Congratulations to our Graduates!

**Doctoral Graduates**

<table>
<thead>
<tr>
<th>Student</th>
<th>Advisor</th>
<th>What’s Next</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bo Chen</td>
<td>Bill Halperin</td>
<td>Postdoc, National Institute of Health</td>
</tr>
<tr>
<td>Anne Dabrowski</td>
<td>Mayda Velasco</td>
<td>CERN Fellowship, Geneva, Switzerland</td>
</tr>
<tr>
<td>Geoffrey Dommett</td>
<td>Rodney Ruoff</td>
<td>Contemplating a small business start-up</td>
</tr>
<tr>
<td>Sarah Dugan</td>
<td>Prem Kumar</td>
<td>Adjunct Lecturer, Northwestern University</td>
</tr>
<tr>
<td>Wei Fang</td>
<td>Hui Cao</td>
<td>Research Assistant, NIST, Maryland</td>
</tr>
<tr>
<td>Casey Law</td>
<td>Farhad Zadeh</td>
<td>Postdoc, University of Amsterdam</td>
</tr>
<tr>
<td>Hua-Bai Li</td>
<td>Giles Novak</td>
<td>Postdoc, Harvard-Smithsonian Observatory</td>
</tr>
<tr>
<td>Kirill Rivkin</td>
<td>John Ketterson</td>
<td>Postdoc, Texas A &amp; M University</td>
</tr>
<tr>
<td>Xiaohua Wu</td>
<td>Hui Cao</td>
<td>Postdoc, Argonne National Laboratory</td>
</tr>
</tbody>
</table>

**Bachelor Graduates**

<table>
<thead>
<tr>
<th>Student</th>
<th>What’s Next</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semyon Blinstein</td>
<td>Graduate study in mathematics at UCLA</td>
</tr>
<tr>
<td>Isaac Brown</td>
<td>Begin work on an MS in education at NYU, with the goal of becoming a high school physics teacher</td>
</tr>
</tbody>
</table>
Oliver Chen (Moving on!)
Michael Downey Seeking employment as a consultant in the Chicago area
Samuel Eckels Graduate study in mathematics at the University of Wisconsin-Madison
Steven Ehler Will spend a year at the Max Planck Institute for Nuclear Physics in Heidelberg, Germany, as a DAAD Fellow, then
begin work on a PhD in astrophysics at Stanford
Matthew Gill Graduate study in mathematics at UC San Diego
Jesse Hall III (Moving on!)
James Hebdon (Moving on!)
Grant Hetherton Seeking employment, possibly in China
Jeffrey Kaplan Graduate study in mathematics at UC San Diego
Aaron Lee Will spend a year at Cambridge University working on a Certificate for Advanced Study in Mathematics, then will enter the PhD astrophysics program at UC Berkeley
Thomas Lippman Graduate study in physics at Stanford
Taejin (Lance) Min Graduate study in physics at the University of Illinois-Urbana
Sasha Muratov Graduate study in astronomy at the University of Michigan
Robert Rettew Graduate study at Georgia Tech, as a President’s Fellow in Georgia’s Center for Excellence in Photovoltaics
Joseph Rodriguez (Moving on!)
William Shepherd Graduate study at Northwestern University, where he will be a GAANN Fellow next year
Future PhDs: Our New Graduate Students 2006-07

Israel Bichachi                  Dibyendu Dey                  William Gannon                  Rodrigo Guzman
Kunal Kumar                     Joo Sang Lee                   Benjamin Reddy                  Sagar Sahasrabudhe
Hosung Seo                      Benjamin Stripe                Francesca Valsecchi

Roberto Vega-Morales            Steven Won
AWARDS & RECOGNITIONS

Our Undergraduates

• *Drum Roll!!* – The Department’s 2006-07 Award for Outstanding Senior Thesis in Physics and Astronomy goes to (three awards):

- Steven Ehler (advisor: Mel Ulmer)
  Temperature And Iron Abundance Gradients In High-Redshift Galaxy Clusters
- Jeffrey Kaplan (advisor: V. Kalogera)
  Low-Frequency Non-Radial Oscillations Of Stars
- Aaron Lee (advisor: Fred Rasio)
  Resonance Trapping In Protoplanetary Discs

- The 2006-07 Award for Outstanding Junior in Physics & Astronomy goes to:

- Yonatan Kahn (advisor: Michael Schmitt)

• *Phi Beta Kappa* – Congratulations to Steve Ehler, James Hebden, and Aaron Lee, all of whom were recently elected to the Phi Beta Kappa Honor Society!

• *Goldwater Scholars* – In April, 2007, physics majors Yoni Kahn and James Kath were selected as Goldwater Scholars for 2007-08. Kahn, a junior, has been working in Prof. Michael Schmitt’s research group on a new experiment to search for dark matter. This summer he will go to CERN in Geneva, Switzerland, to continue his research in particle physics. Kahn is a joint major in Physics and Music Performance. Kath, a sophomore, has until recently been working with Prof. Vicky Kalogera on a project related to the age determination of stellar clusters by using the cooling processes of white dwarfs. He will be joining Prof. John Marko’s research group this summer as an REU (Research Experience for Undergraduates) student. Kath is a double major in ISP and Physics.

Goldwater Scholars are selected on the basis of academic merit from mathematics, science, and engineering programs nationwide. The scholarships cover the cost of tuition, fees, books, and room and board up to a maximum of $7,500 per year. The Goldwater Foundation is a federally endowed agency established by an act of Congress in November 14, 1986, to honor the late Senator Barry M. Goldwater. It is now the premier undergraduate award of its type in these fields.

- *DAAD Fellowship* – Senior Steve Ehler has been awarded a DAAD (Deutscher Akademischer Austausch Dienst, or German Academic Exchange Service) Fellowship for 2007-08. DAAD was founded in 1971 to support academic exchange between the US, Canada, and Germany, and provides fellowships for both graduate and undergraduate students to study in Germany. Steve will be based in Heidelberg, where he will work on the HESS Project (High Energy Stereoscopic System), which is an array of imaging atmospheric Cherenkov telescopes designed to study cosmic gamma rays in the 100 GeV energy range. After he returns from Germany, Steve plans to enter the graduate astrophysics program at Stanford.

- *Kriegbaum Scholar* – Yoni Kahn was recently chosen as a 2007-08 Katherine L. Kriegbaum Scholar. These awards,
with no restriction as to the field of study, are granted to rising seniors in the WCAS. The distinction carries a $1000 research stipend to support his research in particle physics, which he conducts as a member of Prof. Michael Schmitt’s research group.

- **Aaron Lee featured in USA Today**

The following article appeared in the 2/20/07 issue of USA Today:

Between marching band practice and restarting the Northwestern chapter of Pi Mu Epsilon, the national Math Honor Society, Weinberg senior Aaron Lee found time to design evolutionary models of solar systems.

Lee’s work inside and outside the classroom earned him a spot on USA Today's All-USA College Academic Third Team. Twenty students were named to each of the first, second and third teams.

For two years, Lee has studied the initial formation processes of solar systems and written his own code to analyze data. From this, he designed models concerning the orbits and evolution of planets in other solar systems. His findings will be published later this year in the *Astrophysical Journal*.

According to Tracey Wong Briggs, the coordinator of the All-USA Academic and Teacher Teams, the centerpiece of the application is the applicant’s essay describing his or her most outstanding intellectual endeavor.

"We are looking for students who are extending academic knowledge beyond the classroom, beyond getting an A", Briggs said.

The program recognizes students for achievements in areas such as academic research, the arts, politics and public service. The team identifies students for what they have achieved as undergrads, not what they hope to do upon graduation.

"I didn't merely want to do observations," Lee said. "I can be part of suggesting answers to a much more general picture that will allow us to connect what we see observationally with mathematical models, that we can use to predict where we came from and where we are going in terms of the evolution of the universe."

When the first planet outside of the Earth's solar system was discovered nearly a decade ago, scientists found that other solar systems were configured differently, Lee said.

Other solar systems show signs of instability, such as collisions, and to understand why, researchers look at how planets form and evolve, said physics and astronomy Prof. Fred Rasio.

Lee's research investigates what processes make the planets in our solar system remain in stable orbits while those in other systems do not.

"What makes our solar system so particular?" Lee said. "The thing we have to do now is develop new models to help us figure out what and how these systems came about."

Rasio advised Lee on the research, which also will serve as his senior thesis in physics.

"Aaron's research is pretty inspiring. It connects a lot of the human questions," Rasio said. "The big questions, like, what's the meaning of life? Are we alone in the universe?"

Rasio said he recognized early on that Lee was a top student with excellent technical skills and that he was ready for something "more real" in terms of research.

"I decided I would give him a real project from day one and let him sink or swim," Rasio said. "He's been swimming pretty well."

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**Our Graduate Students**

- **AFCEA Fellowship** – In May, 2007, Meghan Anzelc was presented with a check for $5000 by the AFCEA. The AFCEA is a non-profit association of electronics professionals dedicated to encouraging cooperative relationships between government agencies, the
military, and industry. Their Ph.D. Fellowship program seeks to reward excellence for demonstrated effort at the doctoral level of study, rather than the potential for such excellence. Meghan is the first physics graduate student to win a Fellowship from the AFCEA since 1996. Meghan’s faculty advisor is David Buchholz.

**CERN Fellowship** – Anne Dabrowski has recently been awarded a CERN Fellowship. CERN postdoctoral Fellowships are highly competitive, with only about 10% of the applicants accepted. Anne also recently won the $500 student poster award at the 2007 Particle Accelerator Conference in Albuquerque, NM. Anne’s faculty advisor is Mayda Velasco.

**ISGC Fellowships** – Peter Maksym and Jeremy Sepinsky have received $10,000 Fellowships from the NASA-funded Illinois Space Grant Consortium. Peter’s advisor is Mel Ulmer; Jeremy’s advisor is Vicky Kalogera.

**Our Faculty**

- **Asg Teaching Awards** – Profs. Michael Schmitt and David Meyer have recently won recognition from the student body for their teaching. To quote the letters they received, “The Associated Student Government is pleased to inform you that you have been selected by the Northwestern student body as one of the outstanding Faculty of the Year for 2006-2007.”

- **Alumni Awards** – Senior Lecturer Mike Smutko is the recipient of a 2006-07 Arts and Sciences Alumni Teaching Award. Prof. Fred Rasio received a 2006-07 Research Mentor Award from the Alumni in recognition of his outstanding record as a mentor of undergraduates.

- **Research Highlighted** – In January, 2007, Fred Rasio and Bill Halperin had their research highlighted by Northwestern's Newscenter, an on-line newspaper. You can read the text of Fred Rasio’s “Triple Interactions Of Supermassive Black Holes Found To Be Common In Early Universe,” and Bill Halperin’s “Physicists Set Speed Limit for Future Superconducting Magnet” at: [www.northwestern.edu/newscenter](http://www.northwestern.edu/newscenter).

- **APS Fellows** – In late 2006, Hui Cao, John Marko, and Fred Rasio were elected Fellows of the American Physical Society. The APS Fellowship Program was created to recognize members who have made advances in knowledge through original research and publication or made significant and innovative contributions in the application of physics to science and technology. Each year, no more than one-half of one percent of the current membership of the Society can be elected as Fellows. Cao was also made a Fellow of the Optical Society of America.

- **Catalyst Award** – In October, 2006, Prof. John Marko and Prof. Philippe Cluzel of the Department of Physics at the University of Chicago jointly received a Catalyst Award from the Chicago Biomedical Consortium.

- **New Faculty** – New Adjunct Professors in the department are Sam Bader, who works in experimental condensed matter physics, Mike
Norman, who works in many areas of condensed matter theory, and Valerii Vinokur, who is noted for his work in superconductivity theory. All three professors are Senior Physicists at Argonne National Laboratory.

**Our Alumni**

- **Sloan Fellowship** – Northwestern graduate Vesna Mitrovic (PhD, 2001) was recently named a 2007 Sloan Fellow by the Alfred P. Sloan Foundation. Dr. Mitrovic conducted her PhD research in the NMR laboratory of Prof. William Halperin, and later was a Research Associate at CNRS in Grenoble, France. She is currently an Assistant Professor at Brown University. Dr. Mitrovic was previously the winner of an NSF Career Award (2006).

- **OJI Award** – Northwestern graduate Sean Fleming (PhD, 1995) was recently named an Outstanding Junior Investigator by the Department of Energy’s Office of Nuclear Physics. Dr. Fleming conducted his thesis research in particle theory under Prof. Eric Braaten (now at Ohio State), and was a Research Associate at Case Western and the University of Toronto. Dr. Fleming is currently an Assistant Professor at the University of Arizona. His research involves the application of QCD theory (Quantum Chromo-Dynamics) to nuclear structure.

**We Hear That . . .**

- These students will be participating in Northwestern’s 2007 NASA Summer Research Program (sponsor: Mel Ulmer):

  **College Summer Researchers**
  - Jeff Chilcote
  - Alec Davis
  - Rob Delmedico
  - Steve Ehlerl
  - Jeff Kaplan
  - Meagan Morschier
  - Aisha Saleem

  **High School Summer Researchers**
  - Kiefer Aguilar
  - Katheryn French
  - Sam Simmons

- Stefan Cartledge (PhD, 2002) is currently a Visiting Assistant Professor at Valparaiso University where, coincidentally, Andy Richter (PhD, 2000) has been an Assistant Professor for the past two years. Stefan’s advisor was David Meyer; Andy’s advisor was Pulak Dutta.

- Dipangkar Dutta (PhD, 1999) has joined the faculty at Mississippi State University as an Assistant Professor. Dipangkar’s advisor was Ralph Segel.
RESEARCH AWARDS IN THE
DEPARTMENT OF PHYSICS & ASTRONOMY
MAY 2006 – MAY 2007

David Buchholz
High Energy Physics Research
Department of Energy
December 2006 – November 2007
$137,000

David Buchholz & Heidi Schellman
High Energy Physics Research
Department of Energy
December 2006 – November 2007
$359,000

Hui Cao
Quantum-Classical Transition in Deformed Microcavities
National Institute of Standards and Technology
June 2006 – May 2007
$30,000

Venkat Chandrasekhar
Acquisition of a Field Emission Scanning Electron Microscope for Electron Beam Lithography and Nanoscience Education
U.S. Army RDECOM Acquisition Center
June 2006 – June 2007
$181,994

Coherent Thermal and Electrical Transport in Mesoscopic Structures
National Science Foundation
June 2006 – May 2008
$230,000

Coherent Thermal and Electrical Transport in Mesoscopic Structures (REU Supplement)
National Science Foundation
February 2007 – May 2007
$6,625

Novel Nanoscale Materials for Energy Conversion Applications
U.S. Army RDECOM Acquisition Center
August 2006 – November 2007
$124,070

Epitaxial Multifunctional Oxide Heterostructures
DOE Subcontract: University of Wisconsin
September 2006 – August 2007
$178,000

Pulak Dutta
In Situ X-Ray Studies of Adsorption, Nucleation and Self-Assembly at Soft and Hard Surfaces
Department of Energy
November 2006 – October 2007
$173,576

Arthur Freeman
Quantum Engineering of Materials and Devices
DARPA Subcontract: UC Davis
May 2006 – February 2007
$45,000

Fundamental Electronic Structure Characteristics and the Mechanical Behavior of Materials for Aerospace Applications
Air Force Office of Scientific Research
October 2006 – February 2007
$52,083

Fundamental Electronic Structure Characteristics and the Mechanical Behavior of Aerospace Materials
Air Force Office of Scientific Research
March 2007 – November 2007
$89,500
Electronic Structure and Novel Properties in Complex Oxides and Hetero-Interfaces
Department of Energy
April 2006 – March 2008
$121,912

ONR Subcontract: QuesTek Innovations LLC
$122,349

**Bruno Gobbi**
High Energy Physics Research
Department of Energy
December 2006 – November 2007
$190,000

Research Support
DOE Subcontract: Fermilab
February 2006 – June 2006
$59,109

**William Halperin**
Antiferromagnetism and Superconductivity
Department of Energy
July 2006 – June 2007
$120,000

Order Parameter Structure in Thin Films and Disordered Superfluid \(^3\)He
National Science Foundation
August 2006 – July 2007
$152,000

**Vassiliki Kalogera**
A Deep X-ray Survey of the Small Magellanic Cloud
NASA Subcontract: Smithsonian Astrophysical Observatory
April 2006 – April 2008
$14,976

Tidally Interacting Binaries and LISA Astronomy: Waveform and Data Analysis Studies
NASA
May 2006 – April 2007
$86,036

Discrete X-Ray Source Populations and Star-Formation History in Nearby Galaxies
NASA Subcontract: Smithsonian Astrophysical Observatory
September 2006 – March 2007
$17,706

Understanding the X-Ray Binary Populations of Nearby Galaxies Revealed by the Chandra Observatory: Super Star Clusters and Starbursts (Fellowship for J. Sepinsky)
NASA Goddard Space Flight Center
September 2006 – August 2007
$24,000

Fellowship in Science and Engineering
David & Lucile Packard Foundation
October 2006 – September 2007
$125,000

Binary Compact Objects as Gravitational Wave Sources: Modeling and Data Analysis
National Science Foundation
November 2006 – October 2007
$92,911

Binary Compact Objects as Gravitational Wave Sources: Modeling and Data Analysis (REU)
National Science Foundation
September 2006 – October 2007
$36,204

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“I wanted to talk to Professor Blumenkraft about his black hole project, but he’s disappeared somewhere.”
CAREER: Theoretical Studies of Compact Objects in Binary Systems  
National Science Foundation  
November 2006 – October 2007  
$108,479

Vassiliki Kalogera, A. Bayliss, F. Rasio, R. Taam, and F. Yusef-Zadeh  
Acquisition of a Versatile High Performance Computing Facility for Gravitational Wave Sources  
National Science Foundation  
October 2006 – September 2007  
$416,198

John Ketterson  
Chalcopyrite and Orientation-Patterned Semiconductors of Mid-IRT Sources: Modeling, Growth and Characterization  
DOD Subcontract: Stanford University  
January 2006 – May 2006  
$54,200

Dynamic Flux Line Response in Layered Superconductors with Tailored Defect Structures  
DOE Subcontract: University of Kentucky Research Foundation  
January 2006 – February 2006  
$2,927

Collaborative Research: Collective Mode Spectroscopy in Unconventional Superconductors  
National Science Foundation  
May 2007 – April 2008  
$65,244

Collaborative Research: Collective Mode Spectroscopy in Unconventional Superconductors (REU Supplement)  
National Science Foundation  
March 2007 – April 2008  
$7,000

NSF-Europe: Photonics, Plasmonics and Molecule-Based Nanomaterials:

Preparation, Design, Properties Optimization and Device Aspects  
National Science Foundation  
April 2007 – March 2007  
$100,000

John Marko  
Statistical Mechanics of DNA-Protein Interactions and Chromosome Organization  
National Science Foundation  
$167,000

Giles Novak  
Extragalactic and Galactic Surveys with the Balloon-borne Large-Aperture Submillimeter Telescope – BLAST  
NASA  
May 2006 – April 2007  
$12,376

From Dust to Planets – Multi-Wavelength Polarmetric Studies of Protostellar Disks (Fellowship for M. Krejny)  
NASA Goddard Space Flight Center  
July 2006 – June 2007  
$24,000

Laboratory Tests of VPM Technology  
NASA Goddard Space Flight Center  
May 2007 – May 2008  
$60,479

Robert Oakes & André de Gouvêa  
High Energy Physics Research  
Department of Energy  
December 2006 – November 2007  
$87,000

Frederic Rasio  
Binary Stars and Globular Cluster Dynamics  
NASA  
May 2006 – April 2007  
$106,216
Stellar Collisions in Dense Star Clusters and Galactic Nuclei
NASA
May 2006 – May 2007
$98,704

Intermediate-Mass Black Holes in Galactic Nuclei and Starbursts
National Science Foundation
June 2006 – May 2008
$241,750

Dynamics of Extrasolar Planetary Systems
National Science Foundation
August 2006 – July 2008
$265,010

Dynamical Formation and Evolution of Merging Compact Binaries
National Science Foundation
December 2006 – January 2008
$32,996

Ronald Taam & Craig Heinke
Constraining the Temperature of the Neutron Star in Sax J1808.4-3658
NASA
September 2006 – September 2007
$41,351

Ronald Taam & Christopher Deloye
Bright X-Ray Binaries in Elliptical Galaxies: Consequences of an Ultracompact Source Nature
NASA Subcontract: Smithsonian Astrophysical Observatory
$87,000

Melville Ulmer
Illinois Space Grant Consortium
NASA Subcontract: UIUC
March 2006 – February 2007
$120,000

Observations of a Distant X-Ray Luminous Cluster of Galaxies (XMM-Newton)
NASA
February 2007 – February 2008
$35,000

Mayda Velasco
Development of Beam Instrumentation for CLIC at the CTF3 Facility at CERN
Department of Energy
September 2006 – August 2007
$45,000

Maintenance and Operations Activities Related to the US CMS Hadron Calorimeter M&O Subsystem
DOE Subcontract: Fermilab
October 2006 – September 2007
$25,316

Michael Schmitt
High Energy Physics Research
Department of Energy
December 2006 – November 2007
$172,000

Ralph Segel
Physics with Rare Isotope Beams
Department of Energy
February 2007 – December 2007
$64,000

Kamal Seth
Strong Interaction Studies with Medium Energy Probes
Department of Energy
December 2006 – November 2007
$325,000

Serhi Shafraniuk
A Multispectral Detector Based on an Array of Carbon-Nanotube Quantum Wells
Air Force Office of Scientific Research
December 2006 – November 2007
$70,318

Ronald Taam & Christopher Deloye
Bright X-Ray Binaries in Elliptical Galaxies: Consequences of an Ultracompact Source Nature
Nature
October 2006 – October 2007
$87,000

Michael Schmitt
High Energy Physics Research
Department of Energy
December 2006 – November 2007
$172,000

Ralph Segel
Physics with Rare Isotope Beams
Department of Energy
February 2007 – December 2007
$64,000

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Strong Interaction Studies with Medium Energy Probes
Department of Energy
December 2006 – November 2007
$325,000

Serhi Shafraniuk
A Multispectral Detector Based on an Array of Carbon-Nanotube Quantum Wells
Air Force Office of Scientific Research
December 2006 – November 2007
$70,318
High Energy Physics Research
Department of Energy
December 2006 – November 2007
$136,000

FARhad Yusef-Zadeh
A Legacy Study of Stellar Life Cycles at the Galactic Center
NASA Subcontract: Smithsonian Astrophysical Observatory
June 2006 – June 2008
$30,000

GBT Student Support Program
NSF/NRAO
July 2006 – June 2007
$9,000

The Mixed-Morphology SNR G359.1-0-5: Birthplace of the Mouse
NASA Subcontract: Smithsonian Astrophysical Observatory
September 2006 – September 2007
$54,292

A Large-Scale Survey of the Galactic Center at 24 Microns
NASA Subcontract: Jet Propulsion Laboratory
October 2006 – May 2008
$18,234

Precise Measurements of Sgr A* Flare Activity
NASA Subcontract: Space Telescope Science Institute
April 2007 – November 2007
$38,241

Have a great summer!