

Logan M. Lebanowski

University of Pennsylvania
Department of Physics and Astronomy
209 S. 33rd Street
Philadelphia PA, 19104-6396

(+1) 215-898-1705
loganleb@hep.upenn.edu
Profiles: [Personal](#), [LinkedIn](#)

Professional History

2017 – present Research Associate, [Dept. of Physics & Astr.](#), Univ. of Pennsylvania
2012 – 2016 Research Assistant, [Center for High Energy Physics](#), Tsinghua Univ.
2008 – 2012 Research Assistant, [High Energy Physics Group](#), Univ. of Houston
2004 – 2008 Technical Assistant, [Novel Materials Research Group](#), UH
2003 – 2008 Student Worker, High Energy Physics Group, UH
2002 – 2003 Lab Assistant, Novel Materials Research Group, UH

Education

2016 Ph.D. (physics) [Tsinghua University](#), Beijing, China
2011 M.S. (physics) [University of Houston](#), U.S.A.
2008 B.S. (physics), B.S. (mathematics) [University of Houston](#), U.S.A. (*Cum Laude*)

Awards and Honors

2012 – 2016 Chinese Scholarship Council - Full Scholarship
2013 Summer Outstanding Pedagogy Award ([Intl. Neutrino Summer School](#))
2002 – 2008 [The National Dean's List](#) and the UH Dean's List.
2003 Fall [Charles P. Benner Scholarship](#) (UH [Mathematics department](#))

Research Experience

2012 – 2016 **Daya Bay in China: Precise determinations of θ_{13} and Δm_{32}^2 .**

Research Assistant in [Neutrino Physics Group](#) at Tsinghua Univ. – focused on spectral analysis of neutrino interactions and an improved understanding of detector response.

- Developed a non-empirical energy-response model of scintillation detectors.
- Developed an energy spectrum analysis based on the new detector response model (published as method E in Ref. [1]).
- Performed and published studies of detector-related uncertainties (Ref. [3]), which were the largest components of systematic uncertainty.
- Published a most precise θ_{13} from combining distinct IBD analyses (nGd and nH) (Refs. [3, 7]).
- Led a search for Lorentz/CPT violation via sidereal modulations in event rate.
- Proposed and studied modifications to the Daya Bay experiment for new and improved measurements.

2006 – 2012 **Daya Bay in China: Determination of neutrino mixing angle θ_{13} .**

Research Assistant (since 2008) in [HEP Group](#) at UH – focused on RPC R&D (Ref. [10]), QA, and commissioning. Onsite contributions focused on muon system (Ref. [6]).

- U.S. coordinator of resistive plate chamber (RPC) system commissioning.
 - Co-developed and published (Ref. [9]) the QA routine of the >1600 RPCs.
 - Co-developed the online data monitor (e.g., [run 53130](#)) and published calibration algorithms for the RPC system (Ref. [8]).
- Assistant-managed water pool PMT installation.
 - Pressure-tested 167 PMTs (Ref. [5]) and measured their characteristics.
- Developed front-end electronics calibration algorithms and infrastructure.

2004 – 2008 **Research in thermal image analysis for medical applications.**

Technical Assistant in Novel Materials Research Group at [TcSAM](#) at UH.

- Investigated and published (Ref. [11]) on bio-heat transfer.
- Built software and used it to develop techniques to analyze thermal images.

2003 – 2008 **Work in High Energy Physics Group at UH.**

- Wrote an undergraduate thesis (Ref. [12]) on a measurement of K^+ and K^- masses using data from HERA-B at DESY.
- Performed basic R&D on a prototype dark matter bubble chamber.

2002 – 2003 **Experimental work on super-conductivity research.**

Lab Assistant in Novel Materials Research group at UH.

- Synthesized materials (grind, pelletize, sinter)
- Prepared materials (cut, polish, sputter, anneal in a high-pressure oxygen furnace)
- Measured materials (low-temperature, X-ray diffraction, SEM)

Talks

Plenary talk at [NNN'16](#) (2016, November)

Daya Bay and joint reactor analysis - [Slides](#)

Seminar at Argonne National Lab (2016, February)

Neutrino Measurements at Daya Bay - [Slides](#)

April APS Meeting (2014, April)

An Independent Measurement of θ_{13} using Neutron Capture on Hydrogen at Daya Bay

17 talks given at bi-annual Daya Bay Collaboration meetings from 2011 through 2016.

Mentoring Experience

2014 – 2015	Tsinghua undergraduate Zhicai Zhang in a search for Lorentz and CPT violation via sidereal modulations in IBD rates at Daya Bay.
2014 Fall	NCTU Taiwan graduate Kuo-Lun Jen in demonstrating the stability of the Daya Bay front-end electronics.
2012 Fall	Instructional Assistant of junior-level modern physics class, Physics Department, Tsinghua University.
2009 Summer	Texas Tech undergraduate Daniel Dominguez in measurements of gamma-ray attenuation and RPC efficiency.
2006 & 2009	Instructional Assistant of freshman-level optics / circuits / electromagnetism lab, Physics Department, Univ. of Houston. Tutored undergraduates who were not physics majors.
2005 & 2009	High school students and teachers through the QuarkNet Project .

Selected Publications and Papers

Citation profiles: [INSPIRE](#), [Scholar](#)

1. MEASUREMENT OF ELECTRON ANTINEUTRINO OSCILLATION BASED ON 1230 DAYS OF OPERATION OF THE DAYA BAY EXPERIMENT
Daya Bay Collaboration
[arXiv:1610.04802](#) [hep-ex]. [INSPIRE](#)
2. DETERMINATION OF THE TOTAL ABSORPTION PEAK IN AN ELECTROMAGNETIC CALORIMETER
Jia-Hua Cheng, Zhe Wang, **Logan Lebanowski**, Guey-Lin Lin, Shaomin Chen
Nucl. Instrum. Meth. In Phys. Res. A, Aug. 2016, 827 165-170. [[arXiv:1603.04433](#) [physics.ins-det](#)]. [INSPIRE](#)

3. NEW MEASUREMENT OF θ_3 VIA NEUTRON CAPTURE ON HYDROGEN AT DAYA BAY
(*Sole author and editor) Daya Bay Collaboration
Phys. Rev. D, 93 072011. April 2016. [[arXiv:1603.03549 \[hep-ex\]](#)]. [INSPIRE](#)
[Editor's Suggestion](#); [Nature News & Views](#); [Tsinghua Univ. News](#).
4. DESIGN, CHARACTERIZATION, AND SENSITIVITY OF THE SUPERNOVA TRIGGER SYSTEM AT DAYA BAY
Hanyu Wei, **Logan Lebanowski**, Fei Li, Zhe Wang, Shaomin Chen
Astropart. Phys. 75, 38-43. Feb. 2016. [[arXiv:1505.02501 \[astro-ph.IM\]](#)]. [INSPIRE](#)
5. WATERPROOFED PHOTOMULTIPLIER TUBE ASSEMBLIES FOR THE DAYA BAY REACTOR NEUTRINO EXPERIMENT
K. Chow, J. Cummings, E. Edwards, W. Edwards, R. Ely, M. Hoff, **L. Lebanowski**, B. Li, ...
Nucl. Instrum. Meth. In Phys. Res. A, Sep. 2015, 794 25-32. [[arXiv:1502.06652 \[physics.ins-det\]](#)]. [INSPIRE](#)
6. THE MUON SYSTEM OF THE DAYA BAY REACTOR ANTINEUTRINO EXPERIMENT
(*Contributing author and editor) Daya Bay Collaboration
Nucl. Instr. and Meth. in Phys. Res. A, Feb. 2015, 773 8-20. [[arXiv:1407.0275 \[physics.ins-det\]](#)]. [INSPIRE](#)
7. INDEPENDENT MEASUREMENT OF θ_3 VIA NEUTRON CAPTURE ON HYDROGEN AT DAYA BAY
Daya Bay Collaboration
Phys. Rev. D, 90 071101(R). Oct. 2014. [[arXiv:1406.6468 \[hep-ex\]](#)]. [INSPIRE](#)
8. CALIBRATION ALGORITHMS OF RPC DETECTORS AT DAYA BAY NEUTRINO EXPERIMENT
Z Ning, QM Zhang, JL Xu, **L Lebanowski**, JW Zhang, CG Yang, M He, J Zhao, ...
Journal of Instrumentation 8 (03), T03007. March 2013. [INSPIRE](#)
9. THE MASS PRODUCTION AND QUALITY CONTROL OF RPCS FOR THE DAYA BAY EXPERIMENT
L.H. Ma, **L. Lebanowski**, J. Chen, M.Y. Guan, R. Hackenburg, K. Lau, S.K. Lin, ...
Nucl. Instr. and Meth. in Phys. Res. A, Dec. 2011, 659 154-160. [INSPIRE](#)
10. STUDY OF RPC GAS COMPOSITION USING DAYA BAY RPCS
L.H. Ma, Y.F. Wang, J.W. Zhang, **L. Lebanowski**, V. Pěč, G.H. Xu, J. Chen, ...
Chinese Phys. C (HEP&NP), Aug. 2010, 34(8) 1116-1121. [INSPIRE](#)
11. A BASIC STEP TOWARD UNDERSTANDING SKIN SURFACE TEMPERATURE DISTRIBUTIONS CAUSED BY INTERNAL HEAT SOURCES
Z. Wu, H. H. Liu, **L. Lebanowski**, Z. Liu, P. H. Hor.

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Phys. Med. Biol., 52 (2007) 5379–5392. [LINK](#), [ResearchGate](#).

12. A MEASUREMENT OF THE CHARGED KAONS MASSES: A CPT VIOLATION TEST

L. Lebanowski

Undergraduate Thesis, University of Houston (library), 2005. [LINK](#), [ResearchGate](#).