

Carpe Noctem



The News of Central Texas Astronomical Society

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Spectroscopy and Carbon Stars!



Presidents Letter – September 2020

We are open, in case you haven't noticed – at least for member activities with proper social distancing. The observing field is always available to members and their groups for observing, and we have re-started operator training on the 24-inch. The telescope is working better than ever. And we are kicking off our inaugural week-long Star Party at the observing field during the New Moon cycle in October. There will be programs, movie night, operator training, and hopefully good weather for observing. Register on the [Calendar of Events](#) on the website.

Unfortunately, we haven't figured out a way to include the public in our activities while maintaining a proper sanitary condition. In the meantime, we will continue our online live tours of the observatory via Zoom, and conduct public outreach where we can do it safely. I hope to see everyone at the October business meeting via Zoom. It is time for election of officers for next year, and we will have an interesting program. The weather has turned cooler, and the nights are slowly getting longer, so I hope you will be able to get out and join us.

Stay safe, and Clear Skies!

- Dick Campbell
President, CTAS

Observatory training

If you are interested in receiving training on the Meyer Observatory 24-inch telescope, join one of our ongoing training classes!

To sign up for training, please send Dick Campbell (Dick_Campbell@baylor.edu) your availability (Mondays, Fridays, or don't care). All sessions will be limited to two trainees at a time conducted on either a Monday or Friday evening.

If you are inexperienced, please don't feel hesitant to sign up. The system is relatively easy to operate, and it will be a great learning experience for you.

Spectroscopy Program – October 20th Business Meeting

Guest Speaker: Tom Field has been a Contributing Editor at *Sky & Telescope Magazine* and is the author of the RSpec software. Tom will join us via Zoom.

Until recently, spectroscopy was too expensive and too complicated for all but a handful of amateurs. Today, though, new tools make spectroscopy accessible to almost all of us. This talk, with lots of interesting examples, will show how you can easily study the stars with your current telescope and camera, and help you understand how spectroscopy is used in research.

Carbon Stars

By Eric Rachut

Carbon stars are typically red giants, which are variable in magnitude and which, on observation, often have a pronounced and aesthetically pleasing red color. They may, however, be orange, or sometimes yellow or even white. The redness can be greatest when their magnitude is at its minimum and perhaps also if the observer has not acquired dark adaptation, since night vision is not sensitive to the color red (the same reason we use red flashlights at star parties). In addition, there is a subjective element, which may explain why one observer sees a given star as impressively red and another observer is less impressed. Carbon stars, in my own experience, often have an odd, bead-like, almost three-dimensional appearance. Many times, the color – deep red or golden yellow on a black, velvety sky – and sometimes this 3D element, make the star instantly recognizable through the eyepiece.

The science behind these stars is based on their having more carbon than oxygen in their atmospheres. The carbon combines in part with oxygen to form carbon monoxide, and the excess carbon compounds, acting as a layer of "soot" to redden the star's light. This is similar to the appearance of the setting or rising Sun shining through the sooty air on the horizon.

Following is a list of carbon stars from the Astronomical League's list which I found particularly striking:

NOTE that in the "LOCATE" sections following, all directions are stated in degrees. That is, the east-west (right ascension) directions have been converted from hours, minutes and seconds, into degrees and fractions of degree, similar to the north-south (declination) directions. This is done to simplify star-hopping, for example, with a Telrad.

UV Aurigae

RA 05 21 48

Dec +32 30 40

Orange-red, with close blue companion (evidently a true binary), 3.4-4.0 sec distant.

LOCATE by going 6 1/2 degrees due west of open cluster M 37.

T Cancri

RA 08 56 40

Dec +19 50 57

Strikingly red.

LOCATE by going approximately 3 degrees east of open cluster M 44 (the Beehive or Praesepe cluster)

X Cancri

RA 08 55 22

Dec +17 13 52

Odd color - bright yellow with tinge of red.

LOCATE by moving 2 1/2 degrees due south of T Cancri.

W Orionis

RA 05 05 23

Dec +01 10 39

Red to golden orange, easily found.

LOCATE by visualizing Delta Orionis, Gamma Orionis and W Orionis as equilateral triangle, with W the western apex (see figure).

SY Eridani

RA 05 09 48

Dec -05 30 55

Deep orange-red, described as a "burning coal."

LOCATE by going 2 1/3 degrees north and 3/4 degree west of Rigel (see figure)

SS Virginis

RA 12 25 14

Dec +00 46 10

Bright orange; unlike most carbon stars, this color did not fade for me with prolonged observation (no color fatigue).

LOCATE by going 3/4 degree east and 1 degree north of Eta Virginis.

UX Draconis

RA 19 21 35

Dec +76 33 34

Golden yellow with hint of orange.

LOCATE is between Polaris and Delta Draconis - specifically, forty percent of the way from Delta Draconis to Polaris.

V 1469 Aquilae

RA 20 01 03

Dec +09 30 51

Warm yellow to sometimes orange.

LOCATE is 2 1/2 degrees ENE of Altair.

V Cygni

RA 20 41 18

Dec +48 08 28

Very red.

LOCATE is less than 3 degrees due north of Deneb.

S Cephei

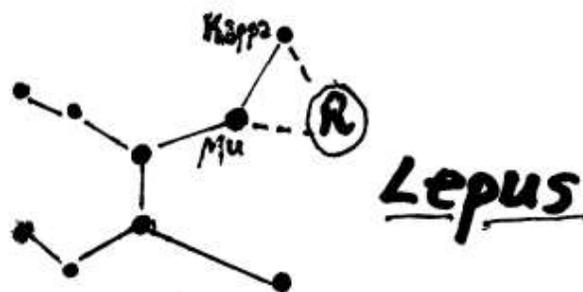
RA 21 35 12

Dec +78 37 28

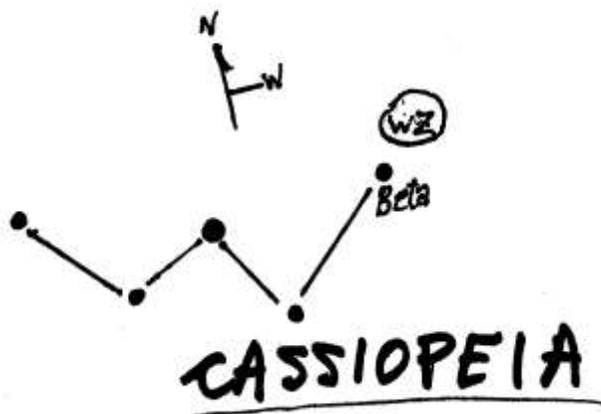
Vivid orange.

LOCATE is 1/3 to 1/2 the way from Beta Cephei to Polaris OR 8 degrees north and less than 1 degree east of Beta Cephei.

WZ Cassiopeiae
 RA 00 01 15
 Dec +60 21 19
 Red-orange, with blue star 58 seconds to east
 (optical double star -
 not a true binary).
 LOCATE is 1 degree west and 1 1/3 degree north
 of Beta Cassiopeiae (see figure).

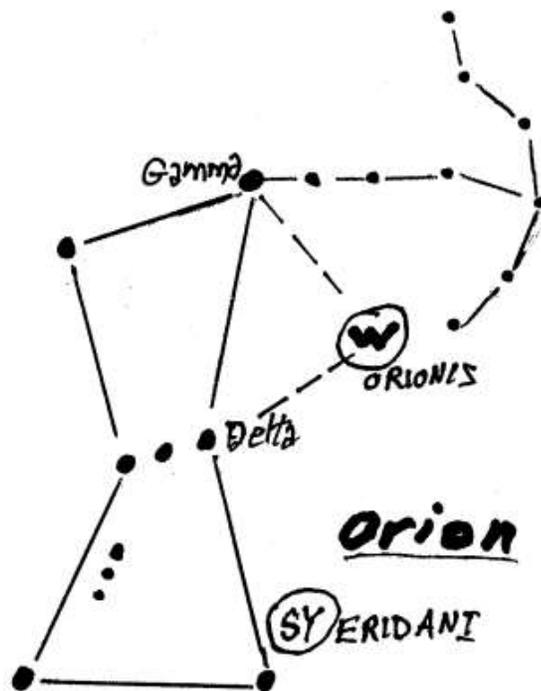


UY Andromedae
 RA 02 38 23
 Dec +39 10 09
 White, requiring AAVSO chart (online) to identify,
 but interesting because small lenticular galaxy
 NGC 1023 lies approximately 20 minutes east, in
 the same low-power field.
 LOCATE is 3 1/2 degrees south and 2/3 degree
 west of center of open cluster M 34.



U Camelopardalis
 RA 03 41 48
 Dec +62 38 54
 Very orange.
 LOCATE is 1/2 degree north and 3 1/2 degrees
 west of open cluster NGC 1502, which is at SE end
 of the asterism, Kemble's Cascade, a line of stars
 running NW to SE in this constellation.

R Leporis (Hind's Crimson Star)
 RA 04 59 36
 Dec -14 48 22
 Yellow-orange at maximum brightness and deep
 red at minimum. This star varies in magnitude from
 5.5 to 11.7 over 14.5 months, so a random sighting,
 at a maximum, may be disappointing.
 LOCATE - R Leporis forms an equilateral triangle
 with Kappa and Mu Leporis (see figure).



AL Award

By Johnny Barton

Congratulations to Eric Rachut for completing the Astronomical League's Carbon Star observing program. As the CTAS Astronomical League Representative, it was my duty to verify Eric's documentation of all 100 Carbon Stars as per the requirements set forth by the AL. And, in typical Eric fashion, he excelled in the notations and descriptions that he made of the star's appearance, as well as in his illustrations of the stars and their surrounding neighbors.

Unfortunately, I won't be able to personally present Eric's certificate and pin at one of our CTAS meetings (due to the pandemic), but I wanted to let our members know about his remarkable achievement, and to encourage all of our members to participate in the numerous observing programs that are offered by the Astronomical League. These programs provide a challenging and fun way to hone your skills on navigating the night sky, and learn about the many intriguing wonders of our universe. Please check out the programs here: <https://www.astroleague.org/al/obsclubs/AlphabeticObservingClubs.html>

This is the pin Eric will receive:



Upcoming CTAS Events

All events are shown on the Calendar of Events on our [website](#). In the event of discrepancies, the web Calendar of Events is the official schedule, as changes may occur throughout the year.

New Moon	Member Star Party	Meetings	Open House (virtual)
Sept. 17	Sept. 19 Oct. 12-17 Mini-Star Party	Sept. 15	Sept. 19
Oct. 16	Oct. 10	Oct. 20*	Oct. 17
Nov. 14	Nov. 14	Nov. 17	Nov. 20
Dec. 14	Dec. 12	Dec. 15	Dec. 19

*General Business Meeting

New Members

April Andreas	Baer Max Ackerman
Kivan Andreas	Sam Buchholz
Carol Hagger	Jason J. Burt
Angela Buchholz	Derek B. Andreas
Cameron Hofmann	Kelly Cloud
Robert A. Buchholz	David Holmes
Kelly Hofmann	Paresh Khanapurkar
Naomi Holmes	Rita Levings
Christina Levings	Robert Murkot
Michelle Mogouirk	Ajeeth Rajan
Ryan Nelms	Brad Riza

We welcome you aboard the Starship CTAS!