidence for Reactor Anti-Neutrino Disappearance at KamLAND*, Joint Nuclear and Astro-Particle Physics Colloquium of the Universities of Karlsruhe, Tuebingen and Heidelberg and the national research center at Karlsruhe (FZK), Karlsruhe, Germany (July 15, 2003).
11. *The Nu Odyssey 2002*, Physics and Theoretical Divisions Colloquium, Los Alamos National Laboratory, Los Alamos, NM, USA (May 22, 2003).
12. *Case Closed: The Missing Solar Neutrinos are Found, but What's Next?*, Martin Weiner Lecture Series (Physics Colloquium) at Brandeis University, Waltham, MA, USA (November 12, 2002).
13. *Latest Results from the Sudbury Neutrino Observatory*, colloquium at the Aspen Center for Physics, Aspen, CO, USA (June 20, 2002).
14. *Solving the Solar Neutrino Problem with 1 kt of Heavy Water 2 km Underground*, colloquium at the Department of Nuclear Engineering, University of California, Berkeley, CA, USA (May 6, 2002).

*Seminars and lectures (since 2000)*

1. *Seeing the Neutrinos*, lecture at the high energy physics seminar course (Physics 290E) at University of California, Berkeley, CA, USA (September 27, 2017).
2. *Initial Results of the MAJORANA DEMONSTRATOR*, seminar at the Lawrence Berkeley National Laboratory, Institute for Nuclear and Particle Astrophysics Journal Club, Berkeley, CA, USA (Jan. 13, 2017).
3. *Searches for Majorana Neutrinos*, seminar at the Lawrence Berkeley National Laboratory Physics Division Research Progress Meeting, Berkeley, CA, USA (June 30, 2016).
4. *Building Low-Radioactive-Background Electronics Components*, Berkeley Lab Brown Bag Instrumentation Seminar, Berkeley, CA (September 23, 2015)
5. *Using High-Purity Germanium Detectors to Search for New Physics*, Tsinghua University, Beijing, PRC (May 19, 2015)
6. *Using High-Purity Germanium Detectors to Search for New Physics*, Shanghai Jiaotong University, Shanghai, PRC (May 15, 2015)
7. *Challenges in Understanding the Neutrino Mass Scale*, Shanghai Jiaotong University, Shanghai, PRC (May 14, 2015)
8. *Measuring the Neutrino Mass in the World's Largest Ultra-high Vacuum Chamber*, Physics Society, University of British Columbia, Vancouver, BC, Canada (February 6, 2015).
9. *Challenges in Neutrinoless Double-Beta Decay Experiment*, Carleton University, Ottawa, ON, Canada (November 27, 2014)
10. *The MAJORANA DEMONSTRATOR*, TRIUMF, Vancouver, BC, Canada (September 10, 2013).
11. *Probing the Neutrino Mass (with  $\beta$  and  $\beta\beta$  decays)*, Lawrence Livermore National Laboratory, Livermore, CA (June 18, 2013).
12. *The MAJORANA DEMONSTRATOR*, Laboratory for Nuclear Science seminar, Massachusetts Institute of Technology, Cambridge, MA (May 10, 2013).
13. *Probing the Neutrino Mass (with  $\beta$  and  $\beta\beta$  decays)*, University of Colorado, Boulder, CO, (October 1, 2012).
14. *The ABC's of Nuclear Science*, Teachers' Workshop, Department of Nuclear Engineering, U of California, Berkeley, CA (March 16, 2012).
15. *Probing the Neutrino Mass (with  $\beta$  and  $\beta\beta$  decays)*, University of Hong Kong, Hong Kong, China (October 13, 2010).
16. *The ABC's of Nuclear Science*, Teachers' Workshop, Department of Nuclear Engineering, U of California, Berkeley, CA (March 19, 2010).
17. *Solar Neutrinos: From their Discovery to the Precision Measurements of Lepton Mixing*, seminar at Paul Scherrer Institut, Villigen, Switzerland (June 15, 2009).

18. *Lectures on Statistics and Analysis Techniques in Nuclear and Particle Physics*, a five-lecture series on statistics and analysis techniques at Institut für Kernphysik, Universität Münster, Münster, Germany (May 19-22, 2009).
19. *Probing the Neutrino Mass (with  $\beta$  and  $\beta\beta$  decays)*, seminar at TRIUMF, Vancouver, Canada (February 19, 2009).
20. *Lectures on Statistics and Analysis Techniques in Nuclear and Particle Physics*, a ten-lecture series on statistics and analysis techniques at Forschungszentrum Karlsruhe/Karlsruhe Institute of Technology (November 2008-April 2009).
21. *Non-Accelerator Neutrino Physics*, joint University of Hong Kong and Chinese University of Hong Kong four-lecture series (July 10-11, 2008).
22. *hep and Diffused Supernova Neutrino Background Search at SNO*, seminar at the Lawrence Berkeley National Laboratory, Institute for Nuclear and Particle Astrophysics Journal Club, Berkeley, CA, USA (Jul. 13, 2006).
23. *Neutrinos*, presentation to high school teacher participants in QuarkNet, LBNL, Berkeley, CA, USA (June 26, 2006).
24. *Get Kids Excited About Science!*, LBNL Institute for Nuclear and Particle Astrophysics Journal Club, Berkeley, CA, USA (September 16, 2005) [Co-presenter: Corinn Brown, Community Resources for Science, Berkeley].
25. *Probing Physics Beyond the Standard Electroweak Model with Solar Neutrinos*, Physics seminar, University of California, Berkeley, CA, USA (September 7, 2005).
26. *Understanding Neutrino Mass and Mixing*, seminar at the University of Hong Kong, Hong Kong, China (November 1, 2004).
27. *Understanding Neutrino Mass and Mixing with the Sudbury Neutrino Observatory and the Majorana Double-Beta Decay Experiment*, seminar at the University of Massachusetts, Amherst, MA, USA (February 6, 2004).
28. *Resolution of the Solar Neutrino Problem—Recent Results from the Sudbury Neutrino Observatory and KamLAND*, seminar at Academia Sinica, Taipei, Taiwan (December 10, 2003).
29. *Measurement of the Total Active  $\nu_B$  Solar Neutrino Flux at the Sudbury Neutrino Observatory with Enhanced Neutral Current Sensitivity*, lecture at the high energy physics seminar course (Physics 290E) at University of California, Berkeley, CA, USA (October 15, 2003).
30. *The Nu Odyssey 2002 — Results from SNO and KamLAND*, seminar at the University of Oxford, Oxford, UK (April 17, 2003).
31. *Direct Evidence for Neutrino Flavor Transformation from Neutral-Current Interactions in the Sudbury Neutrino Observatory*, seminar at Brown University, Providence, RI, USA (November 13, 2002).
32. *Direct Evidence for Neutrino Flavor Transformation from Neutral-Current Interactions in the Sudbury Neutrino Observatory (SNO)*, experimental seminar at the Stanford Linear Accelerator Center, Stanford University, Menlo Park, CA, USA (May 16, 2002).

33. *Solving the Solar Neutrino Problem 2 km Underground —the Sudbury Neutrino Observatory*, seminar at the University of Hong Kong, Hong Kong, China (March 25, 2002).
34. *Neutrino Observations from the Sudbury Neutrino Observatory (I)*, seminar at the Lawrence Berkeley National Laboratory, Institute for Nuclear and Particle Astrophysics Journal Club, Berkeley, CA, USA (July 13, 2001).
35. *Calibrating the Sudbury Neutrino Observatory (SNO)*, seminar at the Nonproliferation and International Security Division, Los Alamos National Laboratory, Los Alamos, NM, USA (May 31, 2001).
36. *Solar Neutrino Observations from the Sudbury Neutrino Observatory*, seminar at the Department of Physics, Brown University, Providence, RI, USA (Mar. 7, 2001).
37. *The Sudbury Neutrino Observatory — 6 Months into Production Running*, invited talk at the Joint Experimental-Theoretical Seminar at Fermilab, Batavia, IL, USA (July 7, 2000).
38. *Review of Neutrino 2000 at Sudbury*, seminar at the Lawrence Berkeley National Laboratory Physics Division Research Progress Meeting, Berkeley, CA, USA (June 29, 2000).
39. *Mining for Solar Neutrinos 2 km Underground: The Sudbury Neutrino Observatory*, seminar at Princeton University, Princeton, NJ, USA (January 14, 2000)