

Current and Pending Support: Jaehoon Yu

Support:	<input checked="" type="checkbox"/> Awarded	<input type="checkbox"/> Pending
Sponsor: DOE	Award Number: DOE DE-SC0011686	
Title of the Funded Research Project: Research on Elementary Particle Physics		
Total Award Amount for the Entire Award Period (including indirect costs): \$890,000		
Award Period: 04/01/16 - 03/31/17		
Number of Person-months per year to be devoted to the project by the PI: 2.0		
<p>Abstract: This proposal requests support for a program of research in elementary particle physics at The University of Texas at Arlington. We propose studies of the recently discovered Higgs boson, and searches for new particles in nature which may be responsible for dark matter, at the ATLAS Experiment at the European Center for Nuclear Research (CERN) in Geneva, Switzerland, and the Silicon Detector (SiD) at the proposed International Linear Collider. The SiD is a novel concept for a future experiment in particle physics. Our program of work involves detector research and development, and distributed computing innovations. Together, the ATLAS Experiment and SiD can provide a deep understanding of two fundamental forces of nature: electromagnetism and the weak nuclear force, in addition to allowing for the discovery of associated new particles suggested by theory. In a new direction for the group, support is also requested for participation in the future Long Baseline Neutrino Experiment (LBNE), which will explore the masses of the neutrinos that are involved in the weak nuclear interactions and search for low-mass dark matter in the beam, and the ORKA Experiment, that will search for signs of new physics in the rare decays of the K-meson, a particle only produced in high energy collisions. Finally, we propose to carry out theoretical studies of the dark matter that exists in large quantities around and between galaxies, in terms of its interactions with astrophysical objects, and its possible creation in low-energy, high beam intensity experiments.</p>		

Support:	<input checked="" type="checkbox"/> Awarded	<input type="checkbox"/> Pending
Sponsor: National Cancer Institute, National Health Institute	Award Number: 1R15CA199020-01A1	
Title of the Funded Research Project: Boosting photo-induced cancer therapies through real-time image guidance		
Total Award Amount for the Entire Award Period (including indirect costs): \$415,336		
Award Period: 04/01/16 - 03/31/19		
Number of Person-months per year to be devoted to the project by the PI: 0.2		
<p>Abstract: We propose to use the position-sensitive gas electron multiplier (GEM) detector and advanced spatiotemporal image processing to enable real-time image guided PITs. The GEM technology is a recent advance of the revolutionary digital imaging of gas detectors using multiwire proportional chambers (MWPC), which won Georges Charpak a Nobel Prize for Physics in 1992. The advantages of GEM-based devices include: intrinsic spatial resolution of 50 μm or better; rate capability larger than 1MHz/mm^2; easy achievable gains above 10^5; allowing detection of single electrons; efficiency for minimum ionizing particles close to 100%. In addition to its excellent detection performance, the flexibility of GEM can be used for a miniature device with the easy integration of an NIR fiber for therapeutic purpose. In this project, for the first time, we propose to develop a multifunctional device using GEM technology for PITs, called Beta Image Guided Light-Induced Therapeutic device (BIGLITE), which can achieve simultaneous imaging and photo-induced therapy.</p>		

Support:	<input checked="" type="checkbox"/> Awarded	<input type="checkbox"/> Pending
Sponsor: NSF	Award Number: 1639157	
Title of the Funded Research Project: Support for Biennial African School of Fundamental Physics 2016		
Total Award Amount for the Entire Award Period (including indirect costs): \$28,215		
Award Period: 07/01/16 - 06/30/17		
Number of Person-months per year to be devoted to the project by the PI: 0.01		
Abstract: This proposal is in support of the forth school in the biennial series. The aim of the school is to build the capacity to harvest, interpret, and exploit the results of current and future physics experiments with particle accelerators, and to increase proficiency in related applications such as medicine, and technologies, such as grid computing. The schools are based on a close interplay between theoretical, experimental and applied physics. The organizing committee consists of a number of people key in the above areas, from both inside and outside Africa. Sub-Saharan Africa is under-represented in sub-atomic physics and this school will serve to provide more opportunities for students to become aware of and to participate in this field.		

Support:	<input checked="" type="checkbox"/> Awarded	<input type="checkbox"/> Pending
Sponsor: Fermi National Accelerator Laboratory	Award Number: N/A	
Title of the Funded Research Project: Application for Neutrino Physics Center Fellowship		
Award Period: 07/01/16 - 06/30/17		
Total Award Amount for the Entire Award Period (including indirect costs): \$10,000		
Number of Person-months per year to be devoted to the project by the PI: 1.5		
Abstract: The major goals of this project are to understand the behavior of the membrane cryostat, develop and design the beam hadron monitor and optimize the beam line components for DUNE experiment. These funds enable the PI to contribute directly to DUNE experiment through an extended stay at FNAL.		

Support:	<input checked="" type="checkbox"/> Awarded	<input type="checkbox"/> Pending
Sponsor: CNRS, France	Award Number: 1263101510	
Title of the Funded Research Project: MOU for Research on WA105 Dual Phase Detector and DUNE		
Award Period: 10/01/15 - 12/31/17		
Total Award Amount for the Entire Award Period (including indirect costs): \$36,728		
Number of Person-months per year to be devoted to the project by the PI: 1.0		
Abstract: The major goal of this project is to contribute to the setup of WA105 and understanding DUNE cryostats.		

Support:	<input checked="" type="checkbox"/> Awarded	<input type="checkbox"/> Pending
Sponsor: Brookhaven National Lab (DOE)	Award Number:	
Title of the Funded Research Project: Development of SiPM Coupling with Scintillation Counters for Range Stack Detector		
Award Period: 10/01/13 - 09/30/16		
Total Award Amount for the Entire Award Period (including indirect costs): \$46,000		
Number of Person-months per year to be devoted to the project by the PI: 0.1		
<p>Abstract: The Range Stack (RS) in ORKA detector plays an essential role in particle identification, especially the pions from Kaon decays from muons. It must be able to measure the energy, range and decay sequence of charged particles emerging from the target with a good position resolution. In addition, it must be able to assist photon veto (PV) detector by identifying them with good efficiency for the photons converting before getting into the PV system. These funds have been repurposed to support LBNE/DUNE photo detector R&D of the same topic.</p>		