News from The Society for Astronomical Sciences

Newsletter for the Society for Astronomical Sciences

Vol. 1, Number 2

Welcome to the second- newsletter from the Society for Astronomical Sciences (SAS), the renamed IAPPP Western Wing. We are now in the planning stages for the rapidly approaching Symposium on Telescope Science in May of 2004. It promises to be among the best ever as we are trying to expand the fields of science amateurs can participate in by having professional(s) attend and present. Dr. Alan Harris has already committed and we are working on others. There will be more topics in spectroscopy (my favorite!), and minor planet work along with the usual CCD photometry results on variable stars.

We also want to welcome Brian Warner to the SAS committee. He joined us back in October and videoconference with our committee meeting we held at Bob Stephens home on November 1 to plan the upcoming meeting in May.

Financially, your Society is in good shape, mostly due to the generous and continued support of our sponsors. It is important to have some funds available in the bank as backup because of unexpected increases in expenses that can occur, especially in procuring our meeting place. This year there has been no increase in price for Northwoods Resort.

Break-time at the last Symposium on Telescope Science, 2003. A great time to go into details with fellow members about their techniques.

Inside this issue:

First Call For Papers and Newsletter Articles

We would like to issue a first call for papers for the upcoming Symposium on Telescope Science 2004, conducted by your SAS. Please note the dates below. The sooner abstracts can be received the better to assure that the program committee can put together an outstanding program. We already have Dr. Alan Harris committed to give a talk on asteroids and how amateurs can contribute. In addition, Dr. Lance Benner of the Goldstone radar imaging team has agreed to talk about imaging done with radar. We are also working on a few other outside speakers to attend, but do not have at this point any firm commitments. We are hoping, in an attempt to cross-fertilize with other groups, to have speakers who are active in the AAVSO and the Minor Planet groups also attend and present. Further details on what we would like to see if you submit an abstract can be obtained at the website below for the 2004 symposium.

Remember, poster presentations are very welcome also. Poster presentations offer a unique way to interact with conference attendees which is difficult when giving an oral presentation. You have your data in front of you and lively discussions and suggestions for improvement and/or follow up are often the result of

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February 21, 2004	Last date to submit abstracts
February 24, 2004	Acceptance Information to speakers
April 4, 2004	Final papers submitted based on accepted abstracts
May 5, 2004	Anticipated printing run
May 26, 2004	Distribution at conference

Committee:

- Lee Snyder — Co-Chairman
- Robert Stephens — Co-Chairman
- Robert Gill — Audio Visual Webmaster
- Dave Kenyon — Program Co-Chairman
- Dale Mais — Program Co-Chairman, Newsletter editor
- Brian Warner— Program Co-Chairman

Advisors:

- Arne Henden
- Dirk Terrell

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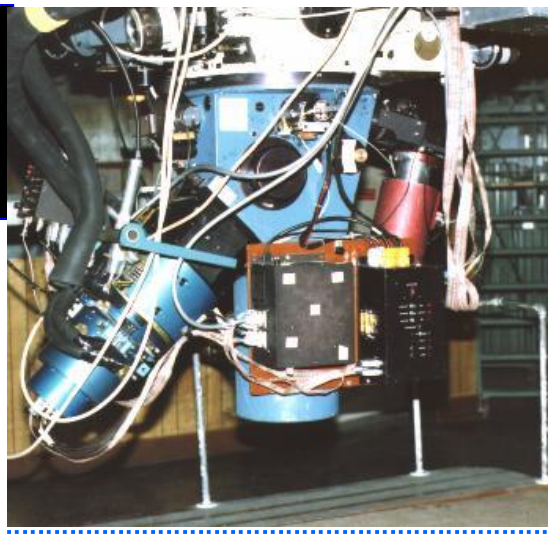


Modern day spectrographs can be massive. You would be hard pressed to get this on your C-11!!

Name the Newsletter

My goal as the Newsletter Editor is to ramp up to a quarterly output. This will depend on several factors, the most crucial being the contributions made by members of **SAS**. And not just Committee members!! To get things rolling that's OK but we want all of you to feel free to contribute. The kind of articles can be varied but to get a flavor, look at this issues back page and the first issue.

In addition, we are contemplating a name for our newsletter. It is open season for all of you to make suggestions to any committee member to all committee members at committee@socastrosci.org. A name for the newsletter is NOT essential, if you feel we should leave things as they are with no name attached , then say so. I of course have my preferences but, in the interest of getting an unbiased opinion from members, will not state my choice!

Call for Papers, continued from page 1

this fruitful way of presenting results. In addition, we are always looking for article contributions by SAS members. Brian Warner and Robert Stephens picked up the ball with this issue and you can read their article on the back page of this volume. We accept a wide range of topics and formats with minimal editing so you can feel free to let your creative juices flow in putting together an informative article you think would be of interest members of SAS. For a better feel as to the general format, just look at the first two "back page" articles in the first 2 issues of the Newsletter.

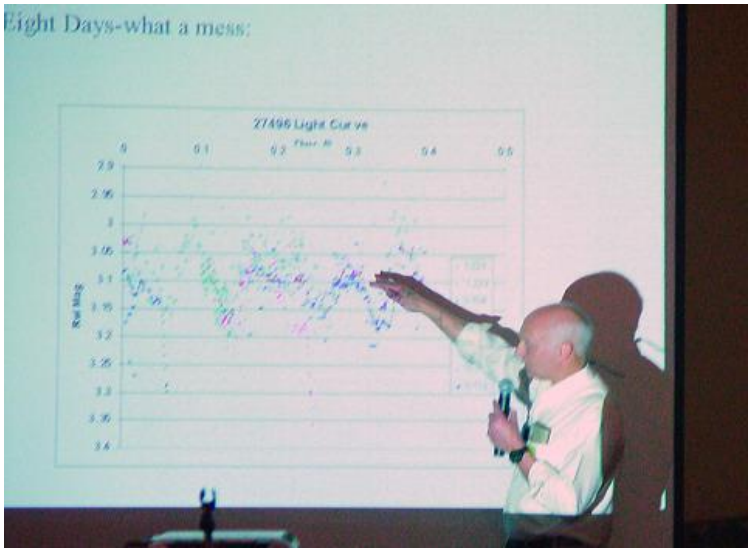
If you wish to be a speaker at the 2004 Symposium on Astronomical Sciences, please see the schedule for the 2004 symposium below and visit our web site at socastrosci.org

Publications of Members

Some of our members also belong to other groups such as the Center for Backyard Astrophysics (CBA). As such they collaborate on projects with professionals which result in publications in professional journals. Others may not necessarily belong to such groups but have published in professional or semi-professional journals or magazines. We want these efforts to be showcased on the website to highlight the efforts of members and the SAS. In order to do this we have added a section to our website where the citations of such publications can be placed, http://socastrosci.org/Default_files/sas_member_papers.pdf.

We would like any member who would like to have there efforts recognized please provide us with the appropriate citation(s) for inclusion. More than anything else it will emphasize the fact that the SAS is a science based group and that collaborations with professionals to meet this end are of primary importance. Also note that abstracts are also acceptable, primarily if they are abstracts to professional level meetings. These result in presentations at meetings, either as talks or posters, and are often published in a proceedings of the meeting.

Submit your Abstracts now for the 2004 Symposium



John Menke tries to make sense of all the data at the 2003 Symposium. Did he succeed? Check the published Proceedings

Membership Information

Membership in your new Society for Astronomical Sciences (SAS).

As was pointed out with the last issue, it was felt that a modest membership fee would greatly help SAS to produce a better product for its members. This fee will be $25.00 per year, the same membership fee of the old IAPPP organization. What will this membership fee provide? Well for one thing it WILL NOT go to any committee members as part of their efforts within SAS. We volunteer our time for The Society.

Members will receive a discount for the registration fee each year for the Symposium at Big Bear. It will assure you that you will get a copy of the published proceedings each year, even if you do not attend the Symposium. It will help defray costs in bringing in outside speakers (professionals) to the symposium. This past meeting, as you all know, we had Arne Hendon and Dirk Terrell participate by giving workshops. Since we pay for their travel and hotel expenses, this adds up, but enriches the content of the meetings, and it is something we will continue to do and hopefully even expand.

Along these lines, we have had a nice announcement about the Society placed in the British magazine *Astronomy Now.* For those unfamiliar with this magazine, it is the leading magazine in Great Britain and one I have subscribed and contributed to for many years. In addition, the Working Group for Professional-Amateur Collaboration has placed information about SAS on their website (http://www.aas.org/wgpac/). This is a committee out of the American Astronomical Society. As of early November we have a total of 25 paid members.

Membership is annual and runs from July to June of the following year. To become a member, send $25 to: Society for Astronomical Sciences, 8300 Utica Avenue, Suite 105, Rancho Cucamonga, CA 91730.

The SAS is a 501(c)(3) charitable organization.

Attentive conference attendees, 2003

The upcoming symposium will be held May 26 and 27, 2004. Registration materials will be mailed in January 2004. NOW is the time to send in your abstracts to get on the program, either as a speaker or to present a poster.

The 2004 meeting of the SAS will be held once again at the lovely Northwoods resort. Special rates are provided for those that wish to spend the night, both for the SAS meeting and RTMC meeting which follows

Society for Astronomical Sciences (SAS)

We thank our 2003 Sponsors whose support makes our meeting possible:

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Transforming Unfiltered Measurements to Johnson V - Can It Be Done?

Brian Warner and Robert Stephens

Transforming your filtered observations to the standard Johnson-Cousins system is a beneficial and well-documented procedure. It allows you to directly compare your observations with others. It permits contributing data to observing campaigns and into the historical record.

One of the most stringent procedures is ''All Sky Photometry", which is where you adjust your data for differences in instrumentation, air mass and color temperature using a series of transformations. What's called "Differential Transformations" can also be used. This technique is available when well-established reference stars are in the same field as the target. Unless the reference stars happen to be Landolt standards, however, the transforms are still not absolutely on the Johnson-Cousins system. However, the errors are usually quite small and can be factored into the final results.

The Problem with Asteroids:

For amateur astronomers, loosely defined here has those with sub-meter telescopes, these techniques presume that your target is bright enough to produce a significant signal-to-noise ratio (100+) even when imaged through filters. This is rarely the case for amateurs working asteroids since most work to determine new light-curve periods involves asteroids at 14th magnitude and fainter. When imaged with a filter, the signal-to-noise ratio often drops to such low levels that reliable photometry is extremely difficult, if possible at all. What is an asteroid-photometrist to do?

Fortunately, it is possible to transform unfiltered measurements to the Johnson V band with a sufficient level of accuracy. After all, your unfiltered CCD images are nothing more than a very broad band, and are repeatedly transformable to the standard V band. Here is what you do.

At the Telescope:

At the start of your imaging run, take one to three V filter and unfiltered images of a standard field reasonably close to your target (more than one allows you to average the readings and reduces noise). Keeping the standard and target fields close reduces errors caused by the difference in air mass between the fields. This standard field needs to have at least three standard stars, more if possible in order to get a better transforms solution. Also understand that not all "standards" are alike. The "Gold Standard'" is the Landolt fields. However, those fields often do not fit onto a CCD frame for most amateur instruments. On the other hand, many of the fields used in the AAVSO programs, those from Arne Henden at USNO-Flagstaff, or some of the LONEOS fields will do.

Next, get one to three V and unfiltered images each (hereafter called C) of your target field. Make sure the target is reasonably high in the sky when you do this, at least 30 degrees (2 air masses). Then, shoot your target for the rest of the night in C.

Do Your Transformations:

To get the transforms needed to convert your C images to Johnson V, you measure the set of images of the standard field to get the instrumental magnitudes for the standard stars in both colors. This allows you to plot V-c values against the instrumental color index (v-c), and so derive by least squares a transform that converts a given C instrumental magnitude and color index to a standard V magnitude. Figure 1 shows such a plot. You can do the reductions using a spreadsheet or one of the photometry software programs that are available.

At this point, you then measure the V and C images of the target field and determine the instrumental v-c values for the asteroid and the comparison stars. Finally, measure all the C images to find the instrumental magnitudes of the asteroid and comparisons and then apply the transforms to derive approximate Johnson V magnitudes.

The Results:

At the end of all this, you should obtain an accuracy of .03 to 0.10m, depending upon your system and the conditions. This is adequate for matching of asteroid lightcurve sessions, although you probably will still have to tweak the zero point adjustments. You will never fully get away from tweaking those zero point adjustments, no matter how good your results because a host of other factors outside of your control, such as the phase angle of the asteroid, will change the results. Still, it is a very respectable start and extends the ability of your system to do work on the standard system.

The method outlined above is similar to one used by Arne Henden for his well known "M67 paper" ("The M67 Unfiltered Photometry Experiment", A. Henden JAAVSO 29, 35, 2000) save that B-V or V-R catalog values were used instead of the instrumental V-C. Also, John Menke presented a similar approach at the IAPPP-West 2003 meeting. The proceedings for that meeting are available on the SAS site at http://www.socastrosci.org.

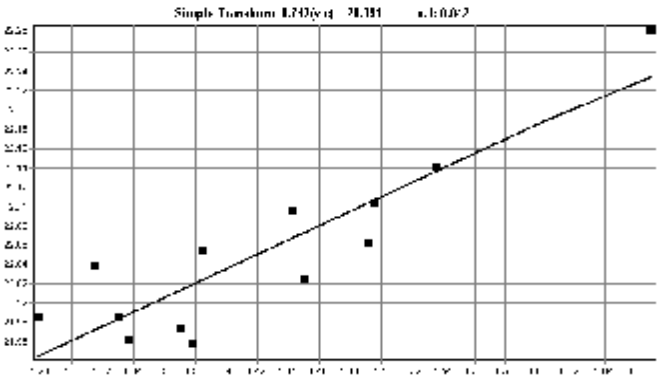

Figure 1 Plot of V-c versus v-c color index Henden AR And field.

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