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To Whom It May Concern,

I am writing this letter to support Mr. Joshua Kendall Dubel Abramovitch in his application for registration support for TIPP 2014.

Mr. Joshua Abramovitch won the highly competitive Hamilton Undergraduate Research Scholarship in 2010, and with that support he started his research in the Optoelectronic Laboratory in the Department of Physics. He worked with Dr. Andy Liu and me on a project that is an international collaboration of institutions from CERN, Oxford UK, Fermi National Laboratory, and SMU. Joshua presented his work at NCUR (National Conference on Undergraduate Research) 2011 in Ithaca, NY, as well as at TIPP 2011 in Chicago, Illinois during June of that year. Not only was Joshua's submission for a presentation accepted by the conference's international committee, but he also won financial support from the conference organizers to attend and was the youngest attendee to present.

Building on successes, Joshua took on a more challenging project to develop a silicon PIN diode X-ray detector to monitor the X-ray dose rate for an instrument we procured in Physics from US federal research funds. This instrument cost over $80,000 and used up the funds we had in the project. We need a monitor for the dose rate when we use this instrument to study silicon semiconductor devices, but our department cannot afford such a monitor from industry at a cost of $10,000. Joshua, working with Dr. Liu, came up with the idea of using a large area PIN diode in motion sensors as the X-ray detector. Both of them researched and designed the readout circuits that can cope with low and high dose rates in our applications. A collaborator of mine at Brookhaven National Laboratory, Dr. Helio Takai, also has a similar idea of using a PIN diode to monitor the Co-60 gamma-ray source there. Joshua spent about a month at BNL to work with researchers there to study and calibrate his detector with gamma-rays from Co-60 and with X-rays from the cyclotron light source, a national research facility housed inside BNL. Joshua's work will not only complete an important instrument we have in Physics for research, but will also open the possibility to study different responses of X-rays and gamma-rays in silicon material. This is a suitable project suitable for future undergraduate research projects, and an answer to a question that some of our collaborators at Texas Instruments are asking. These real-life research projects that have immediate applications in our work illustrate the value of physics that students learn in a classroom environment. Joshua has set a good example about how to best use their time at SMU to acquire knowledge

through research projects for SMU students who plan to have a career in other sciences and engineering.

While I believe that Josh would be an excellent contributor to TIPP 2014, it is very costly for him to travel to Amsterdam from Dallas. He currently has a $1500 grant from SMU, but the trip itself (ticket, accommodation, and food) will cost at least $2,500. We are currently working with our department and with SMU to obtain additional funding. Waiving the registration fee would be a great help, as it would then be considerably easier for Josh to attend TIPP.

Joshua is proactive and independent in research. He is a hardworking student, a good team player, and an early achiever. I highly support him in his application.

Sincerely,

Jingbo Ye