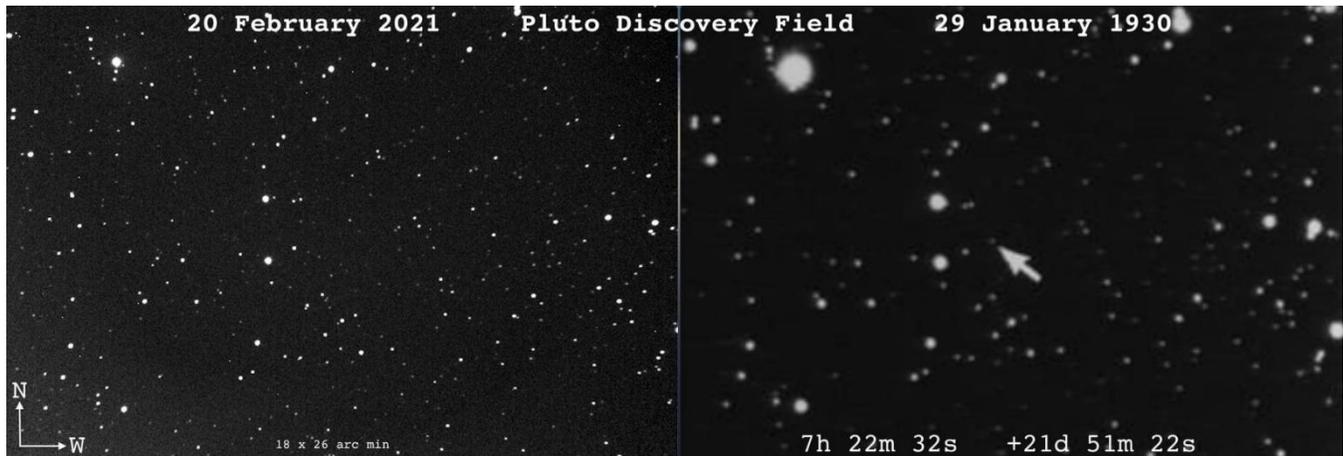




# News from the Society for Astronomical Sciences

Vol. 19 No.1 (February 2021)



**Pluto Discovery Field, then and now:** Patrick Wiggins took the image on the left to celebrate the anniversary of the announcement of the discovery of Pluto. Pluto's discovery image on the right was taken by Clyde Tombaugh, on 29 January 1930 (not sure why it took 3 weeks before the announcement was made). Pluto is the tiny dot indicated by the arrow.

Brian Skiff points out that the full CCD field displayed here represents tiny part of the entire discovery plate. The Pluto camera takes a 14x17 inch glass plate and covers a field on the sky which is about 12 x 14.5 degrees. The usual field of the published Pluto discovery images is only a few millimeters on the plate (image-scale is about 122".5/mm).

## SAS-2021 will be an "on line" Symposium this June

As we announced in the last Newsletter, SAS-2021 will be held as a virtual, online Symposium in summer 2021.

We will build off of last year's success, with plans for SAS-2021 that will offer increased time for interactions and discussion – not just with the presenters, but also among the attendees. It still won't be the same as hobnobbing in the bar at an in-person Symposium, but it will provide for more extended and free-wheeling discussion than is done in a typical webinar format. Here are the details:

The purpose of the SAS Symposium is to encourage research using small-telescope observations and amateur-professional collaborations in astron-

omy. Targets of interest include asteroids, solar system objects, exoplanets, variable stars, novae and supernovae, and related topics such as instrument design and characterization, and data analysis methods. Everyone with an interest in small-telescope research is welcome -- amateur astronomers, students, educators, and professional astronomers. If you want to see how small-telescope observations and measurements are contributing to astronomical science, learn more about photometry, astrometry, spectroscopy and the newest hardware, software and analysis techniques, this is the conference for you!

Online Symposium: The 2021 SAS Symposium will be held online. This will not be a typical "sit and watch presentations" affair. Our format is aimed at facilitating broad audience

interaction and wide-ranging discussions. All papers and posters will be presented as recorded videos; both the videos and the papers will be available for you to view/read about a week before the associated "live" session. At each live session, the agenda will be:

- 45 minute "opening reception" (bring your own drink and snacks)
- 60 minute "Technical Discussion" of the papers assigned to the session (2-minute summary by the author, followed by 8-minute Q&A from the audience)
- Open one or two "breakout rooms" for open-ended discussions on any topic related to the session's papers.

We anticipate 3 "live sessions", but more sessions might be added, de-

pending on the number of papers accepted.

On-line Symposium Technical Discussion sessions will be held on these dates and times:

Tuesday June 15:

6PM PDT = 9PM EDT

0100 June 16 (Wednesday) UTC

Saturday June 19

11AM PDT = 2PM EDT

1800 June 19 UTC)

Tuesday June 22

6PM PDT = 9PM EDT

0100 June 23 (Wednesday) UTC

The “opening reception” for each session will begin 45 minutes before the Technical Discussion.

Watch the times! We have scheduled the June 19th session to be convenient for our UK and European friends.

The Zoom link for the Symposium will be included in your registration-confirmation e-mail. One link will get you into all sessions, including the reception and breakout rooms.

The “breakout room” discussions will stay open until the attendees call it quits. We won’t release recordings of the “live sessions”. We think that it is more valuable for the attendees to have unconstrained and free-wheeling discussion, uninhibited by fear that some poorly-phrased comment or question will come back to haunt you.

Symposium Registration will open on March 15. When registration is open, you can use the link on the SAS website, or go directly to <https://socaastrosci.zsystems.com/eventReg.jsp?event=39&>

Registration price is \$20 for SAS members, or \$40 for non-members.



## SAS-2021: Call for Abstracts

Papers are solicited on all aspects of astronomical science that are (or can be) pursued by observations with small telescopes (less than 1-meter aperture), such as

- Investigations of variable stars, eclipsing binary stars, double stars and stellar systems
- Investigations of asteroids and other solar system objects; and exoplanets
- Progress, status, and planning for upcoming events such as the TESS follow-up initiative and the anticipated outburst of T CrB.
- Instrumentation for photometry, astrometry, spectroscopy, polarimetry, and fast-cadence observations (e.g. occultations)
- Investigations of atmospheric effects, light-propagation and scattering, light pollution monitoring
- Innovative use of astronomy in education.

Format: Papers for Presentation consist of a 20-minute recorded presentation and a written paper that is published in the Symposium Proceedings.

Papers without Presentation are welcome, and will be included in the Proceedings, without a recorded presentation.

Poster Papers are welcomed and can be included in the Symposium Proceedings book.

Authors of all papers are expected to participate in the “live” session scheduled for discussion of their paper. We will try to accommodate reasonable schedule requests in this regard.

Important Dates:

Abstracts are due March 28. Submit abstracts to [program@socaastrosci.org](mailto:program@socaastrosci.org), and please indicate whether you are proposing a Paper with Presentation, Paper without presentation, or Poster. You will be notified of acceptance within a week of submittal.

Final Papers and Recorded presentation are due by May 15.

Presenters must register for the Symposium!

You may propose more than one paper for presentation, but normally only one Presentation per author will be

scheduled. There is no limit to the number of Posters or Papers without Presentation.

You can see the scope and content of presentations from recent Symposia by downloading the Proceedings from the SAS website and viewing the videos of presentations from recent Symposia.

## Newsletter Contributions?

This issue of the SAS Newsletter is a bit thin. Your editor suspects that some of you have interesting stories that your colleagues would like to read about: Small projects that you’re doing; Interesting (or curious) observations you have made; Projects for which you could use a few collaborators; Reviews and lessons-learned from new equipment you’ve put into service; or other astronomical tidbits.

If you have something to share, contact Bob Buchheim:

[Bob@RKBuchheim.org](mailto:Bob@RKBuchheim.org).

## Interest in “mid-term” online events?

Our ongoing experiments with online special-interest meetings (on Spectroscopy, 3-D printed instruments, and Observatory automation) have been useful for the participants. The key feature is that a modest number of people who are interested in a particular subject can meet regularly, get to know each other, and share problems, progress, and successes in fully-interactive online meetings.

If there is a topic that you’d like to see addressed in this way, let us know: Send a note to Bob Buchheim [Bob@RKBuchheim.org](mailto:Bob@RKBuchheim.org).

## “Where did my Yahoo Groups go?”

The venerable Yahoo Groups are gone, fini, deceased. Most of the Groups that were relevant to small-telescope science have migrated to groups.io. Look for your former favorites in their new home.

**For sale or Donation:**

Sean Spratt has an SBIG ST-8XE CCD with filter wheel and B-V-R filters that has been recently checked and cleaned at SBIG. It is on offer to anyone who can make productive use of it. The deal would be: donation to a non-profit (e.g. school, college or other 501-c-3 organization), or fair price to an individual.

If you are interested, contact Sean at [sean\\_spratt@hotmail.com](mailto:sean_spratt@hotmail.com). He is located in Tehachapi, CA, and can either deliver locally or ship it.

**Remembrance of Mike Reynolds**

It has come to our attention that the passing of "Dr. Mike" Dr. Michael D. Reynolds has not been mentioned in our newsletter. I met Mike in the 8<sup>th</sup> grade, at Duncan U. Fletcher Jr. High (whose nickname was "Flunk'um You Betcha"). Along with a few other friends it was natural we form the "Beaches Astronomy Club". We later joined with the Astrogator Astronomy Club (AGAC) under the excellent stewardship of Mr. Richard Sweetsir at the Children's Museum, now MOSH -- the Museum of Science and History.

While with the Astrogators, we ground mirrors, made telescopes spent nights in lawn chairs counting meteors and undertook both total and grazing lunar occultations. We spent hours searching for tektites in nearby Georgia red clay. Mike turned a rather rickety yard shed into his own roll-off roof observatory. Film was hyper-sensitized and he took high school science fair awards with a cold-camera (acetone and dry ice).

In the summer of 1972 we chased an eclipse into Baie-des-Sables, QC, Canada. In the pouring rain – Mike's famous luck kicked in and with the help of CHU Canada we timed Bailey's beads. This later revealed a disconnect between Japan's geodetic system and the Alaska/Aleutian chain. In the

summer of 1973, we chased an eclipse -- flying in a small aircraft out of Suriname. He went on to lead numerous expeditions all over the world chasing his passion for solar eclipses.

Mike teamed up with Mr. Richard Sweetsir on a book, "Observe: Eclipses" and went on to author many books and articles; conduct workshops and outreach events almost too numerous to count.

Time, tide and fortunes took us in different directions. His accolades are listed in detail on his Wikipedia page at:

[https://en.wikipedia.org/wiki/Michael\\_D.\\_Reynolds](https://en.wikipedia.org/wiki/Michael_D._Reynolds)

The page fails to capture his acute sense of humor and the hilarious stories surrounding his adventures.

SAS held a joint Symposium with the Association of Planetary Observers (ALPO) in 2018, but circumstances prevented his attending that symposium.

Mike passed away suddenly on 15 October, 2019 at his home in Jacksonville Beach, FL.

*by Wayne Green  
Feb 2021  
SAS*

**Star Formation Newsletter:**

*From Wayne Green:* The Star Formation Newsletter, after 333 months of care by Dr. Bo Reipurth, has moved. The new location is:

<https://www.starformation.news/home>

This newsletter brings pertinent information about the research related to stars, star formation, interviews, submitted articles and a very important filtering of key papers of the past interval related to this field.

I greatly appreciate Dr. Reipurth's contributions and a real labor of love for the newsletter. The new venue and editors will continue this great service.

The archive at:

<http://www.ifa.hawaii.edu/~reipurth/newsletter.htm>

still has a huge number of interesting articles. The one point I loved was Bo taking the time to interview his colleagues and friends. The interviews served as a great encouragement and model for students across those 333 months. For those so inclined, dip into the archive and indulge in some exciting interviews and great articles.

**European Spectroscopy Seminar:**

Ernst Pollmann has announced the "Spectroscopy Seminar & Workshop 2021" will be held at the Observatory of the "Karl-Fuhlrott-Gymnasium" in Wuppertal, Germany, on 30 April through 2 May, 2021.

A special feature will be an Introduction of the Program 'SpectroCal' by Manfred Schwarz (Austria).

Detailed information can be found at: <https://astrospectroscopy.de>

**"Eclipsing Binaries" workshop Videos**

Videos this 2018 workshop by Dr. Bob Nelson are now freely available online:

- Part 1= <https://youtu.be/KeGqIwWpBfM>
- Part 2= <https://youtu.be/Fyxv38B8RrM>
- Part 3= <https://youtu.be/qR6JWbN3juM>

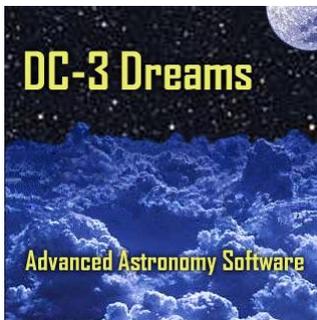
## Symposium Sponsors

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

Here are some interesting notes that have appeared in the literature over the past few months, showing the science that is facilitated by small-telescope photometry and spectroscopy.

### Planetary Nebulae and How to find them – A Review

by Quentin A. Parker

pre-print at

<https://arxiv.org/ftp/arxiv/papers/2012/2012.05621.pdf>

Here is a brief review of the history of discovery and characterization of planetary nebula, and reminders of why they are important. Best-estimates of the current Milky Way population of planetary nebulae suggest that we have discovered only a fraction of the population.

There is a wonderful (albeit brief) discussion of how amateur astronomers are successfully discovering new planetary nebulae, through both data mining and targeted observing programs. There is plenty of room for more such activities.

### Rediscussion of Eclipsing Binaries. Paper II. The Eccentric Solar-Type System KX Cancri

by John Southworth

pre-print available at <https://arxiv.org/pdf/2012.05977.pdf>

Here is an interesting study of a recently-discovered detached eclipsing binary system, which has some useful information for small-telescope observers of eclipsing binary systems.

KX Cnc = HD 74057 (V-mag 7.2) was discovered to be an eclipsing system in 2006. Its orbital period is a bit longer than 31 days, which means that observable eclipses are somewhat rare (only a few ground-based eclipse observations have been reported; only one is in the AAVSO archive (by your editor, in 2007). The system's orbit is noticeably

eccentric (secondary minimum appears at orbital phase  $\Phi \approx 0.64$ ).

A model of the system based on ground-based lightcurves and radial-velocity curves gives a good fit with almost-equal mass solar-type stars.

The key contribution in this study is re-evaluation of the model using TESS data, which provides two critical advantages: first (of course) TESS photometry is much more precise than ground-based photometry, and (second) TESS provides complete coverage of both the primary and secondary eclipses. For detailed modelling, it turns out that complete coverage is important – lack of the lightcurve around 1<sup>st</sup> and 4<sup>th</sup> contacts can lead to fairly broad uncertainty ranges in some inferred parameters of the system. The author's plot of quality-of-fit (chi-squared) vs assumed mass ratio illustrates this point. The ground-based lightcurves lead to a best-estimate of 0.97, whereas the TESS data gives a best fit estimate of 1.00 – pretty comparable. The difference is in the uncertainty band – fairly wide uncertainty range for the ground-based lightcurves, but quite small uncertainty for the TESS data.

Lightcurve-models of eclipsing binaries often invoke hot- or cool-spots to improve the model fit. With the long continuous runs of TESS data, the authors are actually able to see the out-of-eclipse effect of star-spots as the stars rotate.

Finally, the authors ask for high-resolution spectral studies, to obtain  $T_{\text{eff}}$  and photosphere chemical abundances. At V-mag 7.2, is this star within range of any SAS users of LHires or eShel spectrographs?

**Physical parameters of close binary systems: VIII**

By K. Gazeas, et al

pre-print available at <https://arXiv:2101.10680v1>

Quite a few small-telescope photometrists has made lightcurves of W UMa binary systems. They are great targets because you get “action” in the lightcurve in a single night, the eclipse-timings are valuable datapoints (submit them to AAVSO, for example), and the lightcurves permit you to make a pretty good geometric model of the system. In order to complete the modeling (absolute rather than relative sizes of the components) you need spectroscopic observation to provide the radial velocity curve.

As fun and (fairly) straightforward as this project is, these authors note that only 138 contact binaries have combined spectroscopic and photometric solutions. Seems like a tiny fraction of the population.

The authors of this paper are conducting a long-term effort to collect accurate multi-band photometry and spectroscopy on close binary systems, with the goal of creating more accurate models of the individual systems, and (armed with better models) gain insight into the statistics of the close-binary population.

There are two neat things in this paper that will be of interest to small-telescope observers. First, their historical survey of the 20 systems addressed by the paper gives a practical view of the richness of science results that can come from well-done observations of these systems – recognition of star spots, mass transfer, magnetic interactions, and third- (and fourth-) bodies in these erstwhile binary systems.

Second, the photometry done by the authors is representative of the sort of data that many SAS observers might provide: CCD or Photomultiplier B-V-R-I photometry, done with telescopes ranging from 40 cm to 75 cm (16 in to 30 in) aperture. The authors emphasize the value of using a single instrument (per star), and of devoting several all-night runs to each object, to avoid artifacts that might arise from using different instruments, or from observing sets that are widely separated in time (over which secondary cycles might occur). Their lightcurves provide good examples of the accuracy that we should be striving for.

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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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