HAWC 4QFY2015 Progress Report

HAWC continued to operate well with over 95% on time. Brenda Dingus worked at the site in September 2015 on repairing bad electronics channels and PMTs.

LANL's LDRD program decided to fund a 3 year proposal led by Brenda Dingus to extend the high energy sensitivity of HAWC with a sparse array of outrigger tanks. The proposal was entitled "Cosmic Positrons from Pulsar Winds and Dark Matter: New TeV Theories and New TeV Observations with HAWC". The total proposed funding was $5.5M over 3 years of which ~10% is for the hardware and the remaining funds are for scientists doing theoretical work or observations with HAWC.

The premier conference in our field, the International Cosmic Ray Conference, was held in The Hague in August. Brenda Dingus attended the meeting and made two presentations—one on Dark Matter Constraints from HAWC 111 and one on HAWC's sensitivity to Dark Matter. The HAWC collaboration had 30 presentations at this meeting, including an invited, plenary, highlight talk which was given by former LANL employee, John Pretz. LANL was involved in the preparation of many of the conference papers.

Prior to the cosmic ray conference, Brenda Dingus gave an invited seminar at the Max Planck Institute in Heidelberg, Germany. The institute is a leading member of the HESS and CTA collaborations and expressed interest in joining the HAWC collaboration. They have since followed through on this request and are providing funds and scientists to expand the HAWC outrigger array. Brenda Dingus also gave an invited talk at the CTA summer school in Italy about HAWC's capabilities and complementarity to CTA.

LANL postdoc Pat Harding continued to lead the science working group on Fundamental Physics. He hosted a Mexican scientist at LANL for 6 weeks working on a search for Dark Matter signals from M31. Pat Harding also gave talks at the DPF meeting in Michigan and the TAUP meeting in Torino Italy on HAWC's sensitivity to Dark Matter and first limits on Dark Matter with HAWC 111.