Michinari Sakai

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Education

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

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

Double BS, Physics and Mathematics 2005
GPA: 4.3/4.5, Sun Moon University, S. Korea
President's Award 2005, Award for Outstanding Academic Achievement – Samsung Corp.

Research Experience

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

- Led unprecedented topological track reconstruction and particle ID studies in scintillator and applied these techniques using never before observed T2K events spilling into KamLAND
- Spearheaded development of novel directional neutrino detection technique in scintillator and demonstrated with data for the first time that this can be used for indirect dark matter search in scintillator
- Was 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 (Portable Neutrino Detector) 2009 - 2016
Research Assistant, University of Hawaii at Manoa

- Led development of Geant4 detector simulation and guided detector design during construction
- Was responsible for background studies associated with long lived cosmogenic isotopes 8He/9Li, to quantitatively determine effect on detector live time
- Spearheaded trade studies for Li/B neutron capture dopants in scintillator for directional neutrino detection algorithm

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 of CUORE

Leadership and Teamwork

Mentor, *UCLA* 2016 - *Current*

- Taught weekly Geant4 simulation tutorials to 3 PhD students and 3 undergraduate students for 1 semester, students are now able to take on simulation tasks and collaborate in the group
- Led weekly Physics paper discussion groups for 3 PhD students, and promoted team work to increase dialogue and productivity within team

Teaching Assistant, *University of Hawaii at Manoa* 2007 - 2009

- Planned classwork and taught 2 weekly undergraduate Physics Laboratory classes of over 20 students each for 3 semesters, received "excellent" reviews
- Mentored undergraduate students in undergraduate Physics classwork for 2 hours each week for 3 semesters, got students repeatedly seeking my particular tutoring

Skills

Programming Languages:	Proficient in C++, C, Python, Fortran, Mathematica, Bash
Software/Tools:	GENIE neutrino event generator, DarkSUSY, ROOT, Geant4
Human Languages:	English (native), Japanese/Korean (trilingual proficiency)