Asif Imran

Wisconsin IceCube Particle Astrophysics Center
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Research Interests: Application of *cutting-edge* imaging techniques and statistical tools to analyze large quantities of data to study high-energy photon emissions from distant galaxies.

Education

Iowa State University, Ames, IA
Ph.D, Astrophysics — June 2010

Grinnell College, Grinnell, IA
B.A., Physics *With Honors* — May 2003

Skills

Hardware: HAWC Observatory

- Designed and built real-time, VMEbus-based data acquisition system capable of handling an unprecedented 500 MBytes/second. The novel design forgoes traditional hardware trigger in favor of purely software-based triggers.

Software

- Currently developing a C++-based package with a tightly integrated SQLite-DB backend for the real-time monitoring of gamma-ray emission to be used by the HAWC collaboration.
- Developed C-based libraries for synchronized readout of an array of single board computers with a net throughput rate of 500 MBytes/sec.
- Developed Monte Carlo simulation package for the VERITAS collaboration. Developed software analysis tools for the HAWC collaboration to measure sensitivity of the detector.
- Languages: Python, C, C++, database query languages (SQLite and MySQL).
- Tools: ROOT, IPython, NumPy, SciPy, Matplotlib, Boost, Pandas, Pyfits, SQLAlchemy, LaTeX, SVN, Git, bash & regexp.

Research Experience

Wisconsin Icecube Particle Astrophysics Center - Madison, WI
Postdoctoral Research Associate — 2013 – present
Supervisor: Stephan Westerhoff
Develop Analysis Framework for Fast, Real-Time Monitoring of Gamma Ray Emission with HAWC Observatory.

Los Alamos National Laboratory - Los Alamos, NM
Postdoctoral Research Associate — 2010 – 2013
Supervisor: Brenda Dingus
Designed and Built VME-based Data Acquisition System for the HAWC Experiment.
Study of Extragalactic Gamma-Ray Sources with data from HAWC and the Fermi-Space Telescope.

Iowa State University -Ames, IA
Graduate Student Researcher — 2005 – 2010
Advisor: Frank Krennrich
Analyzed Variable Gamma-Ray Emission from Active Galactic Nuclei.
Assembled & Tested camera electronics for the VERITAS telescopes.

Grinnell College - Grinnell, IA
Undergraduate Mentored Advanced Project — 2002
Advisor: Charlie Duke
Simulation of Cherenkov Photons from Cosmic-Ray Cascade in the Earth's Atmosphere.