Nuclear and Particle Physics Group
Nuclear and Chemical Sciences Division
Lawrence Livermore National Laboratory

January 4, 2020

Dear Team Hiring Manager,

As a motivated physicist, I am interested in joining your team to develop and conduct low-energy nuclear-physics experiments that use the surrogate-reaction method to measure important nuclear-reaction cross sections. I would like to apply for the advertised post-doctoral researcher position 106535.

I am currently a post-doctoral researcher at the University of California, Berkeley with expertise in gamma and charged particle detection through highly segmented calorimeters and GEANT4 detector physics simulations working in the field of nuclear/particle physics.

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

- **Education:** PhD in experimental particle physics (2016) with emphasis on GEANT4 particle transport simulations, and algorithm development for novel particle detection technologies.
- **Knowledge of accelerator-based nuclear-physics experiments, neutron irradiations:** Graduate work involves reconstruction of neutrinos interacting with target nuclei in KamLAND using the neutrino beam from the J-PARC facility in Japan. Author of GEANT4 simulation code of portable scintillator detector mini-TimeCube that was deployed at the research reactor at NIST to study its feasibility as a neutron camera.
- **Experience with highly segmented detectors, spectroscopy, and their associated data analysis:** Currently data analysis lead using C++/ROOT/Python for investigation of alpha decay spectrum of nuclear decay backgrounds in the highly segmented calorimeter detector CUORE.
- **Knowledge of programming in C/C++/ROOT and/or other programming languages:** 8 years of experience with C/C++/ROOT analyzing large physics data sets. 4 years of Python experience.
- **Experience with GEANT4:** Author of detector simulation code for mini-TimeCube scintillator detector project. Performed GEANT4 simulations in the highly segmented calorimeter detector CUORE to reconstruct the energy spectrum above 2.5 MeV. Tutored 3 PhD-level students during weekly GEANT4 tutorials at UCLA for a semester.
- **Experience with digital and analog electronics for data acquisition systems, specifically NIM:** Current project involves using NIM modules to amplify and discriminate photomultiplier tube signals in conjunction with custom LabView DAQ program to extract, filter, and save raw data.
- **Documented publication record and proficiency in verbal/written communication skills:** Contributed work published in various journals. Talks given at institutions such as Los Alamos National Laboratory, Sanford Underground Research Facility (SURF), Argonne National Laboratory, DNP (Division of Nuclear Physics) conferences.
- **Experience working collaboratively as part of a team:** Worked in 3 multinational collaborations in Japan, Italy, and US. Original work successfully interfaced with larger collaboration.

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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