

# Time Domain Astrophysics

**scialog2018**<sup>®</sup>

The Third Annual Scialog Conference  
May 31-June 3, 2018 at Westward Look Resort  
Tucson, Arizona



## 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.

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# Scialog: Time Domain Astrophysics

## From the President

Research Corporation for Science Advancement has a very long history of supporting innovative science, especially among early career faculty to enable them to branch out in new directions. The foundation seeks to support ideas with great potential to generate fundamental insights that change conventional thinking in a field, and the Gaia data release 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 dialog 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, listening to a series of presentations on completed studies, rather you will be engaged throughout 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

## From the Program Director

With the generous co-sponsorship of the Heising-Simons Foundation, we are holding the third of three meetings for *Scialog: TDA*. The first two meetings focused on stars and explosions. For this third meeting, the recent data release of Gaia's 3D census of the Milky Way Galaxy provides a tremendous opportunity to pivot to a new topical emphasis. TDA for this meeting entails not only "time domain astrophysics" but also "three dimensional astrophysics." Because of this pivot, of the 47 Scialog Fellows at this meeting, 29 are attending their first Scialog. 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 dialog, networking and building new collaborations to pursue novel high-risk discovery research.

Research Corporation chose to focus this Scialog on the Gaia data release and related topics 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 three outstanding keynote speakers:

- **Boris Gänsicke**, University of Warwick
- **Hans-Walter Rix**, Max Planck Institute for Astronomy
- **Keivan Stassun**, Vanderbilt University

We also have outstanding discussion facilitators including **Boris**, **Hans-Walter**, **Keivan**, and **Lars Bildsten**, KITP, **Suzanne Hawley**, University of Washington, **Dan Jaffe**, University of Texas at Austin, **Juna Kollmeier**, Carnegie Institution for Science, **Knut Olsen**, National Optical Astronomy Observatory, **Marc Pinsonneault**, Ohio State University, and **Tom Prince**, Caltech. We are also delighted to have in attendance **Jochen Marschall** and **Camellia Pham**, program officers from the Heising-Simons Foundation.

Scialog conferences focus on dialog 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 dialog. 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 three dimensional astrophysics.

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 31-June 3, 2018

### Thursday, May 31

|                 |  |                     |
|-----------------|--|---------------------|
| 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>   | Palm Room & Terrace |
| 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>Gaia Data: A Game Changer</i><br>Hans-Walter Rix, <i>MPIA</i>                          | Ocotillo & Cholla   |
| 8:30 - 11:00 pm | <b>TDA Starlight Café</b><br>Snacks, conversations, etc.   | Palm Room & Terrace |

### Friday, June 1

|                     |   |                     |
|---------------------|---|---------------------|
| 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>The Day the Earth Stopped Standing Still</i><br>Boris Gänsicke, <i>University of Warwick</i>                                  | Ocotillo & Cholla   |
| 9:45 - 10:15 am     | <b>Conference Photo &amp; Break</b>   | Palm Terrace        |
| 10:15 - 10:30 am    | <b>Breakout Sessions Overview</b>   | Ocotillo & Cholla   |
| 10:30 - 11:30 am    | <b>Breakout Session I</b>   | Ocotillo & Cholla*  |
| 11:30 am - 12:00 pm | <b>Report Out</b>   | Ocotillo & Cholla   |
| 12:00 - 12:30 pm    | <b>Mini Breakout Session I</b>  | Ocotillo & Cholla*  |
| 12:30 - 1:30 pm     | <b>Lunch</b>  | Palm Room & Terrace |
| 1:30 - 2:15 pm      | <b>Keynote Presentation</b><br><i>An Era of Precision Astrophysics for Exoplanets, Stars, and the Milky Way</i><br>Keivan Stassun, <i>Vanderbilt University</i> | Ocotillo & Cholla   |
| 2:15 - 3:15 pm      | <b>Breakout Session II</b>  | Ocotillo & Cholla*  |
| 3:15 - 3:30 pm      | <b>Report Out</b>   | Ocotillo & Cholla   |
| 3:30 - 4:00 pm      | <b>Mini Breakout Session II</b>   | Ocotillo & Cholla*  |
| 4:00 - 5:30 pm      | <b>Afternoon Break</b>  |                     |
| 5:30 - 6:30 pm      | <b>Reception</b>  | Sonoran Ballroom    |
| 6:30 - 7:30 pm      | <b>Dinner</b>   | Ocotillo & Cholla   |
| 7:30 - 11:00 pm     | <b>AES Starlight Café</b><br>Snacks, Conversations, etc.  | Palm Room & Terrace |

**Saturday, June 2**

|                     |   |                         |
|---------------------|---|-------------------------|
| 6:15 - 7:15 am      | <b>Optional Guided Nature Walk</b>  | WL Trails–Meet in Lobby |
| 7:00 - 8:15 am      | <b>Breakfast</b>  | Palm Room & Terrace     |
| 8:15 - 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 - 10:30 am    | <b>Morning Break</b>  |                         |
| 10:30 - 11:30 am    | <b>Breakout Session IV</b>  | Ocotillo & Cholla*      |
| 11:30 - 11:45 am    | <b>Report Out</b>   | Ocotillo & Cholla       |
| 11:45 am - 12:15 pm | <b>Mini Breakout Session IV</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>  | Sonoran Ballroom        |
| 6:30 - 7:30 pm      | <b>Dinner</b>   | Ocotillo & Cholla       |
| 7:30 - 11:00 pm     | <b>TDA Starlight Café</b><br>Snacks, Conversations, etc.  | Palm Room & Terrace     |

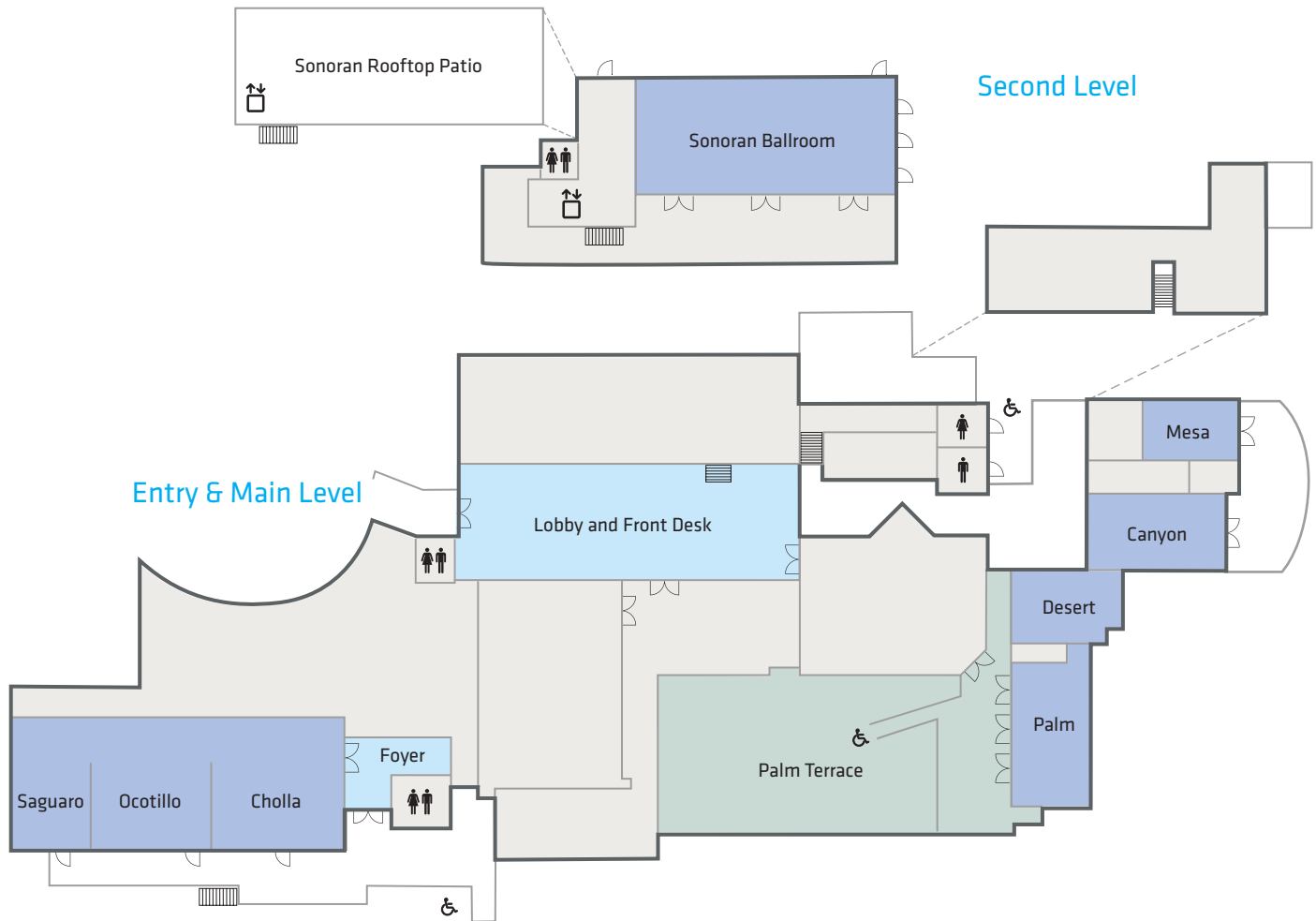
**Sunday, June 3**

|                     |  |                     |
|---------------------|--|---------------------|
| 7:00 - 8:00 am      | <b>Breakfast</b>                       | Palm Room & Terrace |
| 8:00 - 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        | Saguaro Room        |

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

# Scialog: Time Domain Astrophysics

## Westward Look Resort



## Keynote Speakers

### Gaia Data: A Game Changer

#### **Hans-Walter Rix**

*Director, Department Galaxies and Cosmology  
Max Planck Institute for Astronomy*



**Abstract:** From our vantage point in the cosmos, there is nothing like the Milky Way to study the interplay between the physics of stars and the physics of Galaxy formation. This interplay is rich, at times bewilderingly rich, both in terms of the physical processes and the direct observables.

The Gaia mission, with its phenomenal data release just a few weeks ago (of stellar distances and motions, and much more), has ushered in a new era in this field; one that does not obviate, but boosts the need for complementary (e.g., Spectroscopic, or time-domain imaging) data. I will try to give my first impression how Gaia is changing the field of Galactic archeology and stellar physics. This is merely meant to be a starting point for a joint identification and exploitation of untapped gold-mines in such data sets.

**Bio:** Hans-Walter Rix's journey in astrophysics started as a Fulbright scholar and Ph.D. Student at Steward Observatory, then moved to a Hubble Fellowship at the Institute for Advanced Study in Princeton and a faculty job at the University of Arizona. He has been director at the Max Planck Institute for Astronomy since 1999. Studying galaxies 'by any means necessary' he has maintained a balance of theoretical modelling, observing and data mining throughout his career. He carried out the first modelling of gravitational lensing with the Hubble Space Telescope, his research group of colleagues devised the first 10.000 redshift survey to  $z \sim 1$ , and found the highest redshift quasars. Over the last 10 years his research has increasingly focused on taking the Milky Way as a model organism for understanding galaxy formation in general.

## Keynote Speakers Continued

### The Day the Earth Stopped Standing Still

#### **Boris Gänsicke**

*Professor, Department of Physics  
University of Warwick*



**Abstract:** The only way to measure the distances to stars is via a geometric parallax, making use of the fact that the Earth orbits the Sun. Over a century of work on ground-based parallaxes was limited in reach to a few 100pc, at best, and much of our understanding of stellar physics had to be based on proxy distance estimates. On April 25th, the ESA Gaia mission unleashed space-based astrometric data for over 1.3 billion sources, transforming stellar astrophysics over lunch time. I will illustrate the quantum leap in stellar astronomy that these data enable, and will discuss how future large spectroscopic and photometric surveys will augment our understanding of stars both in quality and quantity.

**Bio:** Boris Gänsicke obtained his Ph.D. in Physics and Astronomy in 1997 in Göttingen, Germany, and relocated to Southampton in the UK in 2002 on a PPARC Advanced Fellowship in 2002. In 2003, he moved with Tom Marsh to the University of Warwick, where they set up a new Astronomy and Astrophysics group that has grown in the meantime to 14 faculty members. Boris is an astrophysicist interested in the formation, evolution, and demise of stars and their planetary systems, and his scientific contributions range from model atmospheres for neutron stars to population studies of close binaries to measuring the bulk abundances of exo-asteroids. He enjoys (sometimes) breaking away from established compartmental structures and straying off beaten paths. Boris currently holds an ERC Advanced Grant.

Keynote Speakers Continued

## An Era of Precision Astrophysics for Exoplanets, Stars, and the Milky Way

### Keivan Stassun

*Professor, Department of Physics & Astronomy  
Vanderbilt University*



**Abstract:** While observing stars teaches us about the physical properties of the stars themselves, that knowledge also is the key to measuring the properties of nearly all exoplanets, and also the history of the Galaxy. Combining data from current and upcoming all-sky surveys, including Gaia, TESS, and the fifth Sloan Digital Sky Survey (SDSS-V), will enable accurate, empirical measurements of fundamental properties for millions of stars throughout the Milky Way—including an increase by four orders of magnitude in the number of stars with reliable parallaxes, two orders of magnitude in the number with ultraprecise light curves, and two orders of magnitude in the number with detailed chemical abundances. We demonstrate that stellar masses, radii, temperatures, distances, space motions, and detailed chemical abundances can now be measured with precisions of order 1%, and with systematics better than ~5% in most cases. We discuss the transformational advances that such precise stellar measurements promise for exoplanet science, including studies of planetary system architectures, forensic analyses of planet evolution pathways, testing planet formation theories, and even efforts to infer the mineralogy of planets. We also discuss the similarly transformational advances at hand for galactic archaeology, including studies of stellar micro-populations, testing theories of star formation and of galaxy assembly, and even efforts to trace the chemical “family tree” of the Galaxy through stellar phylogenics. Finally, we discuss the revolution in stellar astrophysics represented by ultraprecise light curves of stars, specifically as probes of stellar interiors and therefore as stress-tests of stellar theory across the Hertzsprung-Russell diagram.

**Bio:** After earning A.B. degrees in physics and in astronomy from the University of California at Berkeley, and the Ph.D. in astronomy from the University of Wisconsin–Madison, Stassun was a NASA Hubble postdoctoral fellow before joining the Vanderbilt faculty in 2003. A recipient of a CAREER award from NSF and a Cottrell Scholar Award from Research Corporation, Stassun’s research on the birth of stars and planetary systems has appeared in more than 250 peer-reviewed journal articles. He is co-investigator for the NASA Transiting Exoplanet Survey Satellite (TESS) mission and chairs the executive committee of the Sloan Digital Sky Survey. From 2004 to 2015, he served as founding director of the Fisk-Vanderbilt Masters-to-Ph.D. Bridge Program, through which Fisk has become the top producer of African American master’s degrees in physics and Vanderbilt has become the top producer of Ph.D.s to underrepresented minorities in physics, astronomy, and materials science. He has served on the NSF Committee for Equal Opportunity in Science and Engineering, has been recognized by the Fletcher Foundation for “contributions advancing the spirit of Brown versus Board of Education,” is a recipient of the American Physical Society’s Nicholson Medal for Human Outreach, and is an elected Fellow of the APS and AAAS. In 2017 Stassun launched the Vanderbilt Initiative for Autism & Innovation. In 2018, Stassun was awarded the Million Dollar Professor prize from HHMI and was named Mentor of the Year by AAAS.

# Scialog: Time Domain Astrophysics

## 2018 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 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 \$100K direct funding for one year and divided between team members (unless the project requires a different division of funds).
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 emailed by 7:00 am Sunday morning to RCSA Senior Program Directors Silvia Ronco (sronco@rescorp.org) and Richard Wiener (rwiener@rescorp.org).
8. After the meeting, each team member will need to upload the proposal to the RCSA online submission system. A link will be provided.
9. Awards will be announced one to two months after the meeting.
10. Awards will be announced in 2018 and start at the beginning of 2019.

## Scialog Fellows

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

University of Pittsburgh

*Time-domain spectroscopy of binaries big and small.*

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

University of Washington

*I am developing two large surveys, ZTF and LSST, and searching the resulting variability datasets for compact binaries.*

**Gurtina Besla** [gbesla@email.arizona.edu](mailto:gbesla@email.arizona.edu)

University of Arizona

*Constraining the dark matter distribution of our Milky Way using the dynamics of satellites/stars that orbit about our Galaxy.*

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

Rider University

*The Milky Way is full of stars. What are they telling us about the Galaxy?*

**Jo Bovy** [bovy@astro.utoronto.ca](mailto:bovy@astro.utoronto.ca)

University of Toronto

*Stellar and galactic astrophysics, galactic dynamics, astrophysical constraints on dark matter, statistical and machine-learning methods.*

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

University of California, Santa Barbara

*Eclectic, but largely exoplanet properties and demographics, with a side of stellar properties and stellar astrophysics.*

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

Flatiron Institute

*Stellar physics: massive stars, stellar rotation, stellar magnetism, and asteroseismology.*

**Laura Chomiuk** [chomiuk@pa.msu.edu](mailto:chomiuk@pa.msu.edu)

Michigan State University

*Novae and the progenitors of Type Ia supernovae; X-ray binaries and the progenitors of LIGO mergers.*

**Kevin Covey** [kevin.covey@wwu.edu](mailto:kevin.covey@wwu.edu)

Western Washington University

*Accretion, angular momentum evolution, and star formation histories of low-mass stars in young clusters & the Milky Way field.*

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

University of Washington

*Variable stars, stellar populations, rotation, and magnetic activity in Kepler/K2/TESS & Gaia.*

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

Northern Kentucky University

*I am interested in using Gaia to provide insights into TESS exoplanets and Radial Velocity companions.*

**Courtney Dressing** [dressing@berkeley.edu](mailto:dressing@berkeley.edu)

University of California, Berkeley

*I am curious about planet formation and composition, the frequency of planetary systems, and the search for life on other planets.*

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

American Museum of Natural History

*I'm focused on using algorithms and visualization tools to map young moving groups down to their free floating planet members.*

**Ryan Foley** [foley@ucsc.edu](mailto:foley@ucsc.edu)

University of California, Santa Cruz

*Supernovae, kilonovae, other transients, weird stars, and cosmology.*

**Carla Frohlich** [cfrohli@ncsu.edu](mailto:cfrohli@ncsu.edu)

North Carolina State University

*I blow up massive and very massive stars for multi-messenger signals from nuclei to photons.*

**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.*

**Gregg Hallinan** [gregg\\_hallinan@yahoo.com](mailto:gregg_hallinan@yahoo.com)

California Institute of Technology

*The magnetic activity of stars, planets and the dynamic radio sky.*

**Keith Hawkins** [khawkins@astro.columbia.edu](mailto:khawkins@astro.columbia.edu)

Columbia University

*Galactic Archaeology with a focus on Galactic formation, structure, and assembly using spectroscopic, astrometric, and photometric surveys.*

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

Hobart and William Smith Colleges

*Magnetic activity on stars and fundamental parameters of young and low mass EBs.*

# 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.*

**Nitya Kallivayalil** [njkr@virginia.edu](mailto:njk3r@virginia.edu)

University of Virginia

*Near-field cosmology.*

**Eliza Kempton** [kemptone@grinnell.edu](mailto:kemptone@grinnell.edu)

Grinnell College

*Atmospheres of extrasolar planets.*

**Chad Kishimoto** [ckishimoto@sandiego.edu](mailto:ckishimoto@sandiego.edu)

University of San Diego

*Astroparticle theorist, weak interaction physics: dark matter properties, core collapse supernovae, nucleosynthesis, r-process.*

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

Carnegie Mellon University

*I am interested in the Milky Way structure, dwarf galaxies, stellar streams, dark matter and in general exploration of large surveys.*

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

University of Colorado

*Observations and modeling of solar and M dwarf flares, signatures of electron beam heating and atmospheric processes in stellar flares.*

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

University of Arizona

*I am interested in binary formation and evolution, and planet formation.*

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

The University of Texas at Austin

*I'm broadly interested in star formation, planet formation, exoplanets, and stellar astrophysics.*

**Nicholas Law** [nmlaw@physics.unc.edu](mailto:nmlaw@physics.unc.edu)

University of North Carolina, Chapel Hill

*High-cadence monitoring of the entire sky.*

**Mariangela Lisanti** [mlisanti@princeton.edu](mailto:mlisanti@princeton.edu)

Princeton University

*I am an astroparticle theorist studying the nature of dark matter.*

**Laura Lopez** [lopez.513@osu.edu](mailto:lopez.513@osu.edu)

Ohio State University

*I am a multiwavelength observer who is interested in supernovae, star formation, stellar feedback, and the interstellar medium.*

**Suvrath Mahadevan** [suvrath@astro.psu.edu](mailto:suvrath@astro.psu.edu)

Pennsylvania State

*Exoplanets, M Dwarfs, Stellar Activity, Precision Spectroscopy, Instrumentation.*

**Raffaella Margutti** [rafmargutti@gmail.com](mailto:rafmargutti@gmail.com)

Northwestern University

*Stellar Eruptions, Disruptions, Mergers and Explosions.*

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

Columbia University

*I am interested in using stars as tools to trace the Milky Way's formation history.*

**Joshua Peek** [jegpeek@stsci.edu](mailto:jegpeek@stsci.edu)

Space Telescope Science Institute

*I study the formation of galaxies and stars through the structure and kinematics of diffuse gas using big surveys and data science methods.*

**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.*

**Armin Rest** [arest@stsci.edu](mailto:arest@stsci.edu)

Space Telescope Science Institute

*Supernovae and other transients; SN Ia cosmology; kilonova; light echoes of transients; SN with KEPLER and TESS.*

**David Sand** [dsand@as.arizona.edu](mailto:dsand@as.arizona.edu)

University of Arizona

*Very young supernovae and other transients; galaxy substructure.*

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

University of Hawaii

*I am a founding member of ASAS-SN and I am interested in transient and variable objects. I primarily focus on SNe, TDEs, and stellar flares.*

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

University of California, Berkeley

*Interested in transients involving white dwarfs: SNe Ia, helium shell explosions, AICs, classical novae...the more the merrier!*

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

University of Illinois at Urbana-Champaign

*Exploring the physics and evolution of supermassive black holes.***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?***Jay Strader** [strader@pa.msu.edu](mailto:strader@pa.msu.edu)

Michigan State University

*The formation of binaries containing neutron stars and black holes; the relationship between dwarf galaxies and globular clusters***Jennifer van Saders** [jivs@hawaii.edu](mailto:jivs@hawaii.edu)

University of Hawaii

*Stellar structure, evolution, magnetism, and using modern observables (rotation, pulsations, astrometry) to infer precision stellar ages.***Matthew Walker** [mwalker@andrew.cmu.edu](mailto:mwalker@andrew.cmu.edu)

Carnegie Mellon University

*Astrophysical nature of dark matter, techniques for inferring amount and spatial distribution of mass within galaxies.***Andrew Wetzel** [awetzel@ucdavis.edu](mailto:awetzel@ucdavis.edu)

University of California, Davis

*Modeling galactic archaeology and near-field cosmology of the Milky Way using cosmological hydrodynamic simulations.***John Wisniewski** [wisniewski@ou.edu](mailto:wisniewski@ou.edu)

University of Oklahoma

*I am an observer who studies hot and cool stars, with and without disks.***Nadia Zakamska** [zakamska@jhu.edu](mailto:zakamska@jhu.edu)

Johns Hopkins University

*Teasing rare and unusual objects out of Gaia based on variability properties; characterizing variability of Galactic sources.***Gail Zasowski** [gail.zasowski@gmail.com](mailto:gail.zasowski@gmail.com)

University of Utah

*Galactic stars, gas, and dust, oh my! - The complex patterns we see, what the Milky Way looks like from the outside, and how normal it is.*

# Scialog: Time Domain Astrophysics

## Discussion Facilitators

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

University of California, Santa Barbara

*Lars works on stars, both those that gently oscillate and those that explode to create supernovae visible in distant galaxies.*

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

University of Warwick

*High-precision stellar physics, late stages of stellar and planetary evolution, and the unforeseen.*

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

University of Washington

*Low mass stars, magnetic activity, stellar flares, starspots, activity cycles.*

**Daniel Jaffe** [dtj@austin.utexas.edu](mailto:dtj@austin.utexas.edu)

University of Texas at Austin

*Star and planet formation, infrared instrumentation, diffraction grating fabrication.*

**Juna Kollmeier** [kollmeier@gmail.com](mailto:kollmeier@gmail.com)

Carnegie Institution for Science

*I am interested in the secrets of the cosmos from planets to cosmology.*

**Knut Olsen** [kolsen@noao.edu](mailto:kolsen@noao.edu)

National Optical Astronomy Observatory

*I am interested in the stellar populations of nearby galaxies and what they teach us about galaxy structure, formation, and evolution.*

**Marc Pinsonneault** [pinsonneault.1@osu.edu](mailto:pinsonneault.1@osu.edu)

Ohio State University

*I am a stellar structure theorist, mostly working on cool stars, currently focusing on asteroseismology and stellar rotation.*

**Thomas Prince** [prince@caltech.edu](mailto:prince@caltech.edu)

California Institute of Technology

*Time-domain surveys. Ultracompact binaries.*

**Hans-Walter Rix** [rix@mpia.de](mailto:rix@mpia.de)

Max Planck Institute for Astronomy

*Loving all galaxies, but the Milky Way most. Committed to doing justice to the information content of Gaia and SDSS data.*

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

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*Understanding star+planet formation and evolution through precision light curves, spectra, and parallaxes.*

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# Scialog: Time Domain Astrophysics

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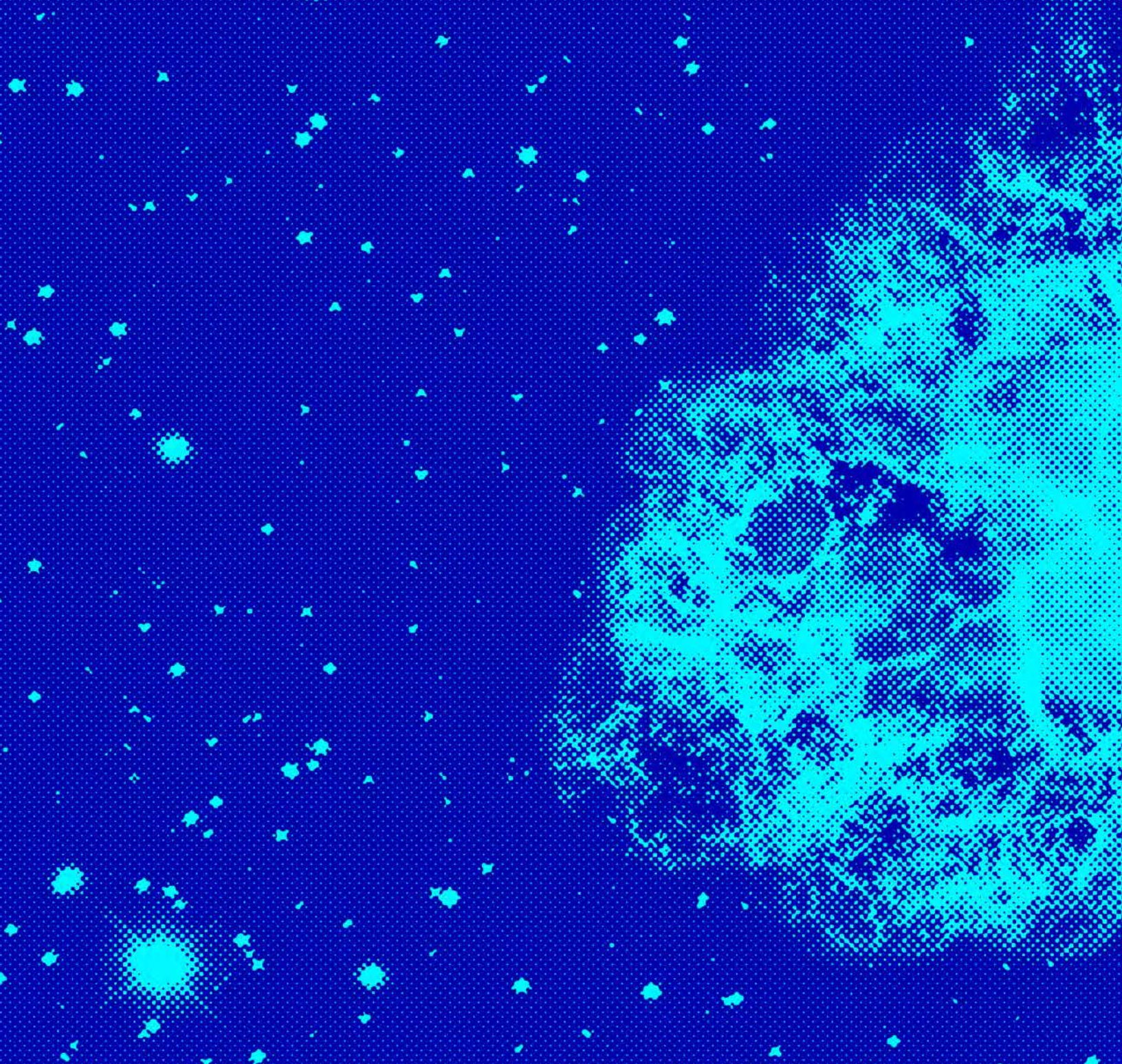
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