Michinari Sakai

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Experience

KamLAND (Kamioka Liquid Scintillator Antineutrino Detector) - *University of Hawaii*   2009 - 2016
- Spearheaded development of novel directional neutrino detection technique in scintillator and demonstrated with data for the first time that this can be applied to conduct indirect dark matter searches in scintillator; first ever physics application of neutrino directionality in scintillator
- Led unprecedented particle ID capability studies in scintillator using track profile reconstruction techniques and never before observed T2K events spilling into KamLAND

Mini-TimeCube (World's Smallest Portable Neutrino Detector) - *University of Hawaii*   2009 - 2016
- Led development of Geant4 detector simulation with team of 3 undergraduate students to conducted case studies of neutron capture doping agents in solid scintillator. Simulation results were later used to guide overall detector design during construction
- Was responsible for background studies associated with long lived cosmogenic isotopes ^{8}He/^{9}Li to quantitatively determine effect on detector live time

Hanohano (Deep Sea-based monolithic Scintillator Neutrino Detector) - *University of Hawaii*   2009 - 2010
- Used CAD to design and assemble apparatus to measure light output of various LAB based scintillators from ionizing radiation as well as test light yield changes in extreme electric potential gradients ($\sim$1 kV/cm)
- Operated, took data, and analyzed light transmissivity of LAB based scintillator when put in near freezing temperatures and high pressure environments (for potential deep sea deployment scenarios) in custom made pressurizer chamber

CUORE (Cryogenic Underground Observatory for Rare Events) - *UCLA*   2016 - *Current*
- Spearheading development of precision α background modeling in collaboration with a graduate student with goal for further background reduction to cover inverted neutrino mass hierarchy of $0\nu\beta\beta$ decay in ^{130}Te
- Mentored and worked with 2 undergraduate students for investigation of shielding structures to mitigate γ/β backgrounds for next generation $0\nu\beta\beta$ decay searches requiring ultra-low background levels

Skills

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

Leadership

Mentor - *UCLA*   2016 - *Current*
- Taught weekly Geant4 tutorials to 3 PhD-level students and an undergraduate student for 1 semester; students are now able to take on simulation projects of their own and make original contribution

Teaching Assistant - *University of Hawaii*   2007 - 2009
- Planned classwork and taught 2 weekly undergraduate Physics Laboratory classes of over 20 students each for 3 semesters, received very positive reviews
- Mentored undergraduate students in undergraduate Physics classwork for 2 hours each week for 3 semesters

Education

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

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.