Applied Physics Laboratory November 23, 2019
Johns Hopkins University
Job ID: 22143

Dear Team Hiring Manager,

I am interested in joining your team as a Weapon System Applied Physicist to contribute toward modeling and evaluating the performance of intercontinental ballistic missiles. I would like to apply for position ID 22143.

I am currently a post-doctoral researcher at the University of California, Berkeley with expertise in computational physics simulations and large-scale data analysis working in the field of particle/nuclear physics.

With regard to my ability to meet specific requirements of this job:

- **Education:** PhD in experimental physics (2016) with emphasis on computational physics modeling/simulations, data analysis, and algorithm development.
- **Skill in statistical estimation and physics-based modeling:** Over 8 years of experience analyzing large-scale simulated/real data using statistical analysis tools in ROOT/Python. Typical work involves uncertainty analysis, trade studies, sensitivity studies.
- **Skill in scientific programming:** Over 9 years of experience with C/C++/ROOT, 4 years of experience with Python and FORTRAN working on data analysis and algorithm development for physics experiments.
- **written/oral communication skills:** Contributed work published in various journals. Talks given at institutions such as Lawrence Livermore National Laboratory, Sanford Underground Research Facility, Fermilab, Argonne National Laboratory. Mentored PhD-level students at UC Berkeley/UCLA and increased productivity by organizing group initiatives.
- **Collaborate effectively with staff, collaborators and sponsors:** Worked with 3 multi-national collaborations of physicists and engineers in Japan, Italy, and US. Contributed independent original work to specific area of research within collaborations.
- **Willing/able to travel:** Yes.
- **Able to obtain interim Secret level security clearance by start date, and ultimately obtain final Top Secret level clearance:** Yes.

I would appreciate an opportunity to meet and discuss my application at an interview. I have also sent my resume for your consideration. Please feel free to let me know if you have any questions.

Thank you for your time,

Michinari Sakai

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Summary

- Extensive experience in particle physics simulation code and analyzing large amounts of real/simulated data.
- Proficient in large-scale data analysis and algorithm software development with 8 years of experience.
- 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.
- Supervisor for simulation/modeling of photon interactions with optical wavelength shifters.

Post-doctoral Researcher, *UCLA* 2016 — 2018
- Mentor for 2 PhD students to simulate radiation shielding structures to mitigate gamma/beta backgrounds for next generation neutrinoless double beta decay searches requiring ultra-low radiation environments.
- Lead developer of precision alpha decay spectrum model to improve characterization of backgrounds in neutrinoless double beta decay decay searches.

Research Assistant, *University of Hawaii at Manoa* 2009 — 2016
- Lead developer of detector simulation code to conducted case studies of neutron capture doping agents in solid scintillator. Simulation results were later used to oversee detector design and construction.
- 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.

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.