Statement of Research Activity

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1 Past Research

Three month internship at Karlsruhe Institute of Technology (KIT)

Research Description During three month internship at Kalsruhe Institute of Technology (KIT) in Germany, I participated a Pierre Auger Experiment related research project was titled *Star Tracking with the High Elevation Auger Telescopes*. A simulation was constructed to predict the star trajectory in the field of view of the florescences telescopes. Then this result was compared with detected star trajectory by florescences telescopes. The simulation-data difference can be used for many different applications, and one of them was to identify mis-cabled PMTs. In the final period of the internship, a mis-cabled PMT checking algorithm was developed and it was proven to be successful.

Computer Package Used Offline, C++, ROOT, SVN.

Final year project at University of Kent at Canterbury

Research Description The research I carried out at University of Kent as final year project was tittled *Investigation of Far Ultraviolet (FUV) radiation induced shock-wave velocity in H2 region*. My task was to use the existing Smoothed Particle Hydrodynamics (SPH) simulation to investigate the affect of the FUV radiation on the molecular clouds. Clouds of different radius and mass were studied.

Computer Package Used IDL, C++, ROOT, FORTRAN 90, SVN, FFMPEG.

Current Research

Research Overview In the master program, I assisted Dr. Garth Huber at University of Regina with the construction of the Heavy Gas Cerenkov Detector, which is part of the 12 GeV upgrade installation at Jefferson Lab, VA. I was involved in detector design, R&D , Monte-Carlo simulation, and hardware quality control. I also participated in the construction of the permanent facility for reflectivity measurement at Jefferson Lab. The setup was successful.

Future Research Goal

Motivation The master experience at University of Regina in particle physics was very enjoyable and productive, it broadened my knowledge and skills in physics and life. I am willing to continue on the experimental particle physics study and research as PhD student, and believe this experience will bring me one step closer to being a real physicist. Also, it will give to great joy to see the installation and commission the HGC detector.