



News from the Society for Astronomical Sciences

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Register & Join us at SAS-2023

The SAS-2023 Symposium will be held in Ontario, California on **June 22-23-24** (Thurs-Fri-Sat), 2023. We are all looking forward to seeing the activities and progress that you have made in small-telescope astronomical research.

SAS-2023 is a hybrid meeting: You can attend in person in Ontario, California, or you can participate from the fully interactive online Zoom meeting. Symposium information is on our website at <https://socastrsci.org/symposium/>. There are two links for registration:

Register for in-person participation at <https://socastrsci.app.neon-crm.com/event.jsp?event=64&>

Register as an on-line participant at <https://socastrsci.app.neon-crm.com/event.jsp?event=69&>

Virtual Attendees: What to expect

One of the recommendations coming out of a recent investigation by AAS-DPS was that “meeting organizers should be transparent about what sort of virtual access is enabled for a given meeting”. (See https://dps.aas.org/sites/dps.aas.org/files/meetings/DPS-MXT_Report.pdf).

Here is what SAS-2023 online participants can expect:

- The Zoom links for on-line participation will be in the confirmation e-mail you receive after you register.
- You will join the Symposium via a Zoom meeting (not a “webinar”). When you join the meeting, your webcam will be “live”, but your audio will be “muted”.
- You will have control over your webcam – you can turn it on or off as you wish.
- The “raise/lower hand” function will be active, so that we can call on you to ask your question or make a comment.

- You will have control over your microphone, so that during Q&A after each talk, you can address the presenter directly – your audio will go out over the speakers in the in-person conference room. Beware, however, that if we are getting background noise over your microphone at other times, we will mute you except when you are called on for a question.
- The “Chat” function will be active. You can use this to communicate with the Symposium’s online coordinator about audio/video or connectivity problems. You can also pose questions to the presenter by typing them into Chat –our online coordinator will be monitoring the Chat and will read the question/comment to the in-person audience and the presenter (in case you don’t have a microphone on your computer).
- You can also use the Chat function to interact directly with other online participants, but the Chat will not be displayed to the in-person participants.
- The Zoom meeting will be “live” during the Workshops, Technical Presentations, lunchtime discussion and receptions.. At all times, our online

coordinator will be monitoring the Zoom to deal with any problems.

- If you log out of the Zoom (intentionally or accidentally), you can log back in at any time.
- If you miss a portion of the Zoom (for any reason), the recording of the sessions will be available within a few weeks after the Symposium. We do not release the recordings of the lunchtime discussions, and we honor any request by a presenter to not release the recording (e.g. because results are embargoed).

We do accept presentations by on-line participants. Online presenters will present “live” at your scheduled time, with your audio going out on the conference room speakers and slides being shown on the screens. We prefer “live online” presentations, but if you must make a pre-recorded presentation, we can accommodate that also. In either case, we require that you send us a copy of your slides a week prior to the meeting, so that we have a “plan B” in case of bandwidth or connectivity problems.

Please coordinate with Bob Gill (rmgill@roadrunner.com) about format, timing, and other details of your online presentation.

In-Person Attendees: What to expect

The Symposium is being held at the Doubletree by Hilton Hotel, in Ontario, California, at 222 North Vineyard Avenue, Ontario, California, 91764-4431. The hotel is very convenient to Ontario Airport (ONT).

Coffee service is in the Breakout Room directly across the hall from the main meeting room. You are welcome to use the Breakout Room for impromptu discussions at any time, so as not to disturb the main meeting.

The Receptions will be held in the Breakout Room, with Hors D’oeuvres and cash bar.

Meeting registration does not include lodging! Contact the hotel to make room reservations (1 909-937-0900). We do not have a special “conference rate” this year.

In-person attendees will note that your registration confirmation e-mail included the Zoom information, and that the registration fees for in-person or online are the same. You are welcome to change your mind about travelling and participate via the Zoom instead.

If you need special accommodation (access, hearing, visual, etc.) please e-mail us at program@SocAstroSci.org and we will try to help.

Something New at SAS-2023:

“Mini-talks show & tell”

Every couple of years, we experiment with changes to the schedule or content of the Symposium. This year, we are going to try a new feature: “Mini-talks, show & tell”. Here’s the idea: For technical presentations, we require a written paper for the Proceedings. However, quite a few of you have done or seen something that is useful, and of interest to our community; but which isn’t ripe for a full-on Paper or Poster. This year, we will schedule time for short presentations (~ 10 minutes) of such projects, results, and observations that you have been involved in.

No paper is required, and the “mini-talk, show & tell” presentations can be made by both in-person and on-line participants.

The only rules are:

- Please let us know by June 1st what your topic will be, so that we can schedule accordingly (e-mail to program@SocAstroSci.org).
- Topics should be related to small-telescope astronomical research (broadly defined, to include equipment, analysis methods, intriguing observations, etc.)
- On-line participants please provide your slides to Bob Gill by June 10, so that we’ll have a backup in case of connectivity problems (e-mail to RMGill@Roadrunner.com).
- In person participants please bring your slides on a USB stick.

We look forward to seeing what you have been up to!

Astronomy Research Seminar Workshop

Sponsored by the Institute for Student Astronomical Research (InSTAR), this Workshop will be held on Sunday morning following SAS-2023, at the same hotel:

Sunday June 25th, 2023

9:00 am - 12:00 pm

Double Tree by Hilton Ontario Airport
Hunters Peak Room

This will include student research presentations and educator discussions. There is no charge. SAS participants are welcome to join this Workshop, but please register with InSTAR so that they know you’re attending, by filling in this short Google form:

<https://forms.gle/dnXEtAxYucwk-LWgF7>

The Astronomy Research Seminar has been taught to high school and undergraduate students, and educators around the US and the world for over a decade, resulting in over 250 papers published in the Journal of Double Star Observations and elsewhere. In the seminar, participants learn how to select a double star system to study, use remote telescopes to collect images of their chosen system and make astrometric measurements of the double stars. An important part of the seminar is then learning how to write up their results for publication in a peer-reviewed scientific journal. Communicating science is a crucial aspect of the scientific process and therefore is emphasized in the seminar, as students learn how scientific writing is different from all the writing that they have previously experienced. They also present their research to authentic audiences at conference workshops or online symposia. In this workshop, you will learn about the research process that the seminar takes students through, from selecting a double star, to collecting data with remote telescopes and making astrometric measurements. There will also be several student presentations to showcase the end results of these research experiences.

Other meetings that you might be interested in:

Here are other gatherings that you might be interested in:

BAA Autumn Meeting 2023: The British Astronomical Association Autumn meeting will be Friday September 8th to Sunday September 10th, 2023 in Leicester.

Details are at

<https://britastro.org/event/autumn-2023>

AAS-242: The American Astronomical Society will be meeting in Albuquerque, NM from June 3-8.

Of particular note is a two-day Workshop on “**Small Ground and Space Telescopes in the New Era of Big Telescope Surveys**” that will be held on Saturday and Sunday (June 3-4). This promises to be a wide-ranging discussion that will touch on many aspects of pro-am collaboration in astronomy. Those of you who are AAS members should consider participating, either in person or online.

The Transient & Variable Universe” conference to be held 20-22 June 2023

at the University of Illinois Urbana-Champaign.

See the Conference website for details:

<https://publish.illinois.edu/transient-variable-2023/>

The goal of the conference is to bring together the scientific community working on transient and variable science across all wavelengths. The motivation is to identify the major fundamental scientific questions that can be addressed with the upcoming time-domain survey facilities in the gamma-ray, X-ray, optical, millimeter, and radio wavelengths. We hope to identify synergies between the various surveys and which rapid follow-up and pointed instruments will be needed to maximize the scientific return. The science topics will be wide and ambitious, covering both Galactic and extragalactic science.

The meeting will be hosted by the Center for AstroPhysical Surveys (CAPS) and held at the National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign. The meeting is sponsored by CAPS, CMB-S4, DSA-2000, ICASU, LSSTC, NCSA, ngVLA, the Roman Space Telescope, and STScI.

Conference registration is open, and will continue until the deadline of May 19, 2023. Registration is on the conference website.

5th European Variable Star Observer meeting (EVS-5) will take place in Barcelona, Spain, on 2023 May 27 and 28. (welcome cocktail on 26th 18:30pm)

As for the former editions, this meeting is aimed to promote collaboration between the different European variable star organizations and improve Pro-Am collaborations.

More information and registration form may be found in the meeting web site: <http://rr-lyr.irap.omp.eu/photometry/EVS5>. Registration is open till 16th May.

About that Spam e-mail from a Journal publisher:

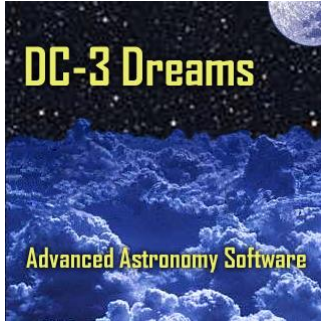
You may have received an e-mail from the “American Journal of Astronomy and Astrophysics” (who are on Beall’s list of predatory journals). We don’t have any relationship with that publisher, and we didn’t send your info to them. As far as we can tell, they drew names and e-mails from our Proceedings PDF.

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.



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Small Telescope Science in the News

With JWST now operational, and Vera Rubin Observatory coming along, we may be heading into another season of worrying about the value of small-telescope and amateur observations. The best evidence in favor of small-telescope observations is their contribution to research. Here are some interesting reports that have appeared in the literature over the past few months, illustrating the science that is facilitated by small-telescope photometry and spectroscopy.

Spin vectors in the Koronis family: IV. Completing the sample of its largest members after 35 years of study

by Stephen M. Slivan, et al

Submitted to Elsevier, Dec 2022

Preprint available at <https://arxiv.org/pdf/2212.12355v1.pdf>

Let's begin by noting that SAS leader Bob Stephens is a co-author of this paper. Those of you who have paid attention to asteroid photometric lightcurves will probably also recognize many of the other authors, including Richard Binzel, Raoul Behrend, and Rene Roy.

This is a fine example of what we can learn about an asteroid (and its family members) from ground-based photometry. The observations used in this report all came from small telescopes and CCD photometry. The process for analyzing the asteroid lightcurves sort of mimics the increasing difficulty of gathering the necessary data. Determining the asteroid's synodic period is straightforward. Determining its phase curve (brightness and lightcurve shape changes as the solar phase angle changes) is more involved, and the observations must span several months during a single apparition. Determining the sidereal period and the rotation direction (prograde or retrograde) requires at least 4 or 5 lightcurves from different apparitions – implying a decade-long set of photometric data. Surprisingly detailed 3-D models of the asteroid's shape can be derived from this photometric data.

This paper describes both the shape and spin state of 3 dozen asteroids, all members of the Koronis family, and shows statistics about the family members.

Of particular note is an extended discussion of the observational and mathematical analysis approach to the project, and references to some of the important "specialist" software that is available for download.

If you are curious about the next step after making asteroid lightcurve observations, this is a great and valuable paper.

Photometric survey of the red giant V449 Cygni over half a century (1974 to 2022). A semi-regular variable star with a period of ~54 days.

By Guy Boistel

GEOS CIRCULAR ON RED VARIABLE STARS July 2022

(pre-print available at

<https://arxiv.org/ftp/arxiv/papers/2207/2207.07480.pdf>)

It can be challenging (frustrating?) to interpret visual observations of variable star brightness. Their great value is that they provide the longest span of observations available (skilled observers' eyeballs were around, long before CCD chips arose). But they are challenging because in most cases, the long run of observations comes from a large number of observers, and each observer has their own random and systematic errors. If the star's magnitude range is small, then the systematic errors of the individual observers can hide the true variation of the star's brightness.

To the casual glance, the visual observations of V449 Cyg in the AAVSO data base show a "long cloud" of data points without any obvious pattern. A clever treatment of such data sets can unravel random noise from the individual systematic offsets of each observer, and tease out the real variation in the star's brightness. (For a description of the algorithm, see <https://articles.adsabs.harvard.edu/pdf/1987Ap%26SS.134..135R>).

The authors start with such an analysis, to show that V449 Cyg was varying in a semi-regular way, since the mid-1950s. The visual lightcurve contains a hint that the nature of the variability might have changed over the past half-century. At long last, a dedicated CCD observer (Sjoerdre Dufoer in Belgium) devoted 2 ½ years to consistent B- and V-band CCD observations of V449 Cyg, to show its semi-regular lightcurve, with amplitude of $\Delta V \approx 0.6$ mag (P-P) and average period of $\approx 54 \pm 10$ days.

This star is bright, ranging from 7.2 to 7.8 magnitude, so there might be real value in a few SAS observers collaborating on a spectro-photometric project to map both its brightness and its spectrum through a few cycles.

Meandering periods and asymmetries in light curves of Miras: Observational evidence for low mass-loss rates?

by P. Merchan-Benitez, et al

preprint available at arXiv:2302.02206v1

The Mira family of long-period pulsating variables contains quite a bit of diversity: most lightcurves rise and fall with good symmetry, but some have asymmetric shapes and some

show humps; most have constant pulsation periods, but some show period changes; and among the period-changers, some display sudden shifts in period, some vary continuously and monotonically, and others have “meandering periods”, shortening and lengthening with no obvious pattern.

These period changes are generally assumed to be related to the star’s evolution through a “third dredge-up” of internal material associated with thermal pulses from the onset of Helium shell burning inside the star.

This paper discusses the observational data (much of it from AAVSO observations) of period-changing Miras. The data is consistent with the TP explanation, and inconsistent with the alternative hypothesis that period changes are a reflection of multiple pulsation modes.

This sort of research requires decades-long spans of observations, which really doesn’t happen without an organization like AAVSO to encourage, collate, and archive the data, and observers who devote at least a portion of their time to these slowly changing stars. The photometric record illustrated in this paper is quite good; I wonder if it is time to start a comparable effort of multi-decade spectroscopic monitoring of these same stars?

Precise Distance Measurement for a Near-Earth Asteroid by the Refined Rotational Reflex Velocity Method

B. F. Guo, et al

The Astronomical Journal, 165:128 (10pp), 2023 March available at <https://iopscience.iop.org/article/10.3847/1538-3881/acb76c/pdf>

What is the distance to that asteroid? Knowledge of the asteroid’s orbit makes it simple to answer the question, but for a potentially hazardous object with only a short arc of optical observations and no radar-observations, the problem is trickier. Two widely spaced observatories making simultaneous observations can derive distance from parallax, but scheduling the observations can be a challenge.

Making use of Diurnal parallax from a single observing site will work. I was thrilled to see that the report that Alvarez &

Buchheim presented at SAS-2012 is referenced; but the method requires two nights of observing and has only been demonstrated for main-belt asteroids (and Pluto). Near-Earth asteroids might present new challenges for it.

This paper applies a more rigorous variation on the theme of diurnal parallax: the Rotational Reflex Velocity method. This requires only two nights of optical astrometric observation from a single observatory, and only two astrometric images on each night. The math for data analysis gets a little hairy, but the concept isn’t too hard to understand. The author’s tests of the method indicate an accuracy of a fraction of 1% in distance. Check it out.

SU UMa-type supercycle in the IW And-type dwarf nova BO Cet above the period gap

by Taichi Kato

preprint available at <http://arxiv.org/abs/2302.02593v1>

BO Cet is a cataclysmic variable with a relatively long orbit period ($P \approx 3.4$ hr). It is also relatively bright ($V_{mag} \approx 14-16$) making it accessible to amateur-scale instruments for CCD photometry. It is of special interest because it is the first object known to display characteristics of both SU UMa-type (ordinary outbursts plus occasional superoutbursts with superhumps) and of Z Cam-type (intervals of stable “standstills” in the lightcurve).

During 2022, BO Cet showed a series of dwarf-nova outbursts of increasing amplitude, terminating in a superoutburst. The final outburst preceding the superoutburst had characteristics similar to a “standstill”. Very curious ...

The paper concludes with a plea for more observations: BO Cet has not been a popular target for the cataclysmic variable observers. The AAVSO database contains a nice 3-month series of measurements by Filipp Romanov, but nothing else. Dr. Kato recommends both (1) sporadic observations at a cadence of a few images per night, and (2) intense time-series photometry when the object is in its bright state.

If you consider putting this guy on your observing plan, Kato’s paper will get you started.

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All SAS Leaders are volunteers, serving without compensation.

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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.

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