2009 Epsilon Aurigae
Eclipse Campaign Newsletter #7
Summer/Fall 2008

Campaign Web Site
http://www.hposoft.com/Campaign09.html

****

Dear Colleagues,

The new season for observations of epsilon Aurigae has begun. Several observers have reported photometry data and hydrogen α spectra. The following is a summary of what has been reported since the last Newsletter

---

News from our Campaign Members

Photometry

26 July 2008
Bob Stencel Reports:

On July 24, 2008, CCD V band photometry of epsilon Aurigae obtained at Mt. Evans Observatory, using eta and zeta Aur as comparison stars showed epsilon to be V=3.10 (24 July 2008 04:30MDT = 10:30GMT).

Mt. Evans Observatory
University of Denver
Denver, Colorado USA

****

Note: Initial reports indicated V at 3.21 and it seemed the eclipse might have started a year early, subsequent observations showed epsilon brighter and even brighter than V = 2.9 magnitude. So far the eclipse is on schedule and due to start the summer of 2009. The first observations of the season were at high air mass and used eta and zeta Aurigae as comparison stars. Both zeta and eta Aurigae are variable stars. While zeta does not eclipse until January 2009, eta has a reported 24 day period. These stars may be fine for naked eye estimates, but should not be used for more precise photometry. The normal comparison star lambda Aurigae is recommended for differential photometric observations. The faint V magnitude of the first observations of the season is mostly likely do to under sampling. This is a big problem with wide field CCD photometry.

26 July 2008
David Daiku Trowbridge Reports:

Comp stars 1 Aur, 2 Aur and Omega in order to average results I had obtained using Eta and Zeta on July 21 (I have no images of Lambda yet).

B	3.319	+/-0.12
V	3.134	+/-0.042
R	2.374	+/-0.139
I	2.062	+/-0.195

I used transformation coefficients that I derived last March using M67 when I was operating my system (Takahashi FSQ-106 with SBIG ST-8XME camera) at f/8. My observations on July 21 used the same scope and camera, but at f/5 (without the Extender-Q) and with a mask over the objective having a 30mm hole in the center to enable longer exposures). My field of view at f/5 is 89x60 arcminutes, so I cannot include any comp stars in the same frame as Eps-Aur. I know how to find transformation coefficients when I have several comp stars in the same frame, but I'm less clear how to do it when they are in different frames.

To transform magnitudes, I first corrected for extinction, then followed the steps in Priscilla Benson's paper, "CCD Transformation coefficients" to apply my coefficients. If you see any errors I've made, I'd appreciate any assistance you might be able to provide.

I was not very confident in the extinction coefficients I got on the 21st, so I went back to measurements of 59 Per (HD 29722) a couple of nights earlier and calculated a new set. These looked more believable, so those are the K()'s I used.

Tinyblue Observatory
Greenbank, Washington State USA

****

31 July 2008
Bruce Grim Reports:

I participated in your 82-84 epsilon Aurigae campaign and read Mathew Templeton's email of July 28, so I pulled out my SSP-3 and took some quick readings this morning (30 Jul at about 4 am MST) under good skies and came up with a V mag of 2.89 for Epsilon compared to the comp star (V mag 4.70) on the AAVSO chart and 2.91 compared to the check star (V mag 3.71). These were not repetitive readings, just a spot check to see if they were in the ballpark and to see if my equipment was working. Did you by any chance take any data this morning to see if my numbers are in the ball park?

Since I have not been actively engaged in photometry for the last few years I thought I might want to get involved in the upcoming campaign. What type of data reporting format are you following - standard AAVSO, etc.? Are you coordinating the effort or are folks just submitting the data to AAVSO so that others can access it? I am not on

top of the latest computer record keeping procedures and would need to bring myself up to speed - do you have any suggestions on the best path to follow?

Grim Observatory
Stansbury Park, Utah USA

****

19 August 2008
Paul Beckmann

Had success this morning. Full data set with matched gains on lambda and epsilon for each band. l also ran a check of the calibration, using lambda, just going back and forth between 10x and 100x gain in the V band, checking for centering each time. I haven't analyzed them yet (I just got up!) but they look in order. I'll have to go back and look at what of the last data set led to the suspicion on of the gain calibration. I'm attaching the file from the calibration check run this morning. (Even though the object says "SKY", it was lambda Aurigae.

Date	JD	B	SD	V	SD	R	SD	I	SD
28/29 Jul 08	2,454,677.844	3.305	.078	3.017	.003	2.521	.006	2.071	.191
28/29 Jul 08	2,454,677.897	3.450	.033	3.023	.013	2.540	.014	2.143	.015
17/18 Aug 08	2,454,697.878	3.484	.001	3.005	033	2.524	.043	2.181	.030

Jim Beckmann Observatory (JBO)
Mendota Heights, Minnesota USA

****

22 August 2008
Jeff Hopkins Reports

Single channel UBV photon counting data was taken on several nights the beginning of this 2008/2009 season. Sets of 3 measurements with each a set of 3 readings was taken. The star system air mass was between 1.9 and 1.3.

Date	JD	V	SD	B	SD	U	SD
27/28 Jul 08	2,454,675.9621	2.9570	.0106	3.5088	.0099	3.582	.010
28/29 Jul 08	2,454,676.9503	2.9709	.0128	3.5234	.0086	3.558	.020
30/31 Jul 08	2,454,678.9551	2.9691	.0393	3.5190	.0373	3.537	.070
10/11 Aug 08	2,454,689.9704	2.9289	.0219	3.4897	.0193	3.577	.038
18/19 Aug 08	2,454,697.9634	3.0064	.0068	3.5519	.0016	3.628	.013
21/22 Aug 08	2,454,700.9565	3.0080	.0009	3.5628	.0057	3.635	.013

Hopkins Phoenix Observatory (HPO)
Phoenix, Arizona USA
****

Photometry Observing Notes:
While it is always best to do photometry as close to the star's meridian as possible, early and late season observing prohibit that. During the beginning of the season the star system will be low to the NE with the comparison star, lambda Aurigae, even lower. Determination of nightly extinction coefficients is very important. This can be done using the data for the comparison star. The air mass must also be determined and extinction corrected for. Because lambda is lower it will appear dimmer and cause epsilon to appear brighter unless the extinction is properly accounted for. Even when done right, high air mass photometry will not be as accurate as photometry done at a smaller air mass (closer to the meridian).

Hour Angle Pseudo Code
Here is pseudo code for hour angle calculations.

If(Abs(LST - RA) = 12, 12,
If((LST - RA) ≥ 12, LST - RA - 24,
If((LST - RA) < -12, LST - RA + 24,
If((LST - RA) < 12, LST - RA, 12)))) * 15

Where LST is Local Sidereal Time and RA is the Right Ascension of the star.

Spectroscopy

SW-Astrophysics Meeting Announcement
Stan Gorodenski
Dewey, Arizona USA
6 September 2008

A small group of us are having a meeting at my home and observatory, Blue Hills Observatory, on Saturday September 6, 2008. This is near Prescott, Arizona at about 5200 ft elevation. There will be presentations and informal discussions related to spectroscopy and photometry. Currently, there are five committed talks. The titles and abstracts can be seen at URL-to-be-inserted. If you would like to attend and give a paper please send me a title and abstract prior to the meeting. All papers will be uploaded to the Yahoo SW-Astrophysics web site and/or an external server that would be available to non-members of the Yahoo discussion group.

I have not settled upon a firm format for the meeting because other presentations may still come in, but at present I plan to have the it start at 10:00 am. The evening (night) is open, including spectroscopic sessions with my Meade 16" LX200R and the LHIRES III spectrometer.

There will be sandwiches for noon, and a potluck is planned for dinner. I will supply hot dogs and hamburger. Those coming significant distances can make a small money contribution in lieu of bringing a dish.

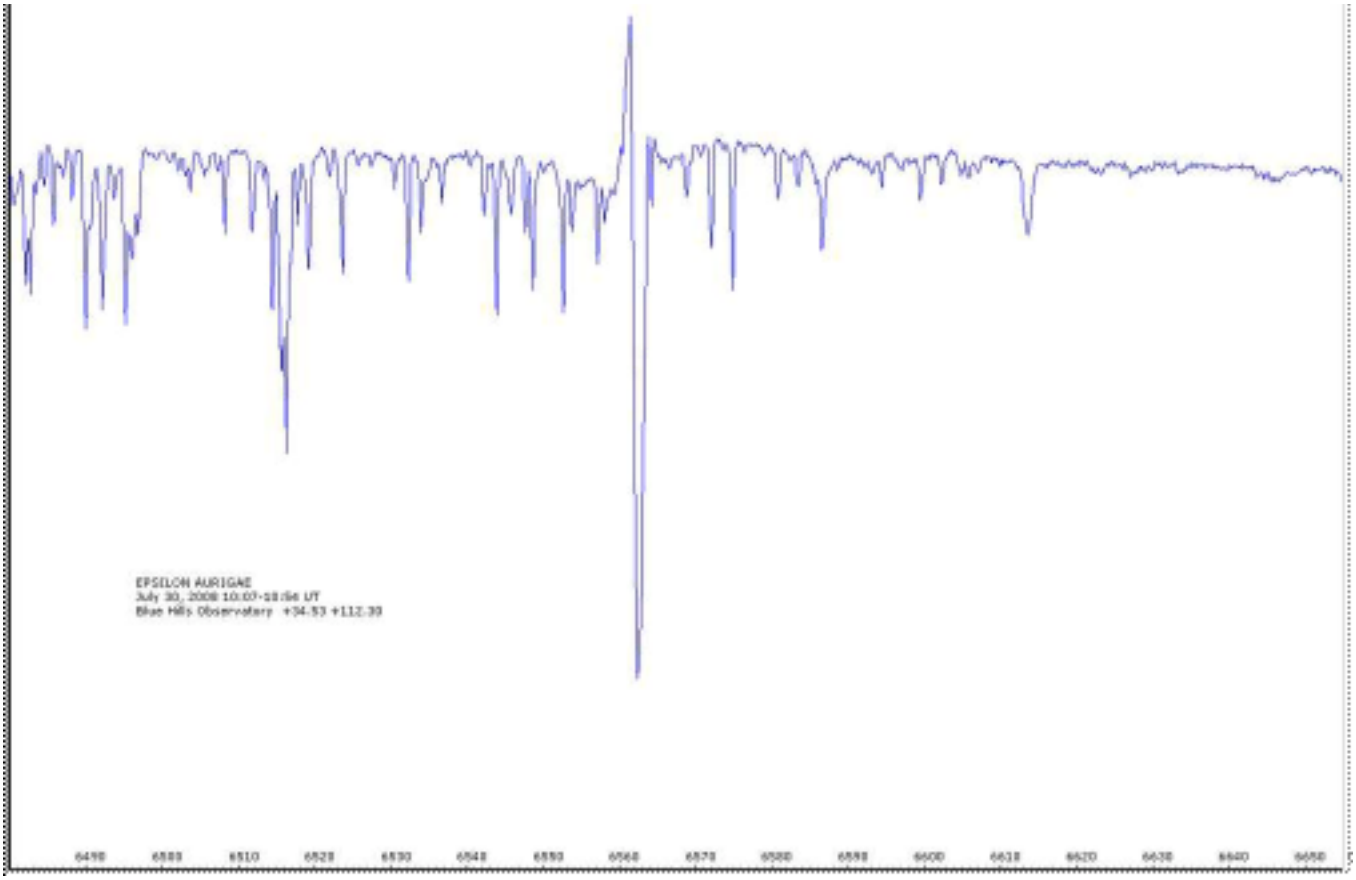
Because the meeting is being held at my home and observatory, I cannot provide sleeping rooms. However, anyone attending can camp on my five acre lot if they have a tent, travel trailer, or RV. In years past I have had star parties and this is what many did (see the camping area at URL-to-be-inserted). Alternatively, motels are available in Prescott Valley about 10 miles from my doorstep.

If you are not familiar with my observatory and the surrounding area you can see it at
http://users.commspeed.net/stanlep/permanentobservatoryns.html
My web site home page is
http://users.commspeed.net/stanlep/homepagens.html

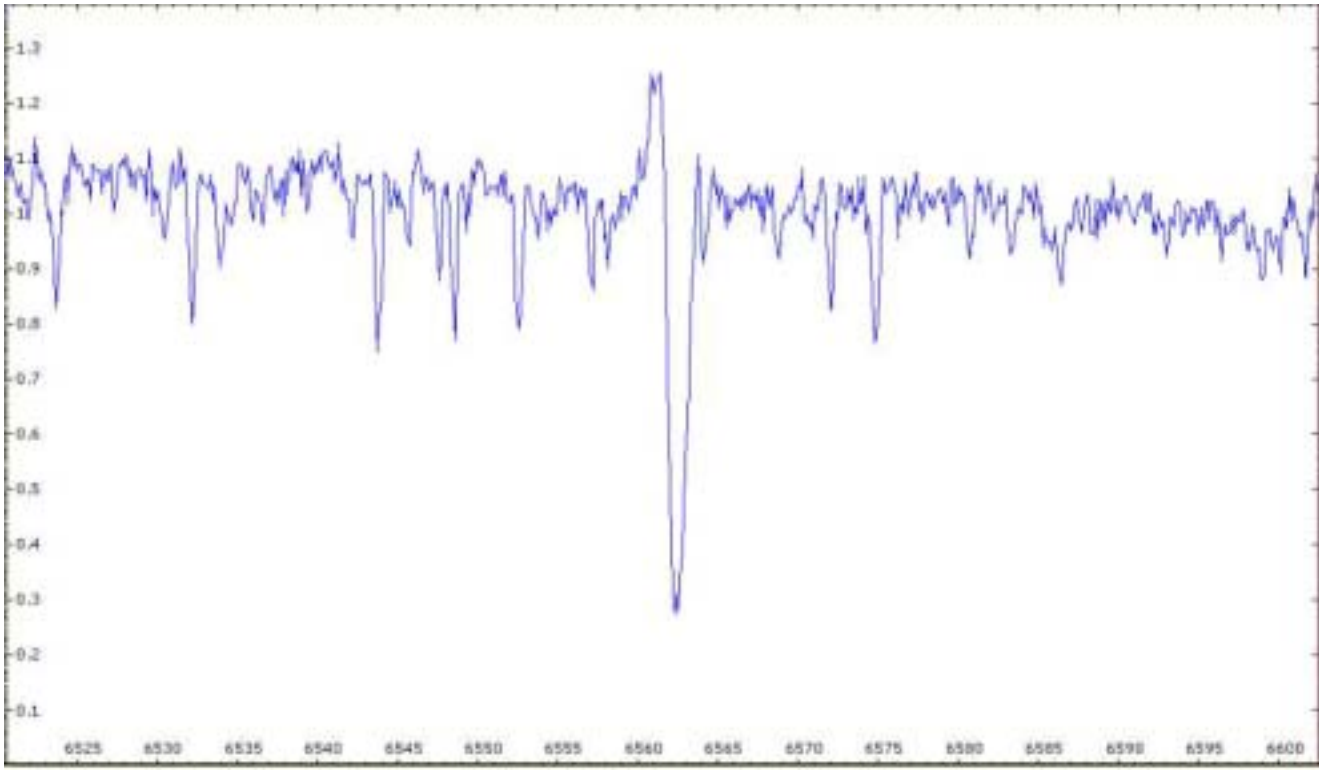
If you would like to attend send me a private email message so that I can plan for you and send directions. **Stan Gorodenski <stanlep@commspeed.net>**
An agenda for the meeting can be seen at
http://users.commspeed.net/stanlep/Agenda.html.

Spectra

Stan Gorodenski
Blue Hills Observatory (BHO)
Dewey, Arizona USA
Hα Spectrum of epsilon Aurigae
30 July 2008
16" LX200R with Lhires III



Jeff Hopkins
Hopkins Phoenix Observatory (HPO)
Phoenix, Arizona USA
Hα Spectrum of epsilon Aurigae
11 August 2008
12" LX200GPS with Lhires III
10-15 second exposures stacked, dark subtracted
H2O Line non-linear and Heliocentric wavelength calibrated



From Dr. Bob

Summer observations of epsilon Aurigae are possible for those with an excellent northern horizon and moderate north latitude. Great care is needed in treating photometry at the very high airmasses during summer, but with the eclipse starting 2009 August, nature hasn't given us a lot of choice. At Mt. Evans, Colorado, we've made a study of the precision possible using a small refractor and simple digital imager. Information on this available on request. Observers are asked to post their results on blogs and/or reported to Jeff Hopkins, as the 2008/09 season gets underway. The AAVSO maintains useful lists of photometric comparison stars – start at www.aavso.org and select Finder Charts for epsilon Aurigae and then Comparison Stars.

Proposals for observing time with interferometers and space based telescopes continue to be made, and hopefully we can begin reporting results of these efforts in coming newsletters.

Reminder, original paper copies of the 1985 Epsilon Aurigae Workshop Proceedings are available on request, free, if interested parties will provide me with a snail mail address. A collector's item! While supplies last.

Dr. Robert Stencel
University of Denver Astronomy Program
<rstencel@du.edu>

Interesting Paper

High-Resolution Spectroscopy of Long-Periodic Eclipsing Binary Epsilon Aurigae

Alex Golovin, Yuliana Kuznyetsova, Maxim Andreev
(Submitted on 8 Aug 2008)

Abstract: The results of spectroscopic observations of long-periodic eclipsing binary Epsilon Aur are reported. The observations were carried out during 2 nights in 2007 at 2-meter telescope located at the peak Terskol, Northern Caucasus (Russia). Here we present series of Epsilon Aur spectra together with EW measurements of the most prominent absorption lines.

http://arxiv.org/abs/0808.1292

****

NEW BOOK

Epsilon Aurigae A Mysterious Star System
by
Hopkins and Stencel

Special Pre-Release Price.
If ordered prior to 1 September you can save $5.00 on the new book
This is a 287 page softcover book covering the history of epsilon Aurigae and the observations both in and out of eclipse as well as the different techniques used.

For more information check
http://www.hposoft.com/EAur09/Book.html

****

Anyone wishing to contribute to the Newsletter, is most welcome. Please send contributions to me at phxjeff@hposoft.com.

Anyone desiring not to receive the Newsletter announcements, please e-mail me and I will remove your name from the mailing list.

Clear Skies!
Jeff

Jeff Hopkins
Hopkins Phoenix Observatory
(Counting Photons)
7812 West Clayton Drive
Phoenix, Arizona 85033 USA
phxjeff@hposoft.com