

University of Rochester

Summer 2004 undergraduate research in Physics and Astronomy (*with selected talks or publications*)

1. Devin Bayer, class of '06 at the University of Rochester, worked with the group of Prof. Kevin McFarland on the Collider Detector at Fermilab (CDF) project. on the Consumer-Server/Logger (CSL), which processes events, i.e. collisions, that have been deemed useful enough to permanently archive.
2. Daniel Capellupo, class of '06 at the University of Rochester, worked with Prof. Adam Frank and finished developing a graphical user interface for plotting data produced by an adaptive mesh refinement code and for producing animations, and he ran simulations of the hydrodynamic interaction of a strong shock wave with heterogeneous astrophysical media with radiative cooling. He plans on applying to graduate school for astronomy
3. James Dolen, class of '06 at the University of Rochester, worked with Prof. Regina Demina at Fermilab on a Monte Carlo simulation of $t\bar{t}$ events at the Large Hadron Collider and at the Tevatron. He plans to attend graduate school in physics.
 1. *CMS AN-2005/039 -- Study of Cell Energy Thresholds in CMS Calorimeters for Jet Reconstruction*}, R. Demina, **J. Dolen**, C. Justus, P. Tipton, M. Zielinski
 2. *CMS NOTE-2006/020 -- Calorimeter Cell Energy Thresholds for Jet Reconstruction in CMS*}, R. Demina, **J. Dolen**, C. Justus, P. Tipton, M. Zielinski, A. Bhatti, R. Harris
 3. **James Dolen**, "Effect of Cell Energy Thresholds on Jet reconstruction at the Compact Muon Solenoid," Advisor - R. Regina (*Physics and Astronomy Senior Thesis*, 2006)
4. Scott Field, class of '05 at the University of Rochester, worked with Prof. Arie Bodek and Dr. Yeonseong Chung on a search for new pentaquarks in CDF data. He plans on pursuing graduate school in physics.
 1. *Search for Penta Quark in the channel of $\Phi P P_i$* , G.B. Yu*, Y.S. Chung*, A. Bodek*, **S. Field***, M. Neubauer, F. Wurthwein, E. Gerchtein, J. Russ, Ch. Paus, S. Tether, J. Chartier, M.-J. Wang, D. Litvintsev, *CDF/ANAL/BOTTOM/CDFR/7144 ; 7/26/04*
 2. *Search for $\Theta^0_{cs} \rightarrow D_s^+ p$ state in CDF* G. Yu, Y. Chung, A. Bodek, **S. Field**, M. Neubauer, F. Wurthwein, E. Gerchtein, J. Russ, Ch. Paus, S. Tether, J. Chartier, M.-J. Wang, D. Litvintsev *CDF/ANAL/BOTTOM/CDFR/7638; 5/6/05*
 3. *Scott Field*, "Search for X^b and $\hat{A} \pm b$ with the CDF II Detector at Fermilab," Advisor - A. Bodek (*Physics Senior Thesis*, 2006) (*Stoddard Prize*, 2006)
5. John Ford, class of '07 at the University of Toronto, worked with Prof. Judy Pipher's group on a study of the low mass star forming region OMC-2/3 in the near infrared.
6. Amy Chi-Yun Huang, class of '05, at the University of Rochester, investigated physics education with Priscilla Auchincloss by teaching a pre-college experience in physics program to high school women. She is undecided about her plans after graduation.
7. Jeremy Johnson, class of '05 at The University of Texas at Arlington, worked with Dr. Howard S. Budd studying attenuation and total light acceptance measurements of WLS optical fibers for the Research and Design phase of MINERnA. He plans to apply to graduate school in

experimental particle physics.

8. Christopher Justus, class of '06 at University of Rochester, worked with Prof. Regina Demina on CMS simulations of tt-bar and ttH events for the LHC. He plans on applying to graduate school for physics.
 1. *CMS AN-2005/039 -- Study of Cell Energy Thresholds in CMS Calorimeters for Jet Reconstruction*}, R. Demina, J. Dolen, C. Justus, P. Tipton, M. Zielinski
 2. *CMS NOTE-2006/020 -- Calorimeter Cell Energy Thresholds for Jet Reconstruction in CMS*}, R. Demina, J. Dolen, C. Justus, P. Tipton, M. Zielinski, A. Bhatti, R. Harris
 3. **Christopher Justus**, "Quantizing and Reducing Noise Through Threshold Energy Cuts in the CMS Calorimeter," Advisor - R. Demina (Physics Senior Thesis, 2006)
9. Ian Kleckner, class of '04 at University of Rochester, worked with Prof. Kevin McFarland on developing an water-based scintillating liquid to be implemented in the Super Kamiokande neutrino detector in Japan. He also worked with McFarland to study the magnetic moment of cosmic ray muons. He plans on applying to graduate school for mechanical engineering.
10. Amanda LaPage, class of '06 at University of Rochester, studies the evolution of gaps formed by eccentric protoplanets in a gaseous protoplanetary disk using 2-D hydrodynamical simulations with Prof. Alice Quillen. She plans on continuing her research with Professor Quillen in the fall and finishing her BS in physics and astronomy.
11. Susannah Lazar, class of '05 at LSU, worked with Jianhui Zhong and Patrick Connelly on quantitative analysis of MRI contrast in phantoms modeling the microcirculatory system of tumors. She plans to apply to graduate school for medical physics.
12. Jarron Leisenring, class of '05 at the University of Rochester, worked on with Prof. Dan Watson on designing and creating various database systems to contain information gathered from Rochester's involvement with the Space Infrared Telescope Facility (SIRTF) as well to generate instructions used for pointing the telescope. He plans on going to graduate school.
13. Zhuohan Liang, class of '05 at the University of Rochester, worked with Prof. S. G. Rajeev on the energy spectrum of a plane pendulum. She plans to apply to graduate school for physics.
14. Matthew Loth, class of '05 at The University of Wisconsin Stevens Point, worked with Prof. Wenhao Wu on fabricating natural single contact nanowires and studying their size dependent superconducting properties. He plans on applying to graduate school in physics.
15. Matthew MacWilliams class of '06 at St. John Fisher College studied the effects of increased amounts of CO₂ produced by humans upon the Arctic's temperature with Prof. Dave Douglass. He plans to plans to apply to graduate school for either optical engineering or mechanical engineering.
16. David Martell, class of, investigated cosmic rays with Prof. Kevin McFarland and high school teacher Paul Conrow. He worked with a liquid scintillator candidate for a neutrino oscillations experiment and with the PARTICLE program which taught local high school physics teachers about particle physics. He plans on applying to graduate school.
17. Robert Penna, class of '07 at the University of Rochester, studied the relation of coronal mass ejection transit times to the recoveries of associated Forbush decreases. He also assisted the AstroPREP program and the PARTICLE Program, which is directed by Professor Kevin McFarland. He expects to apply to graduate school in physics.
 1. *Decay of interplanetary coronal mass ejections and Forbush decrease recovery times* , Penna, RF; Quillen, AC JOURNAL OF GEOPHYSICAL RESEARCH-SPACE

18. Patrick Puccini, class of '05 at SUNY Geneseo, worked with Dr. John Howell on finding an equivalent method for quantum photon teleportation using two spatial modes instead of two polarizations in one spatial mode. He plans on attending graduate school for physics
19. Daniel Riley, class of '06 at SUNY Geneseo, worked with Prof. Doug Cline and analyzed the gamma ray spectrum and plotted the level scheme for the shape transition nuclei Rubidium 109 and 111.
20. Elizabeth Rollings, class of '05 at the University of California, Berkeley, worked with Prof. Regina Demina testing silicon strip sensors for the Compact Muon Solenoid detector at the Large Hadron Collider at CERN. She plans on applying to graduate school in physics.
21. Paul Sutter, class of '05 at Cal Poly State University of San Luis Obispo, studied spectra taken with the Spitzer Infrared Space Telescope of truncated protoplanetary disks with Prof. Dan Watson. He plans to apply to graduate school in physics.
22. Gail Zasowski, class of '05 at the University of Tennessee, studied young stellar objects and their accompanying dust/gas envelopes and using spectroscopic data from the new Spitzer Space Telescope with Profs. Dan Watson and Bill Forrest. She plans to apply to graduate school in physics.