Michinari Sakai

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Education

PhD, Experimental Neutrino Physics 2016
GPA: 4.0/4.0, University of Hawaii
Dissertation: High Energy Neutrino Analysis in KamLAND and Application to Dark Matter Search

Graduate Program in Mathematics 2006
GPA: 4.5/4.5, Sun Moon University, S. Korea

Double BSc, Physics and Mathematics 2005
GPA: 4.3/4.5, Sun Moon University, S. Korea
Summa Cum Laude, Award for Outstanding Academic Achievement, Samsung Corp.

Research Experience

CUORE (Cryogenic Underground Observatory for Rare Events) Apr. 2016 - *Current*
Post-doctoral Scholar, University of California, Los Angeles (UCLA)

- Spearheading development of precision alpha background modeling with goal for further background reduction to cover inverted neutrino mass hierarchy for $0\nu\beta\beta$ decay
- Implemented bolometer thermal model to create mock data for first data taking

KamLAND (Kamioka Liquid Scintillator Antineutrino Detector) 2009 - 2016
Research Assistant, University of Hawaii

- Spearheaded development of novel directional neutrino detection technique in scintillator and demonstrated with data that this can be used to conduct dark matter searches in scintillator
- Led unprecedented particle ID capability studies in scintillator using track profile reconstruction techniques using never before observed T2K events spilling into KamLAND
- Was solely responsible for high energy ($\gtrsim$1 GeV) energy calibration using cosmic ray muons and applying this to neutrino analysis for the first time

Mini-TimeCube 2009 - 2016
Research Assistant, University of Hawaii

- Lead developer of Geant4 detector simulation and took responsibility to guide detector design
- Led critical role in directional neutrino/neutron reconstruction algorithm
- Spearheaded trade studies for Li/B neutron capture dopants in scintillator

Skills

Software/Tools:	ROOT, Geant4, Pads, AutoCAD
Programming Languages:	Proficient in C, C++, Python, Fortran, Mathematica, Bash
Human Languages:	English (native), Japanese/Korean (trilingual proficiency)

Leadership and Teamwork

Mentor, *UCLA* 2016 - *Current*

- Taught weekly Geant4 tutorials to 3 PhD students and 3 undergraduate students for 1 semester
- Led weekly Physics paper discussion groups for 3 PhD students

Teaching Assistant, *University of Hawaii* 2007 - 2009

- Led 2 weekly laboratory sessions on Physics Mechanics to class of ∼20 students for 2 semesters, received "excellent" reviews