Shih-Kai Lin

Postdoctoral Researcher

1700 W Plum St Apt 53E
Fort Collins, CO, 80521
+1 (832) 907 9035
Shihkai.Lin@colostate.edu
shihkailin

Education

Sept. 2014 **Doctor of Philosophy in Physics**, *University of Houston*, Houston, TX.

2003–2005 **Master of Science in Physics**, *National Taiwan University*, Taipei, Taiwan.

1996–2001 **Bachelor of Science in Computer Science**, *National Taiwan University*, Taipei, Taiwan.

Doctoral Dissertation

title *Neutron Production by Cosmic Ray Muons*

supervisors Kwong Lau

description Neutrons produced by cosmic ray muons are a background of underground experiments. Understanding neutron yield is particularly important for future low background experiments. In this work mechanisms of neutron production by muons are discussed and neutron yield is measured with data from Daya Bay Reactor Neutrino Experiment.

Experience

2014–present **Postdoctoral Researcher**, *Colorado State University*, Fort Collins, CO.

Member of the NOvA and the 35-ton prototype collaboration at FNAL.

- Measuring $\bar{\nu}_\mu$ charged-current inclusive cross section with the NOvA near detector.
- Developed the control application for the LBNE calibration module for photon detector, which was used in 35-ton prototype's data taking.
- Photon detector R&D and performance study.

2009–2014 **Research Assistant**, *University of Houston*, Houston, TX.

Member of particle physics group and Daya Bay Reactor Neutrino Experiment. Actively participated in the muon detector system QC/QA, installation, commissioning, operation and data analysis.

- Analyzed data for neutron production by cosmic ray muons.
- Developed a reconstruction algorithm to reconstruct the incident position and the track of cosmic ray muons.
- Designed and built a small resistive plate chamber for monitoring the gas composition.
- Experience in operating radioactive sources such as ^{137}Cs, ^{90}Sr and ^{60}Co for resistive plate chamber response study.
- Designed and built a collimator for shielding and collimating ^{60}Co.
- Monte Carlo simulation on photoelectron production by photons and electron transport in Bakelite.

2005–2008 **Research Assistant**, *Academia Sinica*, Taipei, Taiwan.

Joined Taiwan Experiment on Neutrino(TEXONO) group and worked on high purity Germanium detector response to different particles, energy calibration and data analysis.

- Analyzed data used for dark matter exclusion plots.
- Calibrated the Ge detector with ^{137}Cs, ^{60}Co, ^{55}Fe, ^{32}P, etc.
- Maintained the Ge detector located 28m away from the core of No.1 reactor of Kuo-Sheng Nuclear Power Station.
- Utilizing pulse shape discrimination(PSD) technique to lower detector threshold.
- Developed an algorithm utilizing Fast Fourier Transform spectra to reject near-threshold detector noise.

2003–2005 **Research Assistant**, *National Taiwan University*, Taipei, Taiwan.

Joined semiconductor group and worked on electron transport properties of Indium Gallium Nitride.

- Measured and published a paper on the transport properties of Indium Gallium Nitride.
- Extensive experience in high vacuum and low temperature experiments.

Honors and Professional Memberships

Nov 2015 The 2016 Breakthrough Prize in Fundamental Physics

Mar 2013 American Physical Society

Nov 2009 Golden Key International Honour Society

2005 Government Fellowship for Studying Abroad from Ministry of Education, Taiwan

Selected Publications

2016 (Daya Bay Collaboration), "Measurement of the Reactor Antineutrino Flux and Spectrum at Daya Bay", *Phys. Rev. Lett.* 116, 061801 (2016)

2015 (Daya Bay Collaboration), "New Measurement of Antineutrino Oscillation with the Full Detector Configuration at Daya Bay", *Phys. Rev. Lett.* 115, 111802 (2015)

2013 Z. Ning, Q.M. Zhang, J.L. Xu, L. Lebanowski, J.W. Zhang, C.G. Yang, M. He, J. Zhao, J.H. Zou, V. Pěč, ***Sh.-K. Lin***, M.Y. Guan, H.F. Hao, L. Zheng, X.L. Ji, F. Li, K. Lau and V. Vorobel, "Calibration algorithms of RPC detectors at Daya Bay Neutrino Experiment", *JINST* 8 (2013) T03007

2013 (Daya Bay Collaboration), "Improved measurement of electron antineutrino disappearance at Daya Bay", *Chinese Phys. C* Vol. 37, No. 1 (2013) 011001

2012 (Daya Bay Collaboration), "Observation of electron-antineutrino disappearance at Daya Bay", *Phys. Rev. Lett.* 108, 171803 (2012)

2012 (Daya Bay Collaboration), "A side-by-side comparison of Daya Bay antineutrino detectors", *Nucl. Instr. Meth A* 685, 78-97 (2012)

2011 XU Ji-Lei, GUAN Meng-Yun, YANG Chang-Gen, WANG Yi-Fang, ZHANG Jia-Wen, LU Chang-Guo, Kirk McDonald, Robert Hackenburg, Kwong Lau, Logan Lebanowski, Cullen Newsom, ***Lin Shih-Kai***, Jonathan Link, MA Lie-Hua, Viktor Pěč, Vit Vorobel, CHEN Jin, LIU Jin-Chang, ZHOU Yong-Zhao, LIANG Hao, "Design and preliminary test results of Daya Bay RPC modules", *Chinese Phys. C* 35(9): 844-850