PHYSICS: LIST OF COMPLETED STUDENT RESEARCH PROJECTS

1. Project Title: “Search for Z-Prime Boson at the LHC”. Summer Research Project of Bryan Fagan. Mentor. (Summer 2012). *Bellarmine University. This research project was funded by NSF’s MRI grant.

2. Project Title: “Study of W and Z Bosons with ATLAS Monte-Carlo Data and the Search for Z-Prime Boson using Filtered ATLAS Datasets”. Summer Research Project of Matthew Heath (Undergraduate Student from the University of Michigan). Mentor. (Summer 2012). *Bellarmine University. This research project was funded by NSF’s MRI grant.

3. Project Title: 3-D Animation and Rendering Visualization Project (this work was included in my NSF proposal titled “MRI: Acquisition of a High Resolution Visualization System to Enable Large-Scale Data-Intensive Collaborative Research and Cyber-Learning using Grid Computing”). Research project of Sean Dockery. Mentor. (Spring 2012). *Bellarmine University.

4. Project Title: “Network and Cluster Monitoring of the ATLAS Tier3 Grid Supercomputer Using Cacti, Nagios and MonALISA”. Research project of Meghan Allen and Jovan Andjeljich, Mentor. (Spring 2012 – Present). *Bellarmine University. This research project was funded by NSF’s MRI grant.

5. Project Title: “The ATLAS Tier3 Grid Supercomputing Project at Bellarmine University”. Research project of Meghan Allen and Jovan Andjeljich, Mentor. (Fall 2010 – Spring 2012). *Bellarmine University. This research project was funded by NSF’s MRI grant.

6. Project Title: “Monte-Carlo simulation Studies using the ATLAS Detector at the Large Hadron (LHC) at CERN”. Research project of Sean Dockery. Mentor. (Spring 2011 – Fall 2011). *Bellarmine University. This research project was funded by NSF’s MRI grant.

7. Project Title: “Study of W and Z Bosons with ATLAS Monte-Carlo Data at CERN-LHC”. Research project of Antonin Verlet-Banide, Mentor. (Fall 2011). *Bellarmine University. This research project was funded by NSF’s MRI grant.

8. Project Title: “Monte-Carlo Simulation and Data Analysis using the ATLAS Detector at the CERN-LHC (Large Hadron Collider)”. Research project of Drew Miles, Mentor. (Fall 2010 – Spring 2011). *Bellarmine University. This research project was funded by NSF’s MRI grant.

9. Project Title: “Wavefront Error (WFE) Experimental Testbed Studies Aimed at Detecting Earth-like Exoplanets with NASA’s Next Generation Space-based SIM-Lite Astrometric Observatory”. Research project of Ben Draper and Richard Jelsma. Mentor. (Fall 2010 – Spring 2012). *Bellarmine University. This research project was carried out at the Jet Propulsion Lab and was funded by NASA’s KSGC grant.

10. Project Title: “Wavefront Error (WFE) Simulation Studies using MATLAB for NASA’s SIM-Lite Mission”. Research project of Ben Draper and Richard Jelsma. Mentor. (Fall 2009 – Spring 2012). *Bellarmine University. This research project was funded by NASA’s KSGC grant.


OUTCOME: TALKS AND POSTER PRESENTATIONS GIVE MY RESEARCH STUDENTS AT BELLARMINE UNIVERSITY

1. “Search for the Z-Prime Boson using the ATLAS Detector at the Large Hadron Collider(LHC) at CERN”, Bryan Fagan and Akhtar Mahmood, poster presented at the 2012 KAS (Kentucky Academy of Science) meeting held at Eastern Kentucky University on October 20, 2012.

2. “Computational Physics using Parallel Cluster Computing”, Meghan Allen and Akhtar Mahmood, talk presented at the 2012 KAS (Kentucky Academy of Science) meeting held at Eastern Kentucky University on October 20, 2012. **Meghan Allen won the Second Prize at the Undergraduate Research Competition in the Science Education Paper Session.**

3. “Monte-Carlo Simulation and Data Analysis to Search for the Higgs Particle by Studying the Decay Patterns of the W and Z Bosons (the Electroweak Force Carriers) Using the ATLAS Detector at the CERN-LHC (Large Hadron Collider)”, Sean Dockery, Antonin Verlet-Banide, and Akhtar Mahmood, presented a poster at the 12th Annual Undergraduate Research Week at Bellarmine University on April 18, 2012.

5. “Monte-Carlo Simulation and Data Analysis Studies to Search for the Higgs Boson using the ATLAS Detector at the CERN-LHC (Large Hadron Collider)”, Sean Dockery and Akhtar Mahmood, poster presented at the 2012 Annual KAPT meeting held at Western Kentucky University on March 17, 2012.


7. “The ATLAS Tier3 Grid Supercomputer at Bellarmine University”, Meghan Allen and Akhtar Mahmood presented a poster at the at 97th Annual KAS meeting held at Murray State University on November 5, 2011. Meghan Allen won the First Prize at the Undergraduate Research Competition in the Computer and Information Sciences Poster Session.

8. “Study of W and Z Bosons with ATLAS Monte-Carlo Data at CERN-LHC”, Antonin Verlet-Banide and Akhtar Mahmood, talk given at the 97th Annual KAS Meeting held at Murray State University on November 5, 2011.

9. “Monte-Carlo Simulation Studies using the ATLAS Detector at the Large Hadron Collider (LHC) at CERN”, Sean Dockery and Akhtar Mahmood, poster presented at the 97th Annual KAS meeting held at Murray State University on November 5, 2011.


12. “Monte-Carlo Simulation and Data Analysis using the ATLAS Detector at the CERN-LHC (Large Hadron Collider)”, Drew Miles and Cody Haycraft, and Akhtar Mahmood, invited poster presented at the 2011 Bellarmine University Heritage Dinner, April 14, 2011.

13. “The ATLAS Tier3 Supercomputer at Bellarmine University”, Jovan Andjeljich, Benjamin Draper, Drew Miles, Sean Dockery, and Akhtar Mahmood, poster presented at the 11th Annual Undergraduate Research Week at Bellarmine University, April 10-17, 2011. This poster was selected as one of the best research projects at research competition.

14. “Monte-Carlo Simulation and Data Analysis using the ATLAS Detector at the CERN-LHC (Large Hadron Collider)”, Drew Miles, Cody Haycraft, Jovan Andjeljich, Sean Dockery, Benjamin Draper, and Akhtar Mahmood, poster presented at the 11th Annual Undergraduate Research Week, April 10-17, 2011.


18. “The Sphinx Beowulf Cluster Computing Project at Bellarmine University”, Dzmitry Miranovich, Christopher Tharp, Ben Draper, Antonio Castineira, Richard Jelsma, and Akhtar Mahmood, poster presented at the 10th Annual Undergraduate Research Day at Bellarmine University in April 11-18, 2010. This poster was selected as one of the best research projects at research competition.


26. “Measurement of Muon Flux and Muon Lifetime Using the Bellarmine Cosmic Ray Muon Detector”, Ben Draper, Richard Jelsma, Yan Chen, and Akhtar Mahmood - poster presented by students at the at the 9th Undergraduate Research Week at Bellarmine University on April 14, 2009. This poster was selected as one of the best research projects at research competition.

27. “A Survey of Subatomic Particles with Charmed Quarks”, poster presented by my research student Zachary Kemper at the at the Eighth Undergraduate Research Week Poster Session at Bellarmine University on April 14, 2008.