Rare Event Detection group March 25, 2018

Nuclear and Chemical Sciences Division
Lawrence Livermore National Laboratory
7000 East Avenue, Livermore, CA 94550

Dear Rare Event Detection group, LLNL

It recently came to my attention from one of my colleagues that the neutrino physics group at Lawrence Livermore National Laboratory has an opening for a postdoctoral research staff. I would like to apply for the position.

I received my Ph.D. in experimental neutrino physics from the University of Hawaii at Manoa in 2016. There I worked on novel event track reconstruction and particle ID techniques in KamLAND (Kamioka Liquid Scintillator Antineutrino Detector), a monolithic liquid scintillator neutrino detector in Kamioka, Japan. Through my work, I single handedly opened the doors to a never before explored capability of scintillator detectors to conduct indirect dark matter searches by looking for directional neutrino signals from the core of the Sun and Earth. According to my understanding, my work is the first ever physics application of directional neutrino reconstruction in scintillator. A paper for this is currently under preparation.

I am currently a post-doctoral researcher at the University of California, Los Angeles (UCLA) with the CUORE (Cryogenic Underground Observatory for Rare Events) $0\nu\beta\beta$ experiment at LNGS (Laboratori Nazionali del Gran Sasso), Italy. CUORE is an unprecedented tonne-scale bolometric search for lepton number violation in ^{130}Te. The experiment was successfully upgraded last year increasing its detector mass by a factor of almost 20. A paper of our first $0\nu\beta\beta$ analysis with this increased mass was submitted for publication to PRL in late 2017. (https://arxiv.org/abs/1710.07988).

My innovative accomplishments in developing novel neutrino detection techniques in scintillator, as well as experience being involved in the commissioning phase of an ultra low-background $0\nu\beta\beta$ decay experiment, makes me a strong and unique candidate to apply for your position. I believe I can make a significant impact to your team of academic and scientific prowess in your Rare Event Detection group at LLNL.

Thank you for your consideration.

Best wishes,

Michinari Sakai

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