

Dr. Andrew Norman

Fermilab MS 116

P.O. Box 500

Batavia, IL 60510

January 27, 2018

Dear Dr. Andrew Norman,

I recently heard of a Postdoctoral Research Associate position opening at the Scientific Computing Division (SCD) of Fermi National Accelerator Laboratory in the Neutrino program. I would like to apply for the position.

I received my Ph.D. from the University of Hawaii in 2016 developing novel topological neutrino event reconstruction and particle ID algorithms in liquid scintillator at KamLAND (Kamioka Liquid Scintillator Antineutrino Detector) in Kamioka, Japan. My dissertation was on applying this new technique in indirect dark matter detection by looking for a directional excess of neutrinos from the core of the Sun and Earth. According to my understanding, my work is the first ever physics application of neutrino directionality in scintillator. A paper of my work is currently under preparation.

I have also worked at the University of California, Los Angeles as a postdoctoral researcher from April, 2016, with CUORE (Cryogenic Underground Observatory for Rare Events) at LNGS (Laboratori Nazionali del Gran Sasso), Italy leading the effort on precision modeling of the alpha background contamination of the detector, and the bolometer thermal signals in a cryogenic environment. I have also been heavily involved in the optimization of the signal processing for the recent upgrade from CUORE-0 to CUORE which increased the detector mass by a factor of almost 20. A paper for our first $0\nu\beta\beta$ analysis using CUORE data was submitted for publication in late 2017, and is currently under review (<https://arxiv.org/abs/1710.07988>).

My experience working with neutrino event generators and topological event reconstruction techniques, as well as, experience in the commissioning phase of ultra-low background cryogenic experiments makes me a unique candidate to apply for your position. I believe that I can make a significant impact to your scientific prowess at Fermilab.

Please feel free to contact me if you have any questions or need further information. Thank you for your consideration.

Best wishes,

Michinari Sakai

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