

Prof. John Wilkerson

March 31, 2018

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Dear Prof. John Wilkerson

It recently came to my attention from the CUORE email list that the neutrino physics group at University of North Carolina has an opening for a postdoctoral research staff working on MAJORANA/KATRIN. I would like to apply for the position.

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>).

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 a directional signal of neutrinos 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.

My experience with a successful world-class neutrinoless double beta decay experiment and innovative problem solving skills in experimental neutrino physics makes me a strong candidate to apply for your position. I believe I can make a significant impact in your team at UNC.

Thank you for your consideration.

Best regards,

Michinari Sakai

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