

**IO - May 2012**

Eugene Astronomical Society  
Annual Club Dues \$25  
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**The Astronomical League**  
The World's Largest Federation of Amateur Astronomers

Issue 2012-05  
Eugene Astronomical Society



Next Meeting: Thursday, May 24th

## Spectroscopy: New Possibilities for Amateur Astronomy

by Bernard W. Bopp

Spectroscopy, the detailed study of the light emitted by stars, planets, and galaxies, has been an invaluable tool for astronomers since the mid-19<sup>th</sup> century. Spectroscopy allows us to measure stellar and galactic motions and compositions. The complete stories of the life cycles of stars and the expansion of the universe can be told as a result of spectroscopic observations. Remarkably, the mid-19<sup>th</sup> century pioneers of spectroscopy were amateur, not professional astronomers!

Today, spectroscopy by amateur astronomers is limited. Issues of *Sky and Telescope* and *Astronomy* (as well as meetings of EAS!) are usually devoted to visual observations and imaging. But an August 2011 article in *S&T* entitled "Spectroscopy for Everyone" describes how spectroscopy of stars, planets, nebulae, and even quasars can be done with modest-aperture backyard telescopes at reasonable cost.

This talk will give an overview of astronomical spectroscopy, highlighting the contributions of some remarkable 19<sup>th</sup> century amateur astronomers, and discuss modern equipment and software that allows amateurs to obtain and analyze spectra.

In addition to Bernard's talk, we also encourage people to bring any new gear or projects they would like to show the rest of the club. The meeting is at 7:00 on May 24th at EWEB's Community Room, 500 E. 4th in Eugene.

## Next First Quarter Friday: May 25

Our April 27 star party was rained out, but our April 28th backup star party was more successful. We had clear sky, 6 telescopes, and about twice that many visitors. It was a good night for planets and the Moon. We could see the Hyginus Rille very clearly, Saturn's Cassini Division, Mars's polar cap, and the crescent of Venus. The seeing was steady enough for tight double stars, too. We stayed out until after 11:00 and went home happy. Backup star parties are a great idea!

Our next FQF will be May 25th, with a backup date of Saturday, May 26th if the 25th is cloudy.

First Quarter Fridays are laid-back opportunities to do some observing and promote astronomy at the same time. Mark your calendar and bring your scope to the College Hill Reservoir (24th and Lawrence in Eugene) and share the view with whoever shows up. Here's the schedule for 2012:

May 25 (24% lit)

August 24 (57% lit)

November 16 (15% lit)

June 29 (82% lit)

September 21 (43% lit)

December 21 (69% lit)

July 27 (70% lit)

October 19 (28% lit)

# April Meeting Report

At our April 26th meeting, Jeff Phillips was scheduled to give a talk on imaging with webcams, but he was called out of town unexpectedly, so Jerry Oltion gave a talk on safe solar viewing instead. Jerry showed various ways to view the Sun, including cheap solar shades for direct observing, projecting an image through binoculars onto a white card, using a pinhole projector made from wrapping-paper tubes, using a small mirror to reflect an image of the Sun onto a shady wall, and of course putting a solar filter over a telescope. He discussed how to build a filter from certified solar-safe film, and how to use it safely.

Garth Price brought in a commercially made glass filter for his 8" Schmidt-Cassegrain scope, and the partial-aperture filter that he uses with a tunable etalon so he can see prominences and solar granulation in the hydrogen-alpha spectrum. He showed us an excellent photo he took of the Mercury transit of 2006 with this setup.

Ken Martin brought a Lunt Systems solar scope, a scope that he noted is only good for looking at one star — but it does a really good job at that. Like Garth's, he can tune it for solar prominences and granulation, or for high detail on sunspots. It's small enough (60mm) and light enough that it can be carried outside and set up for viewing in just a few seconds, allowing great views of solar activity at a moment's notice.

Throughout the talk, the audience kept things hopping with lots of questions and comments. Excitement is high for the upcoming solar events in May and June. (See p.4 for details.)

Also for show and tell, Frank Szczepanski brought a 15" mirror blank he cut out of a 3/4" glass tabletop. He got two 15" blanks and three 8" blanks out of the tabletop. Now he just needs to make scopes out of them all!

Our next meeting will be on Thursday, May 24th, at 7:00 PM in the EWEB north building's Community Room. This is the first room in the semicircular building to the north of the fountain at EWEB's main campus on the east end of 4th Avenue.

Here's our meeting schedule for 2012. Note that we don't get regular Thursdays anymore, nor are we in the same room every time. EWEB has had trouble scheduling its meeting space to meet all the demand, so we've had to take what we can get.

May 24 (Thursday, Community Room)

June 28 (Thursday, Training Room)

July 26 (Thursday, Training Room)

August 23 (Thursday, Community Room)

September 19 (Wednesday, Community Room)

October 17 (Wednesday, Community Room)

November 21 (Wednesday, Community)

December 20 (Thursday, Training Room)

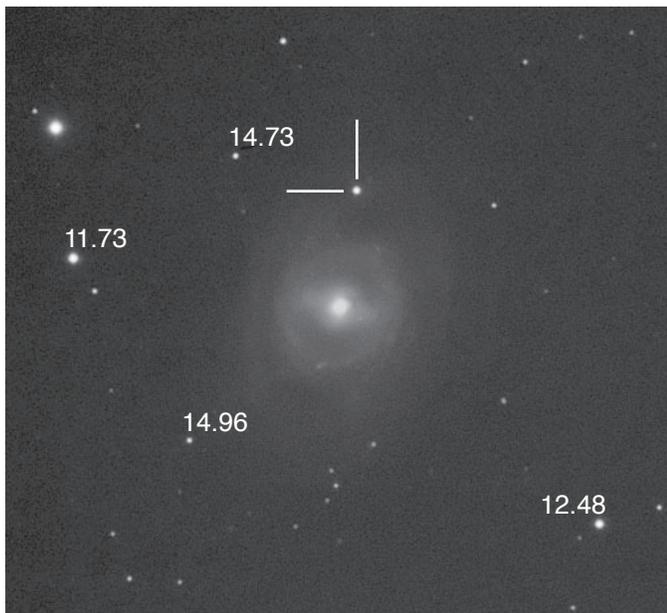
## EAS in Library Display During May and June

The Eugene Public Library has asked the EAS to provide a display of astronomy-related materials to accompany their summer reading program. The theme this year for young kids is "Dream Big," and for teens it's "Own the Night." Astronomy fits nicely into both themes, so we will be filling two large display cases with astronomy paraphernalia to inspire both young and old. So far we've got astrophotos, telescopes, star maps, a planisphere, a celestial globe, a Moon globe, a mirror blank, a finished primary mirror, a secondary mirror, eyepieces, a meteorite, star party fliers, Texerau's book *How to Make a Telescope*, various other books, and a red flashlight. We've probably got more than enough to fill both cases already, but we welcome more input if you can think of something vital that we've missed. Sam and Jerry will be filling the display cases on the morning of May 7th, so if you have any suggestions or materials for the display, contact Sam or Jerry before then.

## Early April Moon

Alan Gillespie took this photo of the rising Moon on the evening of April 6th, using just a camera and a tripod. He used a Canon Powershot SX230 HS at 1/80 second, f/5.9, iso 100, and 70mm focal length. Alan is experimenting with the “Canon hack,” a downloadable modification that allows for greater control of many Canon Powershot camera features such as exposure time, automatic exposure bracketing, file format, etc. Expect to see many more cool photos from Alan as he gets the hang of all the new features.

Note the angle of the Moon in this shot, with Mare Crisium, normally to the right, nearly straight up. That’s because the Moon is just rising, and its north pole is pointing north — to our left.



## Supernova in M95

On that same April 6th night, Brandt Schram got a good image of the supernova in M95. This is a stack of four 2-minute exposures with a TOA 150 scope and ST8300 CCD camera.

Brandt marked the magnitudes of some foreground stars for reference. Looks like the supernova was about 13th magnitude. Visual estimates from other observers around the same time came up with the same figure. The supernova never got much brighter, but it was clearly visible even from town with an 8" or larger scope.

Note the bar in M95’s core. This is one of the few barred spirals that shows a distinct bar in visual observations.

## Thank You Castle Storage

For the last five years, Castle Storage has generously provided EAS a place to store its telescopes and equipment. EAS would like to thank Castle Storage for their generosity and support for our group. Please give them a call if you need a storage space, and tell your friends. They are great people and offer secure and quality storage units.



# Upcoming Star Parties

Beyond our usual First Quarter Fridays, the EAS has four additional star parties coming up in the next few months, plus two additional opportunities for serious stargazing. Here's what's happening, and when:

**May 20 – Partial Solar Eclipse.** This event will be held in conjunction with the Science Factory on the northwest lawn in front of the Science Factory. May 20th is a Sunday. The eclipse starts at 5:00 pm and lasts until about 8:00 pm. If you have a solar-filtered scope, bring it and share the view!

If you want to drive to northern California, you can see this event as an annular eclipse.

**June 5 – Venus Transit.** This event will also be held at the Science Factory. June 5th is a Tuesday. The transit starts at 3:00 and continues until sunset. **This is the last chance to see a Venus transit in your lifetime. Don't miss this transit, whether you attend this event or just watch it from home.**

Both of the above events will require safe solar viewing techniques. There should be considerable public interest in these events, so it would be a great help if anyone who has a solar-filter-equipped telescope or who can project a solar image onto a card (using binoculars or a small refractor, for instance) could come help out. We also have 200 pairs of solar shades (direct-viewing sunglasses) that we plan to sell for a dollar each to recover our costs. These will allow people to view the eclipse safely without a telescope.

**July 14 – Dark Sky Star Party at Dexter State Park.** This will be our fourth annual dark sky star party at Dexter State Park, 15 miles southeast of Eugene on Highway 58. The site is right at the lower end of Dexter Reservoir, and just across the highway from the town of Dexter itself. We've had a great time there every year so far, and this year should be just as fun. The sky is good and dark from there, the ground is grassy and comfy underfoot, and we get lots of very interested people eager for a view they can't see from town. The event is on a Saturday night, and we've got the park all night. The party starts at 9:30 pm. Club members often hang out after the public has gone home and skygaze into the wee hours.

**July 28th – Relay for Life.** The Relay for Life is a cancer-awareness event that runs all night from Friday, July 27th into Saturday, July 28th. We've been asked to bring telescopes early Saturday morning to provide an interesting diversion for relay participants through the wee hours. This is at Willamette High School from 1:00 to 3:00 am behind the bleachers adjacent to the relay track. It's a pretty light-polluted venue, but we were able to find quite a few bright objects to wow people with last year. Note that this is in the morning after our July First Quarter Friday. Yes, long night. We're astronomers, we can do it!

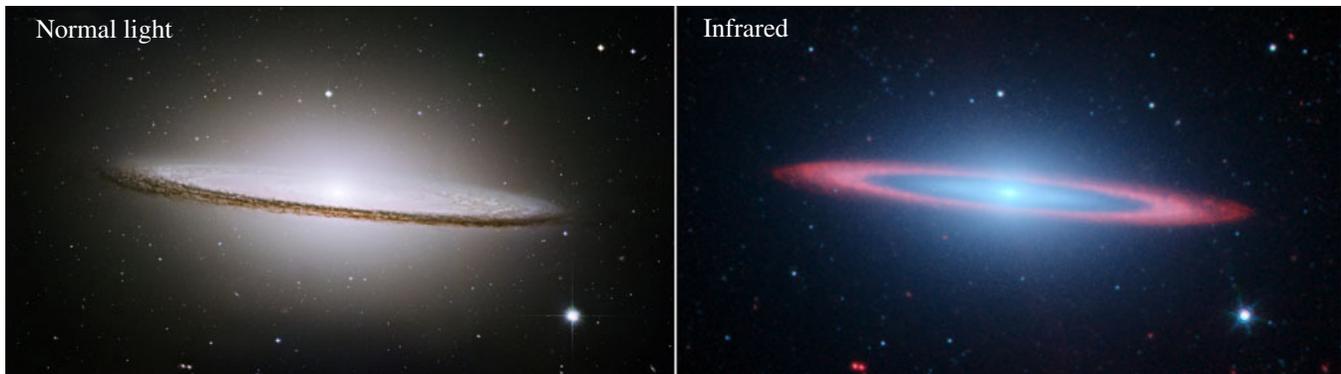
**July 18-22 – Golden State Star Party.** This isn't an EAS event, per se, but several EAS members have gone in the past and enjoyed it considerably. The site is a grassy field, there are lots of amenities, and great dark sky. Visit [www.goldenstatestarparty.org](http://www.goldenstatestarparty.org) for more information.

**August 14th-19th – Oregon Star Party.** This isn't an EAS event either, but many EAS members attend this regional extravaganza in the Ochoco Mountains east of Prineville. If you've never gone, you owe it to yourself to do it this year. It's a camp-out with 400-700 like-minded amateur astronomers under some of the best sky you'll ever see. It's a primitive camp site, but you can do anything from tent camping to motor-homing there. Provided amenities include plenty of porta-potties, a shower truck, dinners, a coffee and burger stand, and a big event tent for daytime programming. There's a swap-meet, vendors with the latest astro gear, and hiking opportunities in every direction. But the real attraction is the dark sky. Plan to stay up most of the night and sleep in late. Visit [www.oregonstarparty.org](http://www.oregonstarparty.org) for details.

# Observing Highlight: the Sombrero Double

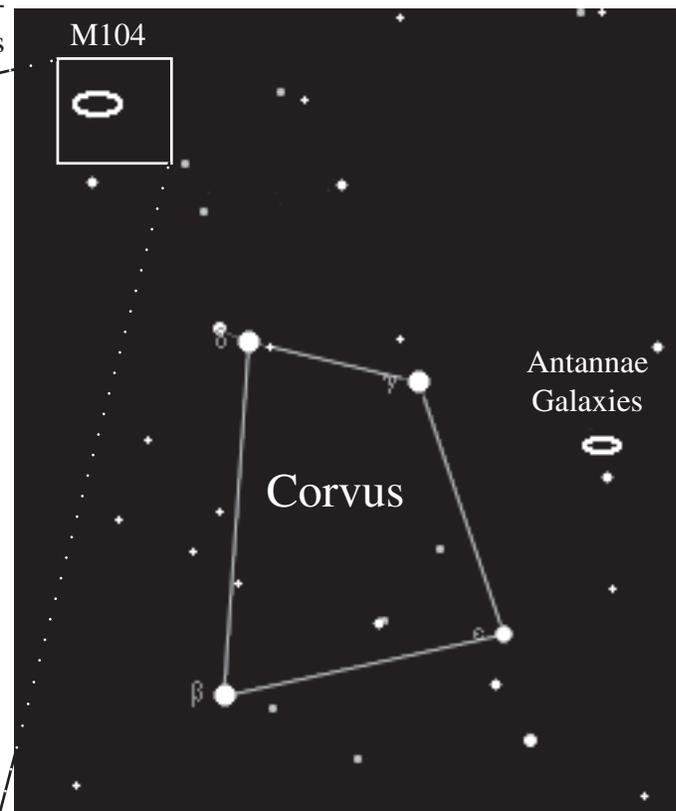
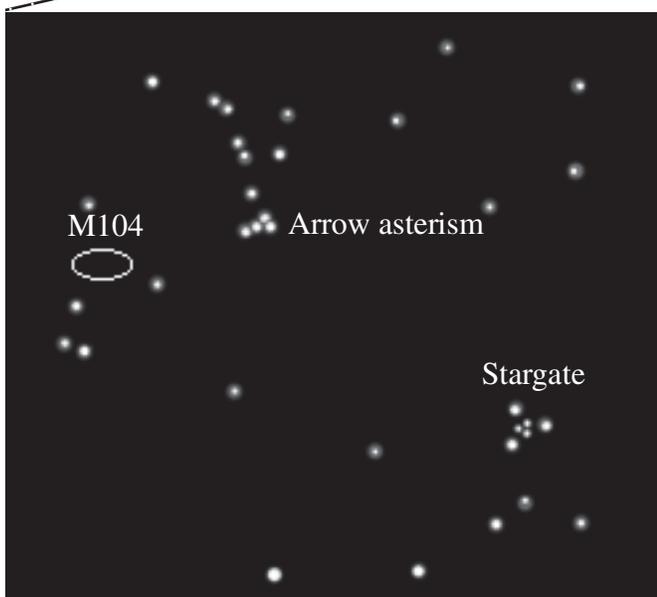
The late spring and summer sky is full of galaxy clusters, often providing several galaxies in the same field of view. Leo has two famous triplets, Virgo has Markarian's Chain, Coma Berenices has the entire Coma Cluster — but right on the boundary between Virgo and Corvus lies a pair of galaxies like no other we know of. Recent studies indicate that M104, the Sombrero Galaxy, is actually two galaxies in one.

In visible light the Sombrero looks like a big elliptical galaxy, with stars scattered high above its central plane. Yet it also displays a distinct disk around its equator, a disk that becomes even more evident in infrared wavelengths. Astronomers studying the galaxy with the Spitzer Space Telescope have found



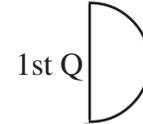
evidence that it started out life as a giant elliptical galaxy which then swallowed a passing cloud of gas that wound around its equator and spawned a disk-shaped galaxy within the elliptical one.

How do you find this galaxy within a galaxy? Find Corvus first, down below the reclining Virgo. Then make a diagonal to the northeast across Corvus and continue the same distance toward Virgo. The Sombrero will be right there, not far from the Stargate. It even has a tiny little Sagitta-like arrow pointing right at it. It's a rewarding sight in just about any telescope. The disk cutting across its wide halo of stars is readily visible. Next time you look at it, realize that you're seeing two galaxies in one!





# Observing in May



May 5	May 12	May 20	May 28
Mercury Rise: 5:20 AM	Mercury Rise: 5:17 AM	Mercury Rise: 5:21 AM	Mercury Behind Sun
Venus Set: 11:47 PM	Venus Set: 11:24 PM	Venus Set: 10:46 PM	Venus Set: 19:53 PM
Mars Set: 3:39 AM	Mars Set: 3:14 AM	Mars Set: 2:47 AM	Mars Set: 2:21 AM
Jupiter Set: 8:45 PM	Jupiter Behind Sun	Jupiter Rise: 5:31 AM	Jupiter Rise: 5:05 AM
Saturn Set: 5:29 AM	Saturn Set: 5:00 AM	Saturn Set: 4:27 AM	Saturn Set 3:55 AM
Uranus Rise: 4:32 AM	Uranus Rise: 4:05 AM	Uranus Rise: 3:35 AM	Uranus Rise 3:04 AM
Neptune Rise: 3:18 AM	Neptune Rise: 2:51 AM	Neptune Rise: 2:19 AM	Neptune Rise: 1:48 AM
Pluto Rise: 12:13 AM	Pluto Rise: 11:41 PM	Pluto Rise: 11:09 PM	Pluto Rise: 10:37 PM

All times: Pacific Standard Time (Nov 4, 2012-March 10, 2013) = UT -8 hours or U.S. Pacific Daylight Time (March 11-November 3, 2012) = UT -7 hours.

Date	Moonrise	Moonset	Sunrise	Sunset	Twilight Begin	Twilight End
5/1/2012	15:16	03:14	06:03	20:16	04:09	22:12
5/2/2012	16:30	03:43	06:02	20:18	04:06	22:14
5/3/2012	17:45	04:13	06:00	20:19	04:04	22:15
5/4/2012	19:04	04:46	05:59	20:20	04:02	22:17
5/5/2012	20:22	05:24	05:58	20:21	04:00	22:19
5/6/2012	21:37	06:10	05:56	20:22	03:58	22:22
5/7/2012	22:45	07:03	05:55	20:24	03:56	22:23
5/8/2012	23:43	08:05	05:54	20:25	03:54	22:25
5/9/2012		09:13	05:52	20:26	03:52	22:27
5/10/2012	00:30	10:23	05:51	20:27	03:50	22:29
5/11/2012	01:09	11:32	05:50	20:28	03:48	22:31
5/12/2012	01:42	12:39	05:49	20:29	03:46	22:33
5/13/2012	02:10	13:44	05:48	20:30	03:45	22:35
5/14/2012	02:36	14:46	05:47	20:32	03:43	22:36
5/15/2012	03:00	15:48	05:46	20:33	03:41	22:38
5/16/2012	03:25	16:48	05:45	20:34	03:39	22:40
5/17/2012	03:51	17:48	05:44	20:35	03:37	22:42
5/18/2012	04:18	18:48	05:43	20:36	03:35	22:44
5/19/2012	04:50	19:46	05:42	20:37	03:34	22:46
5/20/2012	05:25	20:42	05:41	20:38	03:32	22:48
5/21/2012	06:06	21:35	05:40	20:39	03:30	22:49
5/22/2012	06:53	22:23	05:39	20:40	03:28	22:51
5/23/2012	07:46	23:06	05:38	20:41	03:27	22:53
5/24/2012	08:44	23:44	05:37	20:42	03:25	22:55
5/25/2012	09:45		05:36	20:43	03:24	22:57
5/26/2012	10:48	00:17	05:36	20:44	03:22	22:58
5/27/2012	11:54	00:47	05:35	20:45	03:21	23:00
5/28/2012	13:01	01:16	05:34	20:46	03:19	23:02
5/29/2012	14:11	01:43	05:34	20:47	03:18	23:03
5/30/2012	15:23	02:12	05:33	20:47	03:17	23:05
5/31/2012	16:37	02:42	05:33	20:48	03:15	23:06

## Items of Interest This Month

Last month for Venus in the evening this year  
 Mars shrinks from 10" to 8" apparent diameter  
 Good month for the Virgo and Coma galaxies  
 5/5 Largest full Moon of 2012  
 5/20 Partial solar eclipse 5:00 PM to sunset  
 5/21 Thin crescent Moon near Venus at dusk  
 5/25 First Quarter Friday Star Party  
 5/30 Saturn, Spica, and Moon line up



## For Current Occultation Information

Visit Derek C. Breit's web site

<http://www.poyntsource.com/New/Regions/EAS.htm>

Go to Regional Events and click on the Eugene, Oregon section. This will take you to a current list of Lunar & asteroid events for the Eugene area. Breit continues to update and add to his site weekly if not daily. This is a site to place in your favorites list and visit often.

All times are for Eugene, Oregon, Latitude 44° 3' Longitude 123° 06' for listed date