

# Amy Yarleen Lien

NASA Goddard Space Flight Center

Email: [amy.y.lien@nasa.gov](mailto:amy.y.lien@nasa.gov) Phone: 217-299-6019

Website: <https://swift.gsfc.nasa.gov/results/BATbursts/amyweb/Index.html>

---

## Positions

<u>Sept 2017 – Present</u>	Assistant Research Scientist <sup>1</sup> , NASA Goddard Space Flight Center
<u>Sept 2013 – Sept 2017</u>	Postdoctoral Research Associate <sup>1</sup> , NASA Goddard Space Flight Center
<u>Sept 2011 – Aug 2013</u>	NASA Postdoctoral Fellow (research fellowship)

---

## Education

<u>Aug 2005 – Aug 2011</u>	Ph.D., Department of Astronomy, University of Illinois at Urbana-Champaign
<u>Sept 2001 – Jun 2005</u>	B.S. Department of Physics, National Central University (Taiwan)

---

## Research Interests and Relevant Experience

### Research Interests

Gamma-ray bursts, supernovae, gravitational waves, time-domain astrophysics, multi-messenger studies, high-energy astrophysics, stellar evolution, early universe, cosmology

### Professional duty

Primary data analysis scientist of the Burst Alert Telescope onboard the Neil Gehrels *Swift* Observatory, which ranked as the best NASA space science mission for the past six years. Providing data products of gamma-ray bursts (>1300 events), hard X-ray sources (>2000 events), and counterpart search of gravitational waves (>50 events) to the public. Constructing flight commands to the spacecraft to maintain and improve spacecraft operation.

### Teaching Experience

Developed and taught undergraduate courses at University of Maryland, College Park, in 2017 and 2018. Mentored student research projects (>10 students from diverse backgrounds), taught discussion sections, hosted student presentations, night and solar observing sessions for four years.

### Computer Skills

Fluent in C, Python, Shell Script. IDL, AWK, Xspec, FTOOLS. HTML. Experienced in Matlab, Mathematica, Fortran

---

<sup>1</sup> ~80% time for the *Swift* Burst Alert Telescope support, ~20% time for personal research.

Contract affiliation: Center for Space Science and Technology/Univ. of Maryland, Baltimore County

---

## Professional Experience

---

Sept 2011 – Present:

- Research (~ 20%):
  1. Exploring the connection between gamma-ray bursts (GRBs), supernovae, and gravitational waves via multi-messenger observations.
  2. Studying the observed GRB properties with the Neil Gehrels *Swift* Observatory (*Swift*).
  3. Chasing gravitational wave counterparts in the Burst Alert Telescope (BAT) onboard *Swift*
  4. Probing the early universe with long GRBs.
  5. Making forecasts for future telescopes and exploring optimal GRB detection strategies.
  6. Constructing the *Swift*/BAT 157-month hard X-ray survey catalog (<https://swift.gsfc.nasa.gov/results/bs157mon/>).
- *Swift* Burst Alert Telescope (BAT) support (~80%):
  1. Data analysis for the BAT-detected GRB, maintaining and updating the public GRB catalog website (<http://swift.gsfc.nasa.gov/results/batgrbcatalog/>).
  2. Maintaining the BAT hard X-ray transient monitor scripts and public webpages (<http://swift.gsfc.nasa.gov/results/transients/>).
  3. Providing BAT data analysis when required, and offering help for users who have questions regarding the BAT analysis.
  4. Maintaining the BAT-team machines, arranging shifts for the duty scientists.
  5. Writing new automatic scripts for new BAT operation, including prompt data search following gravitational wave detections.
  6. Performing operation of the BAT. Constructing flight commands to send to the space telescope, and perform recovery process and analysis during spacecraft anomalies.

Jan 2007 – Aug 2011

Advisor: Prof. Brian Fields, University of Illinois at Urbana-Champaign

- Code development for detailed forecasting of core-collapse supernova detections for major future surveys in both optical and radio wavelengths, and exploration of science potentials of the detections via multi-messenger observations.

May 2006 – Dec 2006

Advisor: Prof. Joseph Mohr, University of Illinois at Urbana-Champaign

- Code development for mock observations for the galaxy cluster search of the Dark Energy Survey, and seeking the optimal filter for galaxy cluster detections.

---

## Selected Publications

---

\* See full publication list on the ADS search engine (<http://adsabs.harvard.edu>):  
39 refereed and 1100+ non-refereed (e.g., GCN circulars or ATELS) articles.

### Major publications:

1. *Using gamma ray monitoring to avoid missing the next Milky Way Type Ia supernova*  
Xilu Wang, Brian D. Fields, **Amy Lien**  
MNRAS, Volume 486, Issue 2, p.2910-2918 (2019)
2. *The Third Swift Burst Alert Telescope Gamma-Ray Burst Catalog*  
**Amy Lien**, Takanori Sakamoto, Scott D. Barthelmy et al.,  
The Astrophysical Journal, Vol. 829, Issue 1, article id 7, 47 pp. (2016)  
arXiv:1606.01956
3. *Modeling the Swift BAT Trigger Algorithm with Machine Learning*  
Philip B. Graff, **Amy Lien**, John G. Baker et al.,  
The Astrophysical Journal, Vol. 818, Issue 1, article id. 55, 10 pp. (2016)  
arXiv:1509.01228
4. *Swift Observations of Gamma-Ray Burst Pulse Shapes: GRB Pulse Spectral Evolution Clarified*  
Jon Hakkila, **Amy Lien**, Takanori Sakamoto et al.,  
The Astrophysical Journal, Vol. 815, Issue 2, article id. 134, 16 pp. (2015)
5. *Probing the Cosmic Gamma-ray Bursts Rate  
with Trigger Simulations for the Swift Burst Alert Telescope*  
**Amy Lien**, Takanori Sakamoto, Neil Gehrels, et al.  
The Astrophysical Journal, vol. 783, Issue 1, article id. 24, 22 pp. (2014)  
arXiv:1311.4567
6. *The Diffuse Gamma-ray Background from Type Ia Supernovae*  
**Amy Lien**, Brian D. Fields  
The Astrophysical Journal, vol. 747, Issue 2, article id. 120, 12 pp. (2012)  
arXiv:1201.3447
7. *Radio Supernovae in the Great Survey Era*  
**Amy Lien**, Nachiketa Chakraborty, Brian D. Fields, and Athol Kembell  
Astrophysical Journal, vol. 740, Issue 1, id. 23 (2011)  
arXiv:1107.0775
8. *Synoptic Sky Surveys and the Diffuse Supernova Neutrino Background:  
Removing Astrophysical Uncertainties and Revealing Invisible Supernovae*  
**Amy Lien**, Brian D. Fields, and John F. Beacom  
Physical Review D, vol. 81, Issue 8, id. 083001 (2010)  
arXiv:1001.3678

9. *Cosmic Core-Collapse Supernovae from Upcoming Sky Surveys*  
Amy Lien and Brian D. Fields  
Journal of Cosmology and Astroparticle Physics, Issue 01, pp. 047 (2009)  
arXiv:0902.0979

**Other selected publications:**

10. *Study of the variable broadband emission of Markarian 501 during the most extreme Swift X-ray activity*  
MAGIC Collaboration et al., A&A, Volume 637, idA86, 27 pp. (2020)
11. *Short gamma-ray bursts within 200 Mpc*  
Dichiara et al., MNRAS, Volume 492, Issue 4, p.5011-5022 (2020)
12. *Observations of a GX 301-2 Apastron Flare with the X-Calibur Hard X-Ray Polarimeter Supported by NICER, the Swift XRT and BAT, and Fermi GBM*  
Abarr et al., ApJ, Volume 891, Issue 1, id 70, 15 pp. (2020)
13. *Probing the extragalactic fast transient sky at minute time-scales with DECam*  
Andreoni et al., MNRAS, Volume 491, Issue 4, p.5852-5866 (2020)
14. *Fermi and Swift Observations of GRB 190114C: Tracing the Evolution of High-energy Emission from Prompt to Afterglow*  
Ajello et al., ApJ, Volume 890, Issue 1, id.9, 19 pp. (2020)
15. *Swift-XRT Follow-up of Gravitational-wave Triggers in the Second Advanced LIGO/Virgo Observing Run*  
Klingler et al. ApJS, Volume 245, Issue 1, article id. 15, 14 pp. (2019)
16. *The afterglow and kilonova of the short GRB 160821B*  
Troja et al. MNRAS, Volume 489, Issue 2, p.2104-2116 (2019)
17. *Swift spectra of AT2018cow: A White Dwarf Tidal Disruption Event?*  
Kuin et al. MNRAS, Volume 487, Issue 2, p.2505-2521 (2019)
18. *A Search for High-energy Counterparts to Fast Radio Bursts*  
Cunningham et al. ApJ, Volume 879, Issue 1, article id. 40, 13 pp. (2019)
19. *GRB 171205A/SN 2017iuk: A local low-luminosity gamma-ray burst*  
D'Elia et al., A&A, Volume 619, id.A66, 14 pp. (2018)
20. *Multi-wavelength characterization of the blazar S5 0716+714 during an unprecedented outburst phase*  
MAGIC Collaboration et al., A&A, Volume 619, id.A45, 18 pp. (2018)
21. *The largest glitch observed in the Crab pulsar*  
Shaw et al. MNRAS, Volume 478, Issue 3, p.3832-3840 (2018)
22. *The 105-Month Swift-BAT All-sky Hard X-Ray Survey*  
Oh et al. The ApJ Supplement, Volume 235, Issue 1, article id. 4, 14 (2018)

23. *Swift and NuSTAR Observations of GW170817: Detection of a Blue Kilonova*  
Evans et al. Science, Volume 358, Issue 6370, pp. 1565-1570 (2017)
24. *The X-ray Counterpart to the Gravitational-wave Event GW170817*  
Troja et al. Nature, Volume 551, Issue 7678, pp. 71-74 (2017)
25. *The Environment of the Binary Neutron Star Merger GW170817*  
Leven et al. ApJ Letters Vol 848, Issue 2, L28, 9 (2017)
26. *Multi-messenger Observations of a Binary Neutron Star Merger*  
Abbott et al. The ApJ Letters, Volume 848, Issue 2, article id. L12, 59 (2017)
27. *Swift Follow-up of Gravitational Wave Triggers: Results from the First aLIGO run and Optimization for the Future*  
Evans et al., MNRAS, Vol. 462, Issue 2, p.1591-1602 (2016)
28. *Do the Fermi Gamma-Ray Burst Monitor and Swift Burst Alert Telescope see the Same Short Gamma-Ray Bursts?*  
Burns et al. ApJ. Vol. 818, Issue 2, article id. 110, 10 (2016)
29. *The Central Engine of GRB 130831A and the Energy Breakdown of a Relativistic Explosion*  
De Pasquale et al., MNRAS, Vol. 455, Issue 1, p. 1027-1042 (2016)
30. *Happy Birthday Swift: Ultra-long GRB 141121A and Its Broadband Afterglow*  
Cucchiara et al. ApJ, Vol. 812, Issue 2, article id. 122, 13 (2015)
31. *iPTF14yb: The First Discovery of a Gamma-Ray Burst Afterglow Independent of a High-energy Trigger*  
Cenko et al., ApJ Letters, Vol 803, Issue 2, L24, 6 (2015)
32. *GRB 130925A: an ultralong gamma ray burst with a dust-echo afterglow, and implications for the origin of the ultralong GRBs*  
Evans et al., MNRAS, Vol. 444, Issue 1, p.250-267 (2014)
33. *The Swift/BAT Hard X-Ray Transient Monitor*  
Krimm et al., ApJS, Volum 209, Issue 1, article id. 14, 33 pp. (2013)

---

### Principal Investigator Research Grants

---

\*Funding was used to support student research.

- Quantifying the Instrumental Effects and Systematic Uncertainties in the Durations of *Swift*/BAT Gamma-ray Bursts 2017-2020  
- Swift Guest Investigator Program (Cycle 13): \$40K
- Chasing Short Gamma-Ray Bursts with Swift and Fermi 2014-2016  
- Swift Guest Investigator Program (Cycle 10): \$39K
- High Redshift Gamma-Ray Bursts from Swift 2013-2014  
- Swift Guest Investigator Program (Cycle 9): \$33.5K

---

## Selected/Recent Approved Co-Investigator Research Projects

---

\*No funding support was requested from Co-I proposals because I am fully funded by *Swift*

- Improving the localization of Fermi/GBM GRBs with Swift/BAT event data 2020-2021  
 PI: Jamie Kennea (Penn State University)  
 Program: Fermi Guest Investigator Program (Cycle 13)
- Rapid Swift follow-up of fast radio bursts 2020-2021  
 PI: Jamie Kennea (Penn State University)  
 Program: Swift Guest Investigator Program (Cycle 16)
- Key project: The detection and monitoring of 2020-2021  
 electromagnetic counterparts of gravitational wave sources with Swift  
 PI: Jamie Kennea (Penn State University)
- Gamma-ray Bursts Similar to GRB 170817A: 2019-2022  
 Comprehensive Search in the BATSE and Swift Data  
 PI: Peter Veres (University of Alabama, Huntsville)  
 Program: Astrophysics Data Analysis Program (ADAP)
- ToO Spectroscopy of Gravitational Wave Counterparts: Constraining the 2019-2019  
 Origin of r-process Elements  
 PI: Brad Cenko (NASA Goddard Space Flight Center)  
 Program: Keck observatory
- A missing population of short duration gamma-ray bursts 2018-2021  
 PI: Eleonora Troja (University of Maryland, College Park)  
 Program: Astrophysics Data Analysis Program (ADAP)
- Key project: The detection and monitoring of electromagnetic counterparts 2018-2019  
 of gravitational wave sources with Swift in O3  
 PI: Jamie Kennea (Penn State University)  
 Program: Swift Guest Investigator Program (Cycle 14)
- Deeper, Wider, Faster: 2017-2018  
 High Energy Counterparts to the Fastest Bursts in the Sky  
 PI: Tyler Pritchard (Swinburne University of Technology, Australia)  
 Program: Swift Guest Investigator Program (Cycle 13)
- Unveiling the elusive progenitors of short duration gamma-ray bursts  
 PI: Eleonora Troja (University of Maryland, College Park)  
 Program: Keck Observatory
- Swift alert, localization, and first look at a Type Ia supernova in the Milky Way 2016-2017  
 PI: Brian Fields (University of Illinois, Urbana-Champaign)  
 Program: Swift Guest Investigator Problem (Cycle 12)

- Identify the signature of neutron star mergers through rapid Chandra/Hubble observations of a short GRB  
PI: Eleonora Troja (University of Maryland, College Park)  
Program: Chandra Cycle 17

2015-2016

---

### Invited Talks

---

- |                  |   |
|------------------|---|
| <u>Oct. 2020</u> | Seminar, Caltech X-ray Club, meeting hosted virtually online<br>Title: <i>Swift</i> Burst Alert Telescope   |
| <u>Feb. 2020</u> | Seminar, Goddard tour for Japanese STEM students, Goddard visitor center<br>Title: Exploring the Universe with gamma-ray bursts and the <i>Swift</i> Burst Alert Telescope  |
| <u>Sep. 2019</u> | Ioffe Workshop on GRBs and other transient sources, St. Petersburg, Russia<br>Title: Observing the transient sky with the Neil Gehrels <i>Swift</i> Observatory   |
| <u>Jul. 2019</u> | Seminar at the National Taiwan Normal University, Taipei, Taiwan<br>Title: Gamma-Ray Bursts, the Swift Burst Alert Telescope, and the Era of Gravitational Waves  |
| <u>Mar. 2019</u> | Seminar, Astronomy Club (AstroTerps), University of Maryland, College Park<br>Title: Exploring the Universe with GRBs and the <i>Swift</i> Burst Alert Telescope  |
| <u>Feb. 2019</u> | Seminar, Goddard tour for Japanese STEM students, Goddard visitor center<br>Title: Exploring the Universe with gamma-ray bursts and the <i>Swift</i> Burst Alert Telescope  |
| <u>Jan. 2019</u> | AAS Press Panel on the AT2018cow, Seattle, WA<br>Title: AT2018cow: A White Dwarf Torn Apart by a Black Hole?  |
| <u>Oct. 2018</u> | Student Colloquium at Tamkang University, Tamsui, Taiwan<br>Title: Gamma-ray bursts from the <i>Swift</i> Burst Alert Telescope   |
| <u>Oct. 2018</u> | Taipei Gravitational Wave Group Conference, Tamkang University, Tamsui, Taiwan<br>Title: Gamma-ray Bursts in the Era of Multi-Messenger Astronomy (talk #1)<br>Catching Electromagnetic Counterparts for Gravitational Waves Events (talk #2) |
| <u>Oct 2017</u>  | CTC seminar, University of Maryland, College Park<br>Title: Gamma-ray Bursts from the Swift Burst Alert Telescope   |
| <u>Mar 2017</u>  | Seminar, Nagoya University, Japan<br>Title: Gamma-ray Bursts from the Swift Burst Alert Telescope   |
| <u>Mar 2017</u>  | Suzaku/WAM team meeting, Nagoya University, Japan<br>Title: Swift Status & WAM-BAT joint-fit spectral analysis  |
| <u>Dec 2016</u>  | Astroparticle Physic Workshop at Yachay Tech, Quito, Ecuador<br>Title: Gamma-ray Bursts from the Swift Burst Alert Telescope  |

- Oct 2016 The Eighth Huntsville Gamma-Ray Burst Symposium, Huntsville, Alabama  
 Title: The Third Swift Burst Alert Telescope Gamma-Ray Burst Catalog:  
 Instrumental Sensitivity and Implication on the High-Redshift GRBs
- Dec 2015 The Fourth AMON workshop, Penn State University, Pennsylvania  
 Title: Swift-BAT as a Triggering Facility
- Sept 2015 Special Seminars, CEA Saclay, France  
 Title: Gamma-ray Bursts from the Swift Burst Alert Telescope:  
 Probing Intrinsic Distributions with Trigger Simulations
- Apr 2015 Astronomical Sciences Seminars, Virginia Tech, Virginia  
 Title: Probing the Star-Formation History with Core-Collapse Supernovae,  
 Gamma-Ray Bursts, and Neutrinos in the Great Survey Era
- Apr 2015 ITC Seminar, CfA, Harvard University, Boston  
 Title: Gamma-ray Bursts from the Swift Burst Alert Telescope: Probing  
 Intrinsic Distributions with Trigger Simulations
- Jan 2015 Seminar, Academia Sinica, Taiwan  
 Title: Ten Years of Swift: The Third Swift Burst Alert Telescope Gamma-Ray  
 Burst Catalog
- July 2013 Seminar, Academia Sinica, Taiwan  
 Title: Connecting Core-Collapse Supernovae and Gamma-Ray Bursts in the  
 Great Survey Era
- July 2013 Seminar, National Central University, Taiwan  
 Title: Connecting Core-Collapse Supernovae and Gamma-Ray Bursts in the  
 Great Survey Era
- Feb 2012 Seminar, Naval Research Laboratory  
 Title: Core-Collapse Supernovae in the Great Survey Era
- Aug 2011 Seminar, National Tsing-Hua University, Taiwan  
 Title: Core-Collapse Supernovae in the Great Survey Era
- July 2011 Seminar, NASA Goddard Space Flight Center  
 Title: Revealing Optically Invisible Core-Collapse Supernovae in the Great  
 Survey Era
- Apr 2011 The Second Annual CCAPP Symposium, Ohio State University  
 Title: Core-Collapse Supernovae in the Great Survey Era:  
 Impact on Particle Astrophysics and Cosmology
- Feb 2011 Triangle Nuclear Theory Colloquium, North Carolina State University  
 Title: Core-Collapse Supernovae in the Great Survey Era:  
 Impact on Particle Astrophysics and Cosmology



---

### Teaching Experience: instructor

---

<u>Fall 2018</u>	Special Projects in Astronomy: Astronomy Research Techniques (ASTR288C), University of Maryland, College Park Team-teaching with Sean Griffin (University of Maryland, College Park) <a href="https://swift.gsfc.nasa.gov/results/BATbursts/ASTR_288C/Index.html">https://swift.gsfc.nasa.gov/results/BATbursts/ASTR_288C/Index.html</a>
<u>Fall 2017</u>	Special Projects in Astronomy: Astronomy Research Techniques (ASTR288C), University of Maryland, College Park <a href="https://userpages.umbc.edu/~alien/ASTR_288C_2017/Index.html">https://userpages.umbc.edu/~alien/ASTR_288C_2017/Index.html</a>

---

### Mentoring Experience

---

<u>2018 - Present</u>	Quantifying uncertainties in the durations of <i>Swift</i> /BAT Gamma-ray Bursts Grad Student: Mike Moss, George Washington University
<u>Summer 2018</u>	Study of GRB pulses and X-ray flares (co-mentor) Student: Fatima Hussein, University of the Virgin Islands
<u>Summer 2017</u>	GRB pulse-shape study Student: Juan-Carlos Martinez, University of the Virgin Islands
<u>Fall 2016</u>	Spectral joint-fit analysis for GRBs from <i>Swift</i> /BAT and <i>Suzaku</i> /WAM Student: Austin Kim, University of Maryland at College Park
<u>Fall 2016</u>	Probing star-formation rate with Bayesian analysis of Swift GRBs (co-mentor) Student: Anjali Mittu, University of Maryland at College Park
<u>Summer 2016</u>	GRB pulse-shape study Student: Jared Hanley, University of the Virgin Islands
<u>Summer 2015</u>	Chasing short GRBs with <i>Swift</i> and <i>Fermi</i> Student: Charles Law, Harvard University
<u>Summer 2015</u>	Study of GRB pulses and X-ray flares (co-mentor) Student: Jason Baron, University of the Virgin Islands
<u>Summer 2014</u>	High redshift GRBs from <i>Swift</i> Student: Kevin Chen, University of California, Berkeley
<u>Summer 2014</u>	Chasing short GRBs with <i>Swift</i> and <i>Fermi</i> (co-mentor) Student: John Kerin, Georgetown University

---

### Teaching Experience: teaching assistant

---

<u>Fall 2010</u>	TA for Phys 598 (Topics in Computational Physics and Astrophysics) Instructor: Prof. Stuart Shapiro
<u>Summer 2009</u>	TA for Astro100 (Perspectives to Astronomy) Instructor: Dr. Ashley Ross

<u>Spring 2009</u>	TA for Astro330 (Extraterrestrial Life) with discussion sections Instructor: Prof. Leslie Looney
<u>Fall 2008</u>	TA for Astro121* (The Solar System) with discussion sections Instructor: Prof. Edmund Sutton
<u>Summer 2008</u>	TA for Astro100 (Perspectives in Astronomy) Instructor: Dr. Ashley Ross
<u>Spring 2008</u>	TA for Astro596 (Physical Cosmology) Instructor: Prof. Brian Fields
<u>Fall 2007</u>	TA for Astro502 (Theory Diffuse Matter Dynamics) Instructor: Prof. Charles Gammie
	TA for Astro330 (Extraterrestrial Life) Instructor: Prof. Leslie Looney
<u>Spring 2007</u>	TA for Astro405 (Solar System and Interstellar Medium) Instructor: Prof. Ronald Webbink
<u>Spring 2006</u>	TA for Astro100* (Perspectives to Astronomy) Instructor: Prof. Thomasanna Hail
<u>Fall 2005</u>	TA for Astro100* (Perspectives in Astronomy) Instructor: Prof. Laird Thompson

\* Classes including night observing sections and solar observing sections.

---

### Community Service and Outreach

---

- 2019 AAS Press Panel on the event AT2018cow  
<https://aasnova.org/2019/01/13/aas-233-day-4/>  
<https://www.youtube.com/watch?v=P8VhpMRxNW4>
- Representing the *Swift* telescope at the NASA Science Jamborees, the American Astronomical Society (AAS) meetings, and the NASA Goddard Open House
- Serving as a referee for academic journals (ApJ, MNRAS)
- Serving as a reviewer for grant proposals (*Swift*, *Fermi*, *Hubble*, *NuSTAR*, NASA Earth and Space Science Fellowship)
- Participating in the volunteer mentor program for Generation Hope  
(<http://supportgenerationhope.org/generation-hope-19>)
- Participating in AAAS STEM volunteer program to support high school science classes/activities  
(<https://www.aaas.org/programs/STEM-volunteers>)
- Women in astrophysics panel discussions for students at Montgomery College.

---

## References

---

- Dr. Brad Cenko      NASA Goddard Space Flight Center, Code 661  
Address: 8800 Greenbelt Rd, Greenbelt Rd, Greenbelt, MD 20771  
Email: [brad.cenko@nasa.gov](mailto:brad.cenko@nasa.gov)  
Phone: 301-286-4678
- Dr. Scott Barthelmy      NASA Goddard Space Flight Center, Code 661  
Address: 8800 Greenbelt Rd, Greenbelt Rd, Greenbelt, MD 20771  
Email: [scott.d.barthelmy@nasa.gov](mailto:scott.d.barthelmy@nasa.gov)  
Phone: 301-286-3106
- Prof. Takanori Sakamoto      Department of Physics and Mathematics,  
College of Science and Engineering,  
Aoyama Gakuin University  
Address: 5-10-1 Fuchinobe, Chuo-ku, Sagamihara-shi,  
Kanagawa 252-5258, Japan  
Email: [tsakamoto@phys.aoyama.ac.jp](mailto:tsakamoto@phys.aoyama.ac.jp)  
Phone: +81-42-759-6275
- Prof. Brian Fields      Department of Astronomy,  
University of Illinois at Urbana-Champaign  
Address: 1002 W. Green St. Urbana, IL. 61801, U.S.A  
Email: [bdfields@illinois.edu](mailto:bdfields@illinois.edu)  
Phone: 217-333-5529
- Prof. Jon Hakkila      Department of Physics and Astronomy  
College of Charleston  
Address: 311 Rita Hollings Science Center, 58 Coming St.  
Charleston, SC. 29424  
Email: [hakkilaj@cofc.edu](mailto:hakkilaj@cofc.edu)  
Phone: 843-953-6387