*News from the*
# Society for Astronomical Sciences
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**In-person attendees at SAS-2024.** Photo by Bob Stephens.

## Invitation & Call for Abstracts: SAS-2025

Everyone interested in the use of small telescopes for science and education is invited to participate in the Society for Astronomical Sciences' 44th Annual Symposium, in Ontario, California, on **June 19-20-21, 2025**. Mark your calendars, start thinking about the talk you'll give, invite your science-oriented friends and club members to join us. And let us know if you have a suggestion for Workshop topics (e-mail to prograrm@SocAstroSci.org).

The SAS Symposium is the premier annual conference devoted to small-telescope astronomical research. SAS-2025 offers both in-person and interactive online participation.

The Symposium brings together amateur astronomers, students, instructors, and professional astronomers for in-depth discussions of topics related to small-telescope science and research. It is an excellent venue for presenting development of instruments, new observing techniques, discussing targets of observational campaigns, describing instrumentation and data reduction or analysis methods, developing collaborations, and sharing results, expertise and experience. Almost any topic related to astronomical research using modest telescopes is of interest to SAS. In the past these have included – but are not limited to – asteroids, planetary observations, variable stars, solar observing, extra galactic transients, and extrasolar planets.

You do not need to be an expert to benefit from participating in the Symposium. Our goal is to help you learn about small-telescope research opportunities and become a productive observer and researcher, by providing a collaborative environment where you will learn how to perform quality observations, generate useful data, and contribute to astronomical science.

Proceedings and recorded videos from recent SAS Symposia are available on our website: SocAstroSci.org.

**Registration** for the Symposium will open on January 1st, 2025. The registration links are:

In Person participation:
https://socastrosci.app.neoncrm.com/event.jsp?event=99&

Interactive On-Line participation:
https://socastrosci.app.neoncrm.com/event.jsp?event=94&

The Registration fee is $110 (for SAS members) or $135 for non-members. An "early-bird" 10% discount will be applied to in-person registrations made before March 31st.

We hope that you will join us, either in person or online.

## Call for Abstracts for SAS-2025

Papers for presentation at the SAS-2025 Symposium are solicited on all aspects of astronomical science that are (or can be) pursued by observations with small telescopes (less than ≈1-meter aperture). We encourage presentation of work which follows the Scientific Method, including clear hypotheses, reproducible experiments, and results. Examples of work presented at previous Symposia include:

- Observations, data, and analysis of variable stars, eclipsing binary stars, double stars and stellar systems
- Observations, data, and analysis of asteroids and other solar system objects; and exoplanets
- Progress, status, and planning for upcoming observing campaigns such as the TESS follow-up initiative.
- Instrumentation/hardware and techniques (including software) for photometry, astrometry, spectroscopy, polarimetry, and fast-cadence observations (e.g., occultations)
- Investigations of atmospheric effects, light-propagation and scattering, light pollution monitoring as they affect astronomical observations.

We welcome three types of papers: "*Paper with Presentation*" includes both a written paper for the Proceedings and a 20-minute presentation; "*Paper without Presentation*" is a written paper for the Proceedings; and "*Posters*".

We will accept both in-person and remote presentations (in-person are preferred).

All abstract submissions will be reviewed by a panel of experienced amateurs and professionals who will provide helpful feedback to authors and decide which submissions to schedule as part of the symposium as either presentations or posters.

Submit your abstracts via e-mail to: Program@SocAstroSci.org.

Abstracts are due by March 25, 2025. You will be informed of acceptance by April 3.

Final papers for the Proceedings will be due by April 17, 2020.


## Proceedings and Videos from SAS-2024

The SAS-2024 Symposium saw 75 people registered in person and 25 people on-line, for 3 days of small-telescope science. Thank you to the presenters, Sponsors, and organizers for making this a great gathering!

The Proceedings book from SAS-2024 (as a PDF) is freely available on the SAS website, at: (https://socastrosci.org/wp-content/uploads/2024/06/2024-Proceedings_Ver1.3c.pdf).

Recordings of the presentations are also freely available:

Workshops (Global Meteor Network, and Tri-color Imaging for Science) are at: https://www.youtube.com/playlist?list=PLmQ5Bvz4ACYJLYfswIeAipapoeGeI6QWy

Technical Presentations are at: https://www.youtube.com/playlist?list=PLmQ5Bvz4ACYLNZQMZ0dZ7JhWsSYHWhrel

## Binary Asteroids meeting

The 6th Binary Asteroids Meeting will be hosted by the Nice Observatory next year. The workshop will be focused on binary and multiple systems among the NEO, Hungaria, main-belt, Trojan, Centaur, and TNO populations. Expect to see experts on all topics related to binaries, including their detection, characterization, formation, and dynamical evolution.

The meeting will be September 15-17, 2025, at the Observatoire de la Côte d'Azur, Nice, France

Please fill out the following form if you are interested in receiving future updates and registration information: https://forms.gle/dCVgFa2t6WXVLMuM8

## Summer Intern Program in Planetary Sciences 2025

The Lunar and Planetary Institute (LPI) is accepting applications for the 2025 LPI Summer Intern Program! This 10-week, highly competitive program offers undergraduates a unique opportunity to work with scientists at LPI and NASA's Johnson Space Center on cutting-edge research in planetary science.

Program Dates: June 2–August 8, 2025

Eligibility: Open to undergraduates with at least 50 semester hours of credit. Students majoring in physical or natural sciences, engineering, computer science, or mathematics are preferred, but all eligible students will be considered.

Application Deadline: December 12, 2024

For more information and to apply, visit lpi.usra.edu/lpiintern.

## SAS-2024 Symposium Sponsors

The Society for Astronomical Sciences is grateful to our Sponsors for their participation and financial support. Without them, our Symposium would not be possible. We encourage you to consider their fine products for your astronomical needs.

**Sky & Telescope Magazine**
The Essential Guide to Astronomy
http://www.skyandtelescope.com/

**DC3 Dreams Software**
Developers of ACP Observatory Control Software
http://www.dc3.com/

**PlaneWave Instruments**
Makers of the CDK line of telescopes
http://www.planewaveinstruments.com/

**Sierra Remote Observatories**
World Class Remote Imaging and Data Acquisition
http://www.sierra-remote.com

**Software Bisque**
Superior imaging solutions for discriminating astronomers
http://www.bisque.com

**Woodland Hills Camera & Telescopes**

https://telescopes.net

**Optec Inc:**
A creator of Astronomy Technology!
http://www.OptecInc.com

## Small Telescope Science in the News

The best evidence for the ongoing value of small telescopes and amateur research efforts is the steady flow of published science results that used small-telescope data, or that are within the capabilities of our observers. Here are some noteworthy examples.

**Orbits of Binary Stars: from Visual Measures to Speckle Interferometry**

by Andrei Tokovinin

The Astronomical Journal, 168:190 (15pp), 2024 November https://iopscience.iop.org/article/10.3847/1538-3881/ad72e5/pdf

We have seen quite a few papers about speckle interferometry of visual doubles at recent SAS Symposia. Such measurements turn out to be productive projects for student researchers with modest telescopes, and are also being done on larger telescopes (e.g. the 100-inch at Mt. Wilson Observatory).

In this paper, Tokovinin offers sage advice on the uses of ongoing measurements of visual binaries, proper method for merging speckle data (high precision and accuracy) with older observations (lower accuracy), incorporation of GAIA parallaxes and radial velocities, and an updated opinion on "is this orbit really necessary?" (i.e. what observational evidence should trigger an update to the orbital elements).

The paper mentions a particular "special case" that cries out for attention by our observers over the next few years. I quote at length:

*The PMS [pre-main-sequence] star HD 98800 is a 2+2 quadruple system where the outer pair A,B is a classical visual binary I 507 (11221−2447). Recent interferometric observations have established the orientation of the inner subsystems relative to the outer orbit (S. Zúñiga-Fernández et al. 2021). The inner pair Ba,Bb is surrounded by a debris disk, which is nearly perpendicular to its orbit. The A,B pair is closing down, and during the upcoming conjunction in 2026–2027 the disk will occult the subsystem Aa,Ab, offering a unique chance to study the detailed disk structure by photometric monitoring of the occultation. The knowledge of the outer orbit is critical for interpretation of these data, and the historic visual measures of A,B play an important role here.*

The target is bright (V≈ 9.3), but it is pretty far south (declination = -24:46).

**Discovery of eclipses in the cataclysmic variable LAMOST J035913.61+405035.0**

By V. P. Kozhevnikov

Pre-print at https://arxiv.org/pdf/2410.06873v2

It's amazing the things you can see (and discover) just by looking. This star (known by its LAMOST and GAIA identifiers) is a cataclysmic variable (magnitude range ≈15.5 to 17). The author made a time-series photometry study using a photomultiplier on a 70 cm (27 in) telescope, and discovered periodic eclipses (P= 0.228 d). It isn't certain, but there is a hint of a flat-bottom in the eclipses (indicating total eclipse). Eclipses that occur when the CV is in its faint state dip to 18-18.5 mag.

**Caught in the Act: Observations of the Double-mode RR Lyrae V338 Boo During the Disappearance of a Pulsation Mode**

By Kenneth Carrell, et al

Pre-print at https://arxiv.org/pdf/2411.09739

V338 Boo is a 13th magnitude double-mode RR Lyrae (type RRd variable star, pulsating in both the fundamental ($f_0$≈2 cy/day) and first-overtone ($f_1$≈2.5 cy/d) frequencies. The authors have previously reported analysis of TESS data showing changes in the relative strengths of the two pulsation modes. This paper reports follow-up photometry by both TESS and AAVSO observers.

The TESS data analysis shows the amplitude of each pulsation mode over time, for two TESS cycles (about 50 days). Over this time span, the fundamental mode amplitude rose and fell, and the first-overtone amplitude fell to zero and then began rising. AAVSO observations picked up after the TESS pointing changed, which confirmed that the changing strength of the two modes is periodic. It is wonderful to see how ground-based observations from small-telescopes, maintained over a couple of months, can effectively extend the TESS coverage, and provide quite respectable analysis of mode strengths over time.

More such projects are needed. It isn't clear, for example, whether reports of "mode switching" are to be taken at face value, or whether they might be undersampled versions of the sort of mode-amplitude variability seen in V338 Boo. It is probably worthwhile to re-examine some of these "mode switching" stars using the same approach taken here – continuous photometric monitoring over a couple of months to resolve the changes in mode amplitude. It also isn't clear if this effect might be related to the Blazhko effect; the authors suggest that the double-mode RR Lyraes might be useful targets for study in this regard.

**Y Gem, a Symbiotic Star Outshined by its Asymptotic Giant Branch Primary Component**

by M. A. Guerrero, et al

pre-print at https://arxiv.org/pdf/2411.14270v1

Here is a neat example of merging amateur (small telescope) spectroscopy and photometry with professional (large telescope) observations to study an unusual star. The amateur

spectra were taken from the ARAS database, and the amateur photometry comes from the AAVSO database. These augment optical spectroscopy from the 2.54m Isaac Newton Telescope, and X-ray and UV data from space-based instruments.

Their approach to evaluating the optical spectra will be of interest to our spectroscopists; and their analysis of optical photometry will be of interest to our photometrists.

Y Gem exhibits many features of a symbiotic system. The optical spectrum is dominated by a cool star (e.g. T CrB and R Aqr), but its spectrum is unusual in that it lacks some of the expected lines of a symbiotic. The presence of forbidden lines suggests the presence of a hot component – probably a white dwarf.

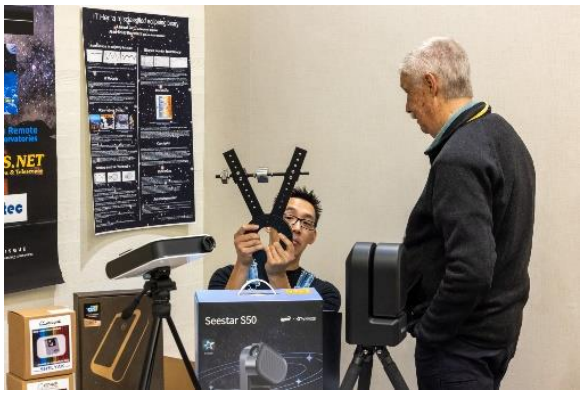
**Modelling Pulsating Stars**

by Philip Masding & Robin Leadbeater

Pre-print at https://arxiv.org/pdf/2409.10116

The authors report on their project to (1) create a hydrodynamic model of stellar pulsations by updating Christy's (1964) code for modern computer use, and (2) apply it to amateur photometry and spectroscopy of a target star (the delta-Scuti star SZ Lyn). The time-series photometry is V-band, and the time-series spectroscopy was made with an LHires III to create a radial velocity curve through a complete pulsation cycle.

The result is impressive: the computer model makes a good match to the brightness and RV observations, and displays the changing internal structure of the star as it pulsates.

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## Membership Information

The Society for Astronomical Sciences welcomes everyone interested in small telescope astronomical research. Our mission is to foster amateurs' participation in research projects as an aspect of their astronomical hobby, facilitate professional-amateur collaborations, and disseminate new results and methods. The Membership fee is $25.00 per year.

As a member, you receive:
• Discounted registration fee for the annual Symposium.
• A copy of the published proceedings on request each year, even if you do not attend the Symposium.

Membership application is available at the MEMBERSHIP page of the SAS web site: http://www.SocAstroSci.org.

The SAS is a 501(c)(3) non-profit educational organization.

## SAS Contact Information

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