Michinari Sakai

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Summary

- Expertise in Geant4 and particle simulations with 8 years of experience
- Experience with cosmogenic radiation and nuclear decay simulations in 3 major particle detector experiments
- Innovative problem solving skills with the ability to interface original work with larger collaboration

Experience

UC Berkeley — Post-doctoral Scholar June 2018 — *Current*

- Building apparatus for measuring micro-physical optical properties of tetraphenyl butadiene (TPB)
- Responsible for maintenance of Geant4 optical modeling of apparatus and TPB material

UCLA — Post-doctoral Scholar 2016 — 2018

- Mentored and worked with 2 undergraduate students to simulate radiation shielding structures in Geant4 to mitigate γ/β backgrounds for next generation $0\nu\beta\beta$ searches requiring ultra-low backgrounds
- Currently spearheading the development of a precision α background model with goal for further background reduction to reach sensitivity goal of covering the inverted neutrino mass hierarchy of $0\nu\beta\beta$ decay in ^{130}Te

University of Hawaii at Manoa — Research Assistant 2009 — 2016

- Led development of Geant4 detector simulation to conducted case studies of neutron capture doping agents in solid scintillator. Simulation results were later used to oversee design during detector construction
- Was responsible for background simulation studies associated with long lived cosmogenic isotopes ^{8}He/^{9}Li to quantitatively determine effect on detector live time
- Was responsible for high energy ($\gtrsim$ 1 GeV) energy calibration using cosmic ray muons and applying this to neutrino analysis for first time
- 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 directionaly in scintillator

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, *UC Berkeley* June 2018 — *Current*

- Advising undergraduate student with Geant4 based optical simulation for current hardware project

Mentor, *UCLA* 2016

- 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 at Manoa* 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 Particle 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

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.