

Undergraduate Scholarship Profile

Waikoloa Had to Wait

Ian Cox could have gone to Hawaii but he decided on Japan instead.

With class and research commitments, only one trip would fit his schedule.

Cox, a junior, has spent the past year or so balancing his academic requirements with work in **Professor Robert Grzywacz's** research group. As such he is learning about neutron spectroscopy, the properties of nickel and tin, troubleshooting experiments, and navigating multiple time zones. He travelled to Japan this summer and again this fall to help set up an experiment using VANDLE (Versatile Array of Neutron Detectors at Low Energy), along with HAGRiD (Hybrid Array of Gamma Ray Detectors) to measure the decay of nickel-78 and neighboring nuclei. The research is located at the Radioactive Isotope Beam Factory at RIKEN, the largest comprehensive research institution in Japan.

The group set up the experiment this summer, and although beam problems caused delays, things were up and running in the fall. While he said he didn't get to see

much of the experiment, Cox did gain firsthand knowledge of adapting when things don't go to plan.

"There were a couple of problems, so we spent some time making sure everything was working well and just how we wanted it," he said.

A November trip to RIKEN meant he had to make some choices about managing his calendar. Cox had submitted a poster to a joint meeting of the American Physical Society Division of Nuclear Physics (DNP) and the Physical Society of Japan. The conference was scheduled for late October in Waikoloa, Hawaii. But with research and coursework, he chose to sit it out.

"I figured I'd focus more on the experiment than on the conference," he said.

Physics is a family tradition for Cox, who grew up in East Tennessee spending time at his grandfather's business: Spectrum Techniques in Oak Ridge. The company sells radioactive sources for teaching, training, research, radiation protection, and up-and-coming technologies. Following in his grandfather's footsteps as a physics major, the Hardin Valley Academy graduate chose UT for a variety of reasons.

"I went to high school in Knoxville and I had been around the university for a while," he said. "I really liked the atmosphere and the campus. I was getting a pretty good deal with scholarships and obviously physics here is good, so I thought it was a good fit."

Cox was accepted into the Chancellor's Honors Program and won the physics department's Bill Bugg Faculty Scholarship. His campus life involves following UT sports, playing sports in his own right, spending time with friends, and membership in the Society of Physics Students. The latter is ultimately how he found out that Grzywacz was looking for an undergraduate to join his group. Cox sent an email, met with Grzywacz, and that was that.

He's done hands-on work and travelled abroad, and he did in fact attend a DNP meeting: the 2017 conference where he presented a poster on studies of tin-133 in the beta-decay of indium-133. Cox advocates getting experience outside the classroom for all physics majors.

"If you study physics I think you should do undergraduate research," he said. "I think it's very important and it's great because you learn a lot more that way. From classes you learn a lot about the math and the theory behind everything, but in my research it's really good to get practice with this kind of stuff and see how it applies; see what grad school's like because you work with graduate students a lot. You can see if that's really what you want to go into."



Ian Cox with the VANDLE (Versatile Array of Neutron Detectors at Low Energy) array at the RIKEN Radioactive Isotope Beam Factory in Japan.