

**Dr. Richard Talaga**  
*Intensity Frontier group*  
*Argonne National Laboratory*

March 25, 2018

Dear Dr. Richard Talaga

It recently came to my attention that the Intensity Frontier group at your Institution has an opening for an assistant physicist position on the Mu2e experiment. 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 April, 2016. There I worked on a novel event track reconstruction and particle ID technique 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 working as 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  $^{130}\text{Te}$ . 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 experience being involved in the commissioning phase of 2 world-class particle physics experiments, as well as my innovative accomplishments in developing novel methods for problem solving makes me a 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 group at ANL.

Thank you for your consideration.

Best wishes,

**Michinari Sakai**

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