

# Time Domain Astrophysics

**scialog2019**<sup>®</sup>

The Fourth Annual Scialog Conference  
May 9-12, 2019 at Westward Look Resort  
Tucson, Arizona

RESEARCH CORPORATION  
*for* SCIENCE ADVANCEMENT

 HEISING-SIMONS  
FOUNDATION

THE  KAVLI FOUNDATION

## Objectives

Engage in dialog with the goal of accelerating high-risk/high-reward research.

Identify and analyze bottlenecks in advancing time domain astrophysics and develop approaches for breakthroughs.

Build a creative, better-networked community that is more likely to produce breakthroughs.

Form teams to write proposals to seed novel projects based on highly innovative ideas that emerge at the conference.

## Process

Brainstorming is welcome; don't be afraid to say what comes to mind.

Consider the possibility of unorthodox or unusual ideas without immediately dismissing them.

Discuss, build upon and even constructively criticize each other's ideas – in a spirit of cooperative give and take.

Make comments concise to avoid monopolizing the dialog.

## Diversity, Inclusion and Avoiding Harassment

Research Corporation for Science Advancement fosters an environment for listening and considering new ideas from a diverse group, with respect for all participants without regard to gender, race, ethnicity, sexual orientation, age or any other aspect of how we identify ourselves other than as fellow scientists.

RCSA does not tolerate any form of harassment, which could include verbal or physical conduct that has the purpose or effect of substantially interfering with anyone else's participation or performance at this conference, or of creating an intimidating, hostile, or offensive environment; any such harassment may result in dismissal from the conference.

# Scialog: Time Domain Astrophysics

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# Scialog: Time Domain Astrophysics

## From the President

For more than a century, Research Corporation for Science Advancement has funded innovative science, especially path-breaking projects by early career faculty. The foundation seeks to support ideas with great potential to generate fundamental insights that change conventional thinking in a field, and newly released data from Gaia, TESS, ZTF, and other sky surveys certainly provides an opportunity to design research projects that might not have been possible before.

An important feature of how RCSA catalyzes innovative research is by encouraging dialogue among colleagues who bring different backgrounds, perspectives, and methodologies. These conversations stimulate the reevaluation of assumptions, and can reveal points of connection between different disciplines or sub-disciplines. The result of these Scialogs has invariably been the development of exciting, collaborative projects.

Scialogs are different than your normal conference. For the Fellows, the focus here is on your voice and your very active participation throughout the meeting. You will not be sitting back, just listening to a series of presentations on completed studies. Instead, you will be engaged throughout these three days in pushing the boundaries of the field. For the Facilitators, many thanks for framing the big questions in the field and for guiding the discussions.

Enjoy the meeting and enjoy your visit to Tucson, RCSA's hometown. My best wishes for a very productive next few days.

**Daniel Linzer**

President

Research Corporation for Science Advancement

# Scialog: Time Domain Astrophysics

## From the Program Officer

With the generous co-sponsorship of the Heising-Simons Foundation, and additional support from The Kavli Foundation, we are holding the fourth meeting for Scialog: TDA. The first two meetings focused on stars and explosions, and the third meeting on the 2018 data release of Gaia's 3D census of the Milky Way Galaxy. Now recent data releases from TESS and ZTF provide a tremendous opportunity to open new research horizons with cutting edge questions being addressed by data from one or several of these recent surveys. As with previous Scialog meetings, we seek continuity and an infusion of new voices. This year we have 48 Scialog Fellows of which 22 are attending their first Scialog and 26 are Fellows from one or more previous meetings. We anticipate a stimulating mix of new and returning Fellows.

Research Corporation's interactive Scialog meetings have the goal of catalyzing new collaborations based on blue-sky ideas among Scialog Fellows, who constitute a select group of exemplary early career U.S. scientists. The essence of Scialog is dialogue, networking and building new collaborations to pursue novel high-risk discovery research.

Research Corporation chose to focus this Scialog on TESS, ZTF, and Gaia data because we believe new emerging big data sets will be disruptive for astrophysics. Just as firmly, we believe breakthroughs based on the availability of new data can be accelerated by astronomers, astrophysicists and data scientists working collaboratively on novel high-risk projects, particularly with theorists and observers combining efforts.

We have two outstanding keynote speakers:

- **Thomas Barclay**, NASA Goddard Space Flight Center & UMBC
- **Kathryn Johnston**, Columbia University

We have outstanding discussion facilitators including Tom and Kathryn, and Lars Bildsten, KITP, Boris Gaensicke, University of Warwick, Suzanne Hawley, University of Washington, David Hogg, New York University, Juna Kollmeier, Carnegie Institution for Science, Shri Kulkarni, Caltech, and Keivan Stassun, Vanderbilt University. We're delighted to have Cyndi Atherton and Jochen Marschall, from the Heising-Simons Foundation, and Chris Martin, from The Kavli Foundation, in attendance. We also have Jenő Sokoloski, a Scialog Fellow from previous meetings, who is now the Director for Science at the LSST Corporation.

Scialog conferences focus on dialogue and team building with the goal of creating novel strategies and collaborative approaches. An important feature of Scialog meetings is the opportunity for Scialog Fellows to form teams and write proposals to pursue particularly creative ideas that emerge through the dialogue. We hope this competition is exciting, but regardless of which proposals are funded, the purpose is to catalyze a deeper and more meaningful exchange of ideas than ordinarily occurs at scientific conferences. Our intent is for this process to facilitate participants gaining new insights and connections that significantly advance efforts to understand aspects of time domain astrophysics and related topics.

Please do not hesitate to provide feedback on how to make the conference better. We hope you have a great Scialog experience!

### **Richard Wiener**

Senior Program Director  
Research Corporation for Science Advancement

# Scialog: Time Domain Astrophysics

## Conference Agenda Westward Look Resort May 9-12, 2019

### Thursday, May 9

|                 |  |                       |
|-----------------|--|-----------------------|
| 1:00 pm         | <b>Registration Opens</b>  | Lobby                 |
| 1:00 - 5:00 pm  | <b>Snacks &amp; Informal Discussions</b>   | Palm Room & Terrace   |
| 5:00 - 6:30 pm  | <b>Reception</b>   | Sonoran Rooftop Patio |
| 6:00 - 6:30 pm  | <b>Meeting for Discussion Facilitators</b>   | Ocotillo & Cholla     |
| 6:30 - 7:30 pm  | <b>Dinner</b>  | Ocotillo & Cholla     |
| 7:15 - 7:30 pm  | <b>Welcome</b><br>Dan Linzer, <i>President, RCSA</i>   | Ocotillo & Cholla     |
| 7:30 - 7:45 pm  | <b>Conference Overview, Desired Outcomes &amp; Guidelines for Collaborative Proposals</b><br>Richard Wiener, <i>RCSA</i> | Ocotillo & Cholla     |
| 7:45 - 8:30 pm  | <b>Keynote Presentation</b><br><i>Welcome to the Milky Way!</i><br>Kathryn Johnston, <i>Columbia University</i>          | Ocotillo & Cholla     |
| 8:30 - 11:00 pm | <b>TDA Starlight Café</b><br>Beer, wine, snacks, conversations   | Palm Room & Terrace   |

### Friday, May 10

|                     |  |                     |
|---------------------|--|---------------------|
| 7:00 - 8:00 am      | <b>Breakfast</b>   | Palm Room & Terrace |
| 8:00 - 9:00 am      | <b>Introductions</b>   | Ocotillo & Cholla   |
| 9:00 - 9:45 am      | <b>Keynote Presentation</b><br><i>Time Domain Astronomy Across the Sky with TESS</i><br>Thomas Barclay, <i>NASA Goddard Space Flight Center &amp; UMBC</i> | Ocotillo & Cholla   |
| 9:45 - 10:00 am     | <b>Conference Photo &amp; Break</b>  | Palm Terrace        |
| 10:00 - 10:15 am    | <b>Breakout Sessions Overview</b>  | Ocotillo & Cholla   |
| 10:15 - 11:30 am    | <b>Breakout Session I</b>  | Ocotillo & Cholla*  |
| 11:30 am - 11:45 am | <b>Report Out</b>  | Ocotillo & Cholla   |
| 11:45 am - 12:15 pm | <b>Mini Breakout Session I</b>   | Ocotillo & Cholla*  |
| 11:45 am - 12:15 pm | <b>Meeting for Discussion Facilitators</b>   | Ocotillo & Cholla   |
| 12:15 - 1:30 pm     | <b>Lunch</b>   | Palm Room & Terrace |
| 1:30 - 2:15 pm      | 2018 Funded Teams Presentations  | Ocotillo & Cholla   |
| 2:15 - 3:30 pm      | <b>Breakout Session II</b>   | Ocotillo & Cholla*  |
| 3:30 - 3:45 pm      | <b>Report Out</b>  | Ocotillo & Cholla   |
| 3:45 - 4:15 pm      | <b>Mini Breakout Session II</b>  | Ocotillo & Cholla*  |
| 4:15 - 5:30 pm      | <b>Afternoon Break</b>   |                     |
| 5:30 - 6:30 pm      | <b>Reception &amp; 2018 Funded Teams Presentations</b>   | Ocotillo & Cholla   |
| 6:30 - 7:30 pm      | <b>Dinner</b>  | Ocotillo & Cholla   |
| 7:30 - 11:00 pm     | <b>TDA Starlight Café</b><br>Beer, wine, snacks, conversations   | Palm Room & Terrace |

# Scialog: Time Domain Astrophysics

## Saturday, May 11

|                     |   |                         |
|---------------------|---|-------------------------|
| 6:15 - 7:15 am      | <b>Optional Guided Nature Walk</b>  | WL Trails—Meet in Lobby |
| 7:00 - 8:00 am      | <b>Breakfast</b>  | Palm Room & Terrace     |
| 8:00 - 9:15 am      | <b>Breakout Session III</b>   | Ocotillo & Cholla*      |
| 9:15 - 9:30 am      | <b>Report Out</b>   | Ocotillo & Cholla       |
| 9:30 - 10:00 am     | <b>Mini Breakout Session III</b>  | Ocotillo & Cholla*      |
| 10:00 - 10:15 am    | <b>Morning Break</b>  |                         |
| 10:15 - 11:30 am    | <b>Breakout Session IV</b>  | Ocotillo & Cholla*      |
| 11:30 - 11:45 am    | <b>Report Out</b>   | Ocotillo & Cholla       |
| 11:45 - 12:15 pm    | <b>Mini Breakout Session IV</b>   | Ocotillo & Cholla*      |
| 11:45 am - 12:15 pm | <b>Meeting for Discussion Facilitators</b>  | Ocotillo & Cholla       |
| 12:15 - 1:30 pm     | <b>Lunch</b>  | Palm Room & Terrace     |
| 1:30 - 6:00 pm      | <b>Team Formation, Informal Discussion &amp; Proposal Writing</b><br>Proposals due 7:00 am Sunday morning |                         |
| 6:00 - 6:30 pm      | <b>Reception</b>  | Ocotillo & Cholla       |
| 6:30 - 7:30 pm      | <b>Dinner</b>   | Ocotillo & Cholla       |
| 7:30 - 11:00 pm     | <b>TDA Starlight Café</b><br>Beer, wine, snacks, conversations  | Palm Room & Terrace     |

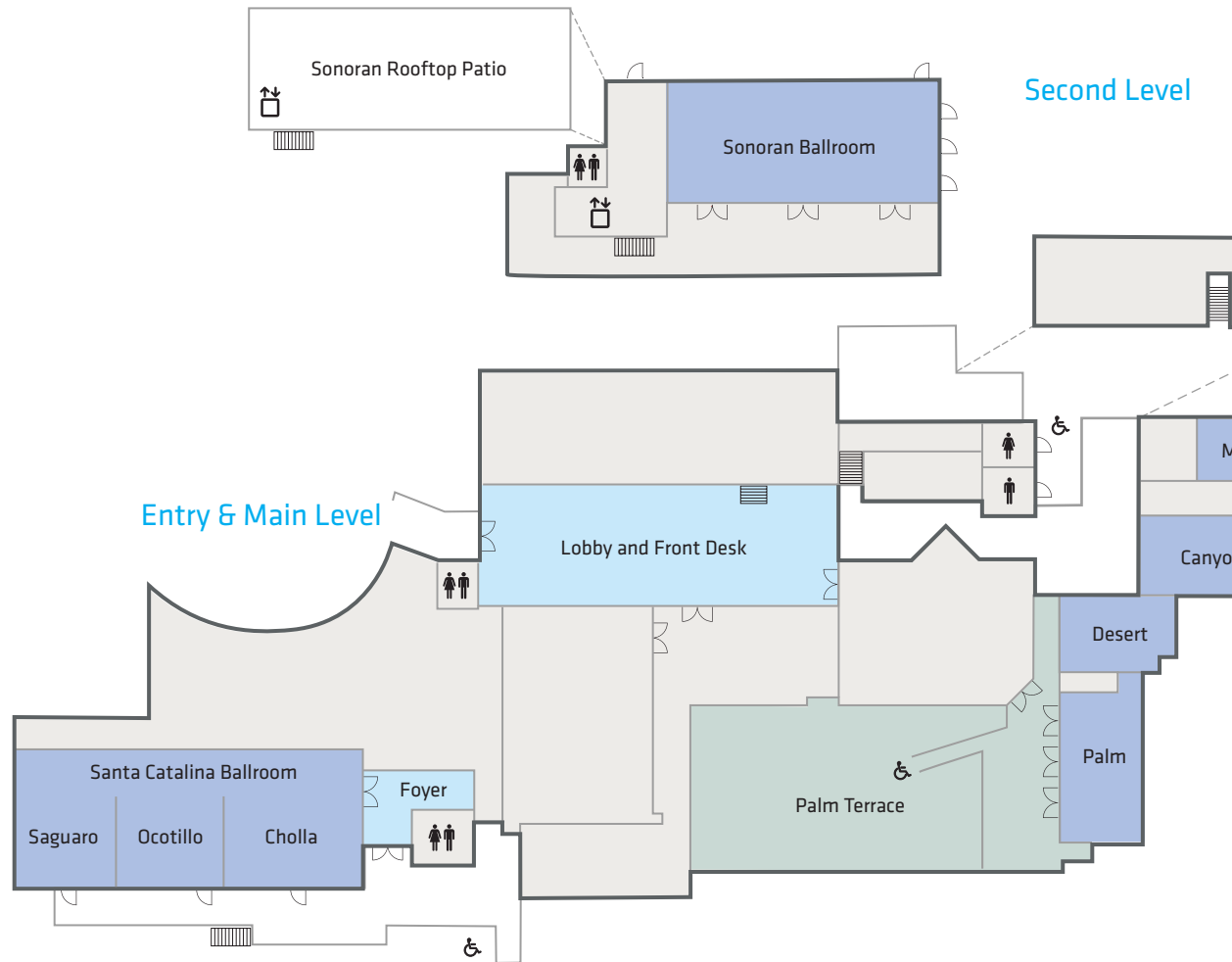
## Sunday, May 12

|                     |  |                      |
|---------------------|--|----------------------|
| 6:30 - 7:30 am      | <b>Breakfast</b>                       | Palm Room & Terrace  |
| 7:30 - 10:30 am     | <b>Presentations of Proposal Ideas</b> | Ocotillo & Cholla    |
| 10:30 - 11:00 am    | <b>Assessment Survey &amp; Wrap-up</b> | Ocotillo & Cholla    |
| 11:00 am - 12:00 pm | <b>Lunch</b><br>Available to go        | Santa Catalina Foyer |

\*Breakout Sessions will be held in Ocotillo & Cholla, Desert, Canyon, Mesa, and Saguaro meeting rooms. Fellows will first meet in Ocotillo & Cholla and then disperse to their discussion groups.

# Scialog: Time Domain Astrophysics

## Westward Look Resort



## Keynote Speakers

### Time Domain Astronomy Across the Sky with TESS

#### Thomas Barclay

*NASA Goddard Space Flight Center & UMBC*



**Abstract:** The Transiting Exoplanet Survey Satellite (TESS) will observe most of the sky for at least a month, collecting continuous 30-min cadence photometry over the next two years. The primary science goal of the mission is to detect transiting exoplanets that can be characterized by larger ground and space-based telescopes. However, primarily due to the large 96x24 degree field of view, the TESS dataset provides an incredible resource that can be mined by myriad astronomical fields. Three areas where TESS has made particular contributions are in transient astrophysics, near-Earth objects, and Galactic archeology. Transients that fall into the TESS field of view are monitored before and throughout the event; TESS will be capable of discovering approximately 1,400 previously unknown NEOs in the full frame images; and TESS will be able to detect oscillations from over a million red giants. The value of TESS data can be significantly increased when combined with game-changing surveys like GAIA, or simultaneous ground and space-based observations that provide multi-wavelength data. With TESS capable of lasting for a decade or more, and plans to decrease the observing cadence to 10 minutes, there is much to look forward to.

**Bio:** Tom Barclay's career is focused on space-based time-domain experiments. He currently works as a Research Scientist at NASA's Goddard Space Flight Center. After obtaining his Ph.D. from University College London, he moved to NASA's Ames Research Center in Silicon Valley, California to work as a support scientist on the Kepler Mission. His primary focus has been maximizing the science yield of the mission through supporting the science community. He was part of the science leadership of the K2 Mission, Kepler's follow-on, where he led the mission's Guest Observer Program and was awarded the NASA Exceptional Public Service Medal. In 2017 he moved to NASA's Goddard Space Flight Center to work on the Transiting Exoplanet Survey Satellite where he leads the Guest Investigator Program and is the mission Associate Project Scientist. His research is focused on detecting and characterizing exoplanets. He led teams that discovered the smallest known exoplanet and with colleagues discovered the first Earth-sized planet in the habitable zone of another star.

## Keynote Speakers Continued

### Welcome to the Milky Way!

#### **Kathryn Johnston**

*Columbia University*



**Abstract:** In this talk I will share some thoughts on the revolutions in our understanding of our Galaxy that have been enabled by large stellar surveys throughout my career. I will celebrate just a few of the spectacular science results on the Milky Way in the last year from analyses of Gaia DR2 by groups across the globe. More generally, I am interested in sparking a discussion of whether we can more effectively coordinate across scientists with different sets of expertise (e.g. data analysis, theory, simulations) and balance the natural tensions between teamwork and competition in dealing with such data floods. I will end with a few ideas on the topic of this Scialog workshop: directions for Milky Way science enabled by current and near-future time-domain surveys.

**Bio:** Kathryn Johnston is a professor at Columbia University. She will be taking up a joint appointment between Columbia and CCA to allow her to lead a new Dynamics Group in fall 2019. Prof. Johnston is interested in understanding how our own Galaxy formed. She pursues this goal using a combination of close collaborations with observational colleagues, theory and simulations to explore signatures of key physical processes in data sets. She arrived in this field following an undergraduate degree in mathematics from Cambridge University, a Ph.D. in Astronomy and Astrophysics from UC Santa Cruz and a postdoctoral position at the Institute for Advanced Study in Princeton. She joined the Columbia Astronomy Faculty in fall 2006, after spending seven years as an assistant professor at Wesleyan University.

## 2018 Scialog TDA Funded Teams

### Funded by Heising-Simons Foundation

**Timothy Brandt**, physics, University of California, Santa Barbara; **Jackie Faherty**, astronomy, The American Museum of Natural History—*Acceleration Today: Finding, Weighing, and Characterizing New Degenerate Companions to Nearby Stars*

**Sergey Koposov**, physics, Carnegie Mellon University; **Joshua Peek**, astronomy, Space Telescope Science Institute—*Data at Your Fingertips: A Real-Time Discovery Engine for Gaia*

**Kaitlin Kratter**, physics, University of Arizona Foundation; **Nicholas Law**, physics, University of North Carolina at Chapel Hill; **James Fuller**, physics, California Institute of Technology—*Quickening Heartbeats: Measuring Tidal Orbital Decay in Eccentric Young Binaries*

**Yue Shen**, astronomy, University of Illinois at Urbana-Champaign; **Nadia Zakamska**, physics, Johns Hopkins University—*Discovery of Sub-kpc Binary SMBHs from Gaia with Variability-Induced Astrometric Jitter*

**Gail Zasowski**, physics, University of Utah; **Carles Badenes**, physics, University of Pittsburgh—*Mapping Explosive Enrichment*

### Funded by Research Corporation

**Keith Hawkins**, astronomy, University of Texas at Austin; **Gail Zasowski**, physics, University of Utah, **Kaitlin Kratter**, astronomy, University of Arizona—*A Gaia-Enabled View of Chemical Homogeneity*

**Daniel Huber**, astronomy, University of Hawaii; **Melissa Ness**, astronomy, Columbia University—*Expanding the Time-Domain Revolution: Stellar Parameters from Every Light Curve*

# Scialog: Time Domain Astrophysics

## 2019 Proposal Guidelines & Collaborative Awards

### Scialog: Time Domain Astrophysics

1. Awards are intended to provide seed funding for teams of two to three Scialog Fellows formed at this conference for **novel, high-risk and potentially high-impact projects**.
2. Two-page proposals should describe the proposed project and the role of each team member. No budget is necessary. A third page may be used for references.
3. Awards will be in the amount of \$50K direct funding (plus 10% overhead) **per team member** for one year.
4. No Scialog Fellow can be a member of more than two teams. If a Scialog Fellow is a member of two teams, other members of the two teams must be different. No team can submit more than one proposal.
5. Teams cannot include members who have previously collaborated with one another.
6. Teams are encouraged to include at least one theorist or data scientist and one observer.
7. Proposals must be submitted electronically by Sunday morning at 6:30 am. Instructions for electronic submission will be provided at the meeting.
8. Awards will be announced about two months after the meeting.

## Scialog Fellows

**Carles Badenes** [badenes@pitt.edu](mailto:badenes@pitt.edu)

University of Pittsburgh

*Time-domain spectroscopy, stellar multiplicity, supernova progenitors.*

**Eric Bellm** [ecbellm@uw.edu](mailto:ecbellm@uw.edu)

University of Washington

*Searching for unseen populations of neutron stars and black holes in our galaxy with ZTF, LSST, and more.*

**John Bochanski** [jbochanski@rider.edu](mailto:jbochanski@rider.edu)

Rider University

*I am interested in the structure & kinematics of the Milky Way, and the fundamental properties of the stars that inhabit it.*

**Timothy Brandt** [tbrandt@ucsb.edu](mailto:tbrandt@ucsb.edu)

University of California, Santa Barbara

*I take statistical approaches to a broad range of problems: currently high-contrast imaging and astrometric discovery of companions.*

**Matteo Cantiello** [mcantiello@flatironinstitute.org](mailto:mcantiello@flatironinstitute.org)

Flatiron Institute

*I am a theorist working on computational stellar physics. #MESA #Asteroseismology #Stellarmagnetism #Convection #Massivestars #Mergers.*

**Sukanya Chakrabarti** [chakrabarti@astro.rit.edu](mailto:chakrabarti@astro.rit.edu)

Rochester Institute of Technology

*Galactic structure and dynamics, lensed supernovae and variable stars.*

**Kathryne Daniel** [kjdaniel@brynmawr.edu](mailto:kjdaniel@brynmawr.edu)

Bryn Mawr College

*Galactic dynamics. Modeling and analytically derived simulations. Disk response at dynamical resonances, particularly radial migration.*

**James Davenport** [jrad@uw.edu](mailto:jrad@uw.edu)

University of Washington

*Variable stars, magnetic activity, stars in large time domain surveys.*

**Nathan De Lee** [deleenm@nku.edu](mailto:deleenm@nku.edu)

Northern Kentucky University

*I am interested in what stellar companions and variable stars can tell us about galactic formation history and structure.*

**Maria Drout** [maria.drout@utoronto.ca](mailto:maria.drout@utoronto.ca)

University of Toronto

*Evolution of massive stars; Peculiar transients; Methods to identify populations of evolved stars in elusive phases from large datasets.*

**Catherine Espaillat** [cce@bu.edu](mailto:cce@bu.edu)

Boston University

*I use multiwavelength observations and models to study pre-main sequence stars, particularly accretion, variability, and planet formation.*

**Jackie Faherty** [jfaherty17@gmail.com](mailto:jfaherty17@gmail.com)

American Museum of Natural History

*My research focuses on the motions and atmospheres of low mass stars, brown dwarfs, and planets.*

**Claude-André Faucher-Giguère**

[cgiguere@northwestern.edu](mailto:cgiguere@northwestern.edu)

Northwestern University

*Galaxy formation, galactic structure and dynamics, star formation, feedback, dark matter, black holes, simulations.*

**James Fuller** [jfuller@caltech.edu](mailto:jfuller@caltech.edu)

California Institute of Technology

*Stellar structure and evolution, planetary formation and constitution. Asteroseismology, supernovae, finding novel solutions.*

**Keith Hawkins** [keithhawkins@utexas.edu](mailto:keithhawkins@utexas.edu)

University of Texas at Austin

*Galactic and Stellar Archeology, stellar chemistry, and the structure and nature of the Milky Way.*

**Leslie Hebb** [hebb@hws.edu](mailto:hebb@hws.edu)

Hobart and William Smith Colleges

*Fundamental properties of stars: eclipsing binaries, magnetic activity, spectroscopic stellar parameters.*

**James Hermes** [jjhermes@bu.edu](mailto:jjhermes@bu.edu)

Boston University

*I am interested in observationally constraining the endpoints of stars, binaries, and planetary systems.*

# Scialog: Time Domain Astrophysics

## Scialog Fellows Continued

**Daniel Huber** [huberd@hawaii.edu](mailto:huberd@hawaii.edu)

University of Hawaii

*Asteroseismology, Exoplanets, Stellar populations of Transit Surveys, Optical long-baseline interferometry, Galactic archeology.*

**Jedidah Isler** [jedidah.c.isler@dartmouth.edu](mailto:jedidah.c.isler@dartmouth.edu)

Dartmouth College

*I'm interested in how Nature does particle acceleration and I use simultaneous, multiwavelength observations of blazars to do it.*

**Wolfgang Kerzendorf** [wkerzendorf@gmail.com](mailto:wkerzendorf@gmail.com)

New York University

*I'm interested in the life and death of stars using astrophysics, machine learning and statistics.*

**Quinn Konopacky** [qkonopacky@ucsd.edu](mailto:qkonopacky@ucsd.edu)

University of California, San Diego

*Star and planet formation and evolution at high spatial and high spectral resolution.*

**Sergey Koposov** [skoposov@cmu.edu](mailto:skoposov@cmu.edu)

Carnegie Mellon University

*I am interested in galaxy evolution, Milky Way structure, dwarf galaxies and in general exploration of large survey datasets.*

**Adam Kowalski** [adam.f.kowalski@colorado.edu](mailto:adam.f.kowalski@colorado.edu)

University of Colorado

*Stellar flares, near-UV and optical spectroscopy of dynamic phenomena.*

**Kaitlin Kratter** [kkratter@email.arizona.edu](mailto:kkratter@email.arizona.edu)

University of Arizona

*Binaries, Planets, and Disks!*

**Adam Kraus** [alk@astro.as.utexas.edu](mailto:alk@astro.as.utexas.edu)

The University of Texas at Austin

*I study star & planet formation, exoplanets, and stellar astrophysics, spanning the full evolution of stars and their planetary systems.*

**Gongjie Li** [gongjie.li@physics.gatech.edu](mailto:gongjie.li@physics.gatech.edu)

Georgia Tech

*Formation and evolution of planets; interactions between stars and supermassive black holes.*

**Andrew Mann** [awmann@unc.edu](mailto:awmann@unc.edu)

University of North Carolina at Chapel Hill

*I'm broadly interested in the evolution, fundamental parameters, and statistical properties of stars and the planets orbiting them.*

**Carl Melis** [cmelis@ucsd.edu](mailto:cmelis@ucsd.edu)

University of California, San Diego

*Stellar physics and evolution, star formation and stellar systems, the evolution and fate of binary star systems, and planetary systems.*

**Philip Muirhead** [philipm@bu.edu](mailto:philipm@bu.edu)

Boston University

*Low-mass Stars, Extrasolar Planets, Infrared Instrumentation.*

**Melissa Ness** [mkness@gmail.com](mailto:mkness@gmail.com)

Columbia University

*Using stars as tools to trace the structure and formation of the Milky Way.*

**Elisabeth Newton**

[Elisabeth.R.Newton@Dartmouth.edu](mailto:Elisabeth.R.Newton@Dartmouth.edu)

Dartmouth College

*M dwarfs are everywhere. What do they look like? How and why do their rotation rates and magnetic properties change over time?*

**Jason Nordhaus** [nordhaus@astro.rit.edu](mailto:nordhaus@astro.rit.edu)

Rochester Institute of Technology

*I am a theorist who studies the physics of binary interactions during the post-main sequence.*

**Joshua Pepper** [joshua.pepper@lehigh.edu](mailto:joshua.pepper@lehigh.edu)

Lehigh University

*I like to find unusual variable stars and exoplanets using large surveys. I mostly work on transiting exoplanets, but am especially interested in weird kinds of stellar variability.*

**Erik Petigura** [petigura@astro.ucla.edu](mailto:petigura@astro.ucla.edu)

University of California, Los Angeles

*Unraveling the deep interconnectedness between star and planet formation.*

# Scialog: Time Domain Astrophysics

## Scialog Fellows Continued

**Emily Rauscher** [erausche@umich.edu](mailto:erausche@umich.edu)

University of Michigan

*I am interested in identifying how to pull complex, multi-dimensional information about an object out of limited data.*

**Robyn Sanderson** [robynes@sas.upenn.edu](mailto:robynes@sas.upenn.edu)

University of Pennsylvania

*Dynamics of galaxies; the identity of dark matter; synthetic surveys.*

**Simone Scaringi** [simone.scaringi@ttu.edu](mailto:simone.scaringi@ttu.edu)

Texas Tech University

*Accretion physics on all scales; non-linear timing analysis; machine learning.*

**Benjamin Shappee** [shappee@hawaii.edu](mailto:shappee@hawaii.edu)

University of Hawaii

*Transient and variable objects, multi-messenger astronomy, and large area surveys.*

**Ken Shen** [kenshen@astro.berkeley.edu](mailto:kenshen@astro.berkeley.edu)

UC Berkeley

*Supernovae and peculiar transients, accreting white dwarfs, binary stellar evolution, thermonuclear combustion.*

**Yue Shen** [shenyue@illinois.edu](mailto:shenyue@illinois.edu)

University of Illinois at Urbana-Champaign

*I am interested in how massive black holes grow, and also interested in pursuing cute science ideas in any area.*

**Ryan Terrien** [rterrien@carleton.edu](mailto:rterrien@carleton.edu)

Carleton College

*I'm interested in the structure, activity, exoplanets, and Galactic context of low-mass stars, and the instrumentation used to study them.*

**Jennifer van Saders** [jivs@hawaii.edu](mailto:jivs@hawaii.edu)

University of Hawaii

*I confront stellar models with modern time domain stellar observables, with a particular interest in inferring stellar ages.*

**Ji Wang** [wang.12220@osu.edu](mailto:wang.12220@osu.edu)

The Ohio State University

*Exoplanets in binary stars and around metal-poor stars.*

**Andrew Wetzel** [awetzel@ucdavis.edu](mailto:awetzel@ucdavis.edu)

University of California, Davis

*Simulating the Milky Way.*

**John Wisniewski** [wisniewski@ou.edu](mailto:wisniewski@ou.edu)

University of Oklahoma

*I'm an observer interested in a broad range of stellar astrophysics: hot stars, cold stars, young stars, old stars #seuss-stars.*

**Siyi Xu** [sxu@gemini.edu](mailto:sxu@gemini.edu)

Gemini Observatory

*Planetary systems around white dwarfs.*

**Nadia Zakamska** [zakamska@jhu.edu](mailto:zakamska@jhu.edu)

Johns Hopkins University

*Teasing rare and unusual objects out of large variability surveys; characterizing variability of Galactic sources.*

**Gail Zasowski** [gail.zasowski@gmail.com](mailto:gail.zasowski@gmail.com)

University of Utah

*Stars, gas, and dust, oh my! - the complex Galactic patterns we see, what our Milky Way looks like from the outside, and how normal we are.*

## Discussion Facilitators

**Thomas Barclay** [barclay.astro@gmail.com](mailto:barclay.astro@gmail.com)

NASA Goddard Space Flight Center

*I use ground and space-based observations to infer properties of exoplanets and their host stars.*

**Lars Bildsten** [bildsten@kitp.ucsb.edu](mailto:bildsten@kitp.ucsb.edu)

University of California, Santa Barbara

*Lars's research ranges from exploding stars observed in distant galaxies to unusual binaries or variable stars found in our own galaxy.*

**Boris Gaensicke** [boris.gaensicke@warwick.ac.uk](mailto:boris.gaensicke@warwick.ac.uk)

University of Warwick

*Boris is fascinated by what white dwarfs can teach us, from planet formation to the progenitors of type Ia supernovae, and by the unforeseen.*

**Suzanne Hawley** [slhawley@uw.edu](mailto:slhawley@uw.edu)

University of Washington

*Magnetic activity and flares on low mass stars; evolution of magnetic activity in stellar populations.*

**David Hogg** [david.hogg@nyu.edu](mailto:david.hogg@nyu.edu)

New York University

*I work on computational data analysis and hard measurement problems across all astrophysics domains, from exoplanets to cosmology.*

**Kathryn Johnston** [kvj@astro.columbia.edu](mailto:kvj@astro.columbia.edu)

Columbia University

*Galactic dynamics, formation and evolution, with a focus on the Milky Way.*

**Juna Kollmeier** [jak@carnegiescience.edu](mailto:jak@carnegiescience.edu)

Carnegie Institution for Science

*I'm interested in all of it!*

**Shri Kulkarni** [srk@astro.caltech.edu](mailto:srk@astro.caltech.edu)

California Institute of Technology

*I'm interested in all of it!*

**Keivan Stassun** [keivan.stassun@vanderbilt.edu](mailto:keivan.stassun@vanderbilt.edu)

Vanderbilt University

*Empirical measurements of fundamental physical properties of stars and planets.*

## Heising-Simons Foundation

**Cyndi Atherton** [catherton@hsfoundation.org](mailto:catherton@hsfoundation.org)  
Heising-Simons Foundation  
*The foundation funds basic scientific research in astronomy and cosmology.*

**Jochen Marschall** [jmarschall@hsfoundation.org](mailto:jmarschall@hsfoundation.org)  
Heising-Simons Foundation  
*Time-domain astronomy.*

## The Kavli Foundation

**Chris Martin** [cmartin@kavilfoundation.org](mailto:cmartin@kavilfoundation.org)  
The Kavli Foundation  
*Advancing basic science for the benefit of humanity.*

## LSST Corporation

**Jennifer Sokoloski** [jeno@astro.columbia.edu](mailto:jeno@astro.columbia.edu)  
Columbia University  
*How can we use multi-wavelength observations of accreting WDs and novae to reveal physics of accretion, jets, and eruptive transients?*

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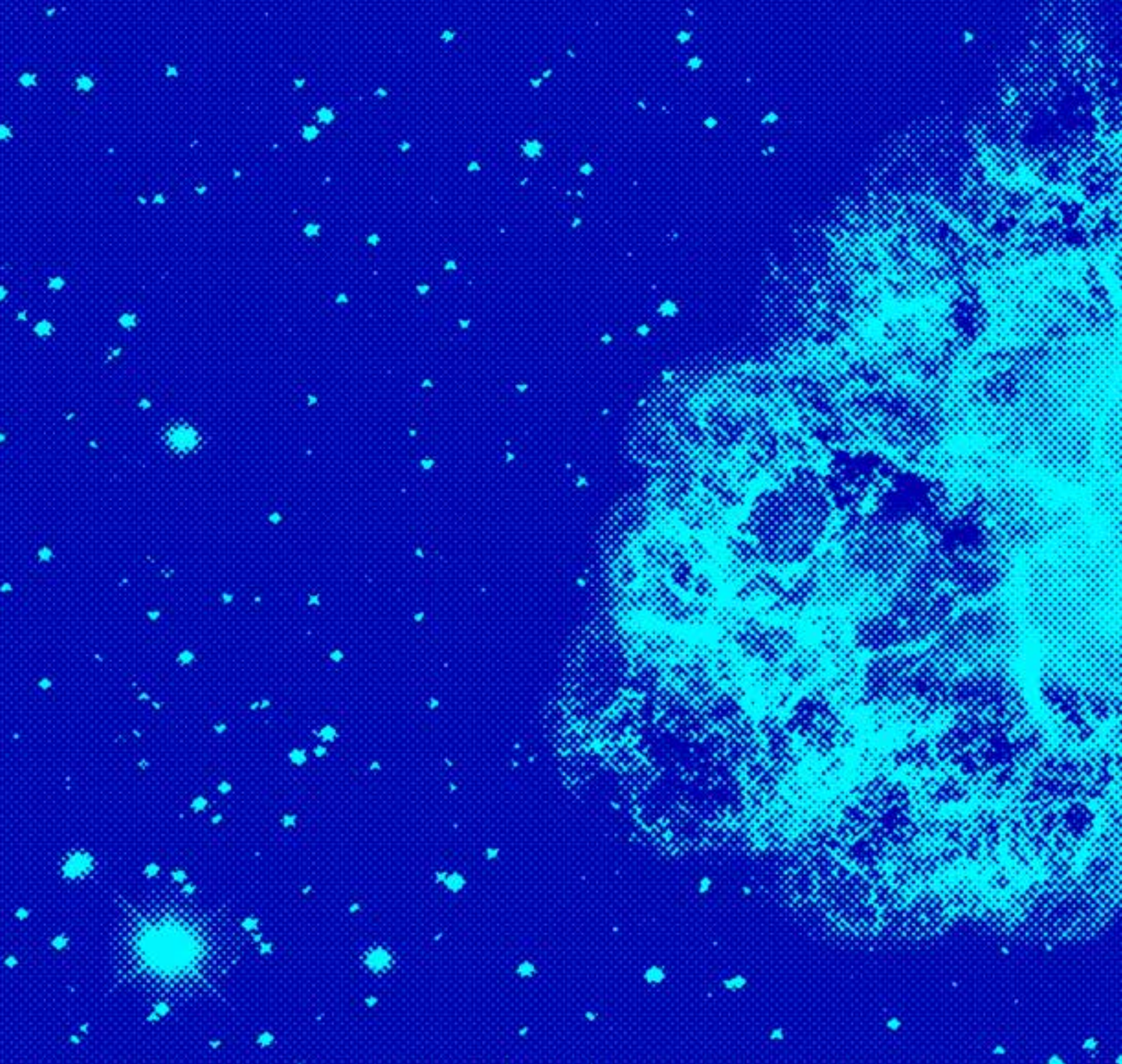
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# Scialog: Time Domain Astrophysics



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