

Michinari Sakai

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Summary

- Experience with highly segmented calorimeter detectors and reconstruction of energy spectrum of backgrounds.
- Extensive experience in analyzing large-scale data sets, Geant4 simulations, and algorithm development.
- Innovative problem solving skills with the ability to interface original work with larger collaboration.

Experience

Post-doctoral Researcher, UC Berkeley June 2018 — *Present*

- Data analysis lead for energy spectrum of radioactive isotope alpha decays.
- Mentor for modeling of photon interactions with optical wavelength shifters with Geant4.

Post-doctoral Researcher, UCLA 2016 — 2018

- Lead developer of precision energy spectrum model for radioactive alpha decays to improve characterization of backgrounds in neutrinoless double beta decay searches.
- Mentor for 2 PhD students to simulate radiation shielding structures in Geant4 to mitigate gamma/beta backgrounds for next generation neutrinoless double beta decay searches requiring ultra-low radiation environments.

Research Assistant, University of Hawaii at Manoa 2009 — 2016

- Spearheaded development of a novel directional neutrino detection technology 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.
- Lead developer of neutrino detector simulation code using Geant4 to conducted case studies of neutron capture doping agents in solid scintillator. Simulation results were later used to oversee detector design and construction.

Skills

Software/Tools: ROOT, Geant4, LabView, SolidWorks, AutoCAD, ComSol, Git, Pads
Programming Languages: Proficient in Python, C/C++, Mathematica, Matlab, BASH; Some experience with R
Human Languages: English (native), Japanese/Korean (trilingual proficiency)

Leadership

Mentor, UC Berkeley/UCLA March 2016 — *Present*

- Advised 2 students with optical simulation code for current hardware project. Students are now undertaking independent research tasks and contributing original work.
- Taught weekly Geant4 physics simulation tutorials to 3 PhD-level students for a semester. Students successfully learned to take on independent projects.

Teaching Assistant, University of Hawaii at Manoa 2007 — 2009

- Planned coursework and taught 2 weekly physics laboratory curriculum for classes of over 20 students each for 3 semesters. Received especially positive reviews for clarity of explanation of material, and teaching style.

Education

PhD, Experimental Particle Physics 2016

- GPA: 3.97/4.00, 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: 4.33/4.50, Sun Moon University, S. Korea
- President's Award 2005, Award for Outstanding Academic Achievement – Samsung Corp.