University of Rochester

*S*ummer 2005 undergraduate research in Physics and Astronomy *(Also shown are selected talks and publications by undergraduates)*

1. Megan Alexander, class of '08 at Northeastern, worked with Prof. Frank Wolfs and developed various applications of FPGA-based digital signal processors; applications include dark-matter R&D and outreach activities. She plans to continue study in engineering or physics.
    1. *Alexander, Megan; Miner, Daniel; Skulski, Wojtek; Wolfs, Frank, Online Muon Capture and Decay Experiment American Physical Society, APS March Meeting, March 13-17, 2006, abstract #V42.009 2006APS..MARV42009A*
2. Wen-fai Fong, class of '08 at MIT, worked with professors Eric Blackman and Chuang Ren to assess the feasibility of the Weibel plasma instability as a mechanism for energy transfer between ions and electrons in a collisionless plasma. She plans to eventually apply to graduate school in physics or astrophysics.
    1. *Ren, C; Blackman, EG; **Fong, WF**, "Understanding the saturation of proton-driven Weibel instabilities and implications for astrophysics", PHYSICS OF PLASMAS, p. , vol. 14, (2007). 2007PhPl...14a2901R 10.1063/1.2409606*
    2. *Ren, Chuang; Blackman, Eric; **Fong, Wen-Fai,** Efficiency of proton-driven Weibel instability at thermalizing initially two-temperature astrophysical plasmas, American Physical Society, 48th Annual Meeting of the Division of Plasma Physics, October 30-November 3, 2006, abstract #GP1.082 2006APS..DPPGP1082R*
3. Andreas Gennis, class of '08 at the University of Rochester, worked with Prof. Paul Tipton examining the missing energy transverse resolution for the CMS detector sing data from Monte Carlo simulations. #
4. Kate Green, class of '07 at the University of Michigan, worked with Prof. Yongli Gao on investigating the electronic structure of metal-doped organic semiconductors via x-ray photoelectron spectroscopy. She received the Addison-Wesley Book Award in 2007 from the University of Michigan Department of Physics and the Richard P. Feynman Award in 2007 from the Cornell Physics Department. In 2008 she began her graduate work at Cornell (physics) focusing on experimental condensed matter physics. #R
    1. *Doping Induced Energy Level Shift in Organic Semiconductors, Ding, Huanjun; **Green, Kate; Gao, Yongli American Physical Society, APS March Meeting, March 13-17, 2006, abstract #H28.007 Publication Date: 03/2006 2006APS..MARH28007D***
    2. *Ding, Huanjun; Park, Kiwan; **Green, Kate; Gao, Yongli, Electronic structure modification of copper phthalocyanine (CuPc) induced by intensive Na doping, Chemical Physics Letters, v. 454, iss. 4-6, p. 229-232. (2008) 2008CPL...454..229D***
5. Jeff Haas, class of '06 at San Francisco State University, CA, worked with Prof. Regina Demina and Sergey Korjenevski doing silicon testing for the CMS experiment. He plans to attend graduate school. #
6. Walter Hopkins, class of '08 at Rochester Institute of Technology, worked with Prof. Kevin McFarland and Dr.Veronique Boisvert on optimizing matching a b jet with a lepton in top

antitop lepton+jets events at CDF at FNAL. He plans on applying to graduate school in physics.

1. *Measuring the sign of the top charge using the top decay products in 1.5/fb: P. Bednar, V. Boisvert, Z. Gunay Unalan,* ***W. Hopkins, K. McFarland, M. Schwartz, V. Sorin, S. Tokar, K. Tollefson, CDF/ANAL/TOP/CDFR/8921, 7/23/07***
2. *Finding the Charge of the top quark in the Dilepton Channel, Beretvas, A.; Antos, J.; Chen, Y. C.; Gunay, Z.; Sorin, V.; Tollefson, K.; Bednar, P.; Tokar, S.; Boisvert, V.;* ***Hopkins, W.; McFarland, K, Presented at Symposium on Hadron Collider Physics 2006 (HCP 2006), Durham, North Carolina, 22-26 May 2006 2007arXiv0707.1339B***

7. Chat Hull, class of '06 at the University of Virginia, worked with Prof. Dan Watson on the reduction of infrared spectral data from the Spitzer Space Telescope. Using the data, he researched disk accretion and outflow shocks in class 0 young stellar objects. He plans to apply to graduate school in astronomy.
    1. *Spitzer Space Telescope Observations of the Magnetic Cataclysmic Variable AE Aquarii, Dubus, Guillaume; Taam, Ronald E.;* ***Hull, Chat; Watson, Dan M.; Mauerhan, Jon C, The Astrophysical Journal, Volume 663, Issue 1, pp. 516-521(2007), 10.1086/518407 2007ApJ...663..516D***
    2. *The development of a protoplanetary disk from its natal envelope, Watson, Dan M.; Bohac, C. J.; Hull, C.; Forrest, William J.; Furlan, E.; Najita, J.; Calvet, Nuria; D'Alessio, Paola; Hartmann, Lee; Sargent, B.; and 3 coauthors Nature, Volume 448, Issue 7157, pp. 1026-1028 (2007) 10.1038/nature06087 2007Natur.448.1026W*
    3. *Spitzer IRS Observations of Class I/II Objects in Taurus: Composition, Temperature and Thermal History of the Circumstellar Ices, Zasowski, G.; Markwick-Kemper, F.; Watson, Dan M.; Furlan, E.; Bohac, C. J.; Hull, C.; Green, J. D. Submitted to ApJ. 38 pages, 18 figure (2007) 2007arXiv0712.2458Z*
8. Soo Chon Kim, class of '06 at University of Rochester, worked with Dr. Priscilla Auchincloss to teach Physics to female high school students who have not taken Physics before. She plans to apply to medical school.
9. Michael Laski, class of '07 at the University of Rochester, worked with Prof. Adam Frank on the computer simulation of the hydrodynamics of stellar jets, envelopes, and other objects. He plans on applying to graduate school for physics. #
    1. *AstroBEAR: hydrodynamic & magnetohydrodynamic code environment designed for a variety of astrophysical applications --Brandon Schroyer. Developers:Andrew Cunningham,*
    Peggy Varniere, Alexei Poludnenko, Kris Yirak, Matt Lijoi, Mike Laski, http://www.pas.rochester.edu/~bearclaw/
10. Mark Laurri, class of '06 at SUNY Brockport, worked with Prof. Robert Knox on a mathematical, three-layer energy balance model of the climate system. He assigned feedbacks in the model to reproduce climate sensitivities to CO_2 doubling predicted by general circulation models. He plans on applying to graduate school in physics. #
11. Kara Morris, class of '07 at the University of Rochester, worked with Prof. McFarland and the PARTICLE program, a high school outreach program, investigating the characteristics of muons in cosmic showers. She plans on applying to graduate school. #
    1. *Kara Morris (Advisor Kevin McFarland, Physics) FREQUENCY AND ANGULAR DISTRIBUTIONS OF MUONS DETECTED IN ATMOSPHERIC SHOWERS - NCUR 2006 http://www.ncur20.ws/abstract_display.asp?id=1131*

2. *Frequency and Angular Distributions of Muons Detected in Atmospheric Showers; Kara Morris, Aimee Slaughter, and Prof. Kevin McFarland, University of Rochester; Paul Sedita, Dan Wigent, Canandaigua Academy; Laura Arnold, Greece Arcadia; Yuri Shadunsky, Brighton High School; Jeff Parvin, Zach Noyes, Greg Meade, Pittsford Mendon High School; Robert Meek, Oakfield-Alabama High School; Prof. Richard Thorley, The Harley School , RSPS 2006*

12. Andrew Mosher, class of '06 at SUNY Geneseo, worked with Huanjun Ding and Prof. Yongli Gao to determine the dependence of rubrene thin film morphology on evaporation rate of the rubrene and the temperature of the substrate. He plans on applying to graduate school in physics. #
13. Dylan Prendergast class of '08 at University of Rochester, worked with the group of Prof. Paul Tipton and studied missing Et resolution in the CMS detector by analyzing missing Et in Z->mumu events. #
    1. *Monitoring Missing-Et Resolution at the CMS Detector at the LHC Collider; Dylan Prendergast, Prof. Paul Tipton, University of Rochester , RSPS 2006*
14. Amos Rosenstein, class of '06 at the University of Rochester, worked with Prof. Mark Bocko on characterizing the mechanical impedance of piano keys of different pianos to build an electronic keyboard that more accurately exhibits the feel of a real piano. He plans on applying to graduate school in physics or electrical engineering. #
15. Elizabeth Scherrer, class of '07 at University of Rochester, worked with Dr. Priscilla Auchincloss on the Pre-College Experience in Physics, which is a summer program for high school girls that promotes women in science and engineering. She plans to apply to graduate school for physics. (She also worked with Kevin McFarland and Steve Manly)
    1. *Elizabeth Scherrer, "Electron Scattering and Pion Production in Relation to Neutrino-Nucleon Interactions" Advisor - Kevin S. McFarland (Physics Senior Thesis, 2007)*
    2. *Electron Scattering and Pion Production in Relation to Neutrino-Nucleon Interactions -Elizabeth Scherrer and Prof. Kevin McFarland, University of Rochester, RSPS 2007*
    3. *ELECTRON SCATTERING AND PION PRODUCTION IN RELATION TO NEUTRINO-NUCLEON INTERACTIONS Oral Physics Scherrer, Elizabeth http://www.dominican.edu /query/ncur/display_ncur.php?id=756 NCUR 2007*
16. David Sher, class of '07 at Johns Hopkins University, worked with Prof. Steven Manly on nuclear effects in electron scattering off hydrogen and carbon targets. He plans to apply to graduate school in mathematics, physics, or a related field. #
17. Grant Tremblay, class of '06 at the University of Rochester, worked with Prof. Alice Quillen on a morphological study of nuclear dust structures in 3C radio galaxies. The work was part of a collaboration with the Space Telescope Science Institute and utilized Hubble Space Telescope infrared and optical imaging. Grant's research led to a publication in the Astrophysical Journal (Tremblay et al. 2007). He plans to attend graduate school in astronomy.
    1. *Tremblay, GR; Chiaberge, M; Donzelli, CJ; Quillen, AC; Capetti, A; Sparks, WB; Macchetto, FD, "Isophotal structure and dust distribution in radio-loud elliptical galaxies", ASTROPHYSICAL JOURNAL, p. 109, vol. 666, (2007). Published,*
    2. *Grant Tremblay, "The Warped Nuclear Disk of Radio Galaxy 3C 449," Advisor - A. Quillen (Physics and Astronomy Senior Thesis, 2006) (Stoddard Prize, 2006)*
    3. *The Warped Nuclear Disk of Radio Galaxy 3C 449; Grant Tremblay, Prof. Alice Quillen, University of Rochester , RSPS 2006*

18. Jeremy Wolcott, class of '06 at the University of Rochester, worked with Prof. Arie Bodek on analysis of data from the Collider Detector at Fermilab, and searched for new baryons which contain both bottom quarks and strange quarks. He plans to apply to graduate school. #
19. Joseph Yesselman, class of '07 at University of Rochester, worked with Prof. Frank Wolfs on upgrading and improving software that will be used for the dark matter detection. He plans on applying to graduate school in physics. #