



# The Night Sky

A Publication of The Astronomy Club of Akron  
Akron, OH USA

ACA Homepage: <http://www.acao.org>

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2004 ACA Calendar	Summary
7/10/04 Sat 9:00 p.m.	The Jewels of Summer— ACA Observatory
7/17/04 Sat 4:00 p.m.	CAA OTAA convention— Letha House
7/18/04 Sun TBA	ACA Club Picnic—The Her- vols
7/24/04 Sat 9:00 p.m.	The Summer Constellations— ACA Observatory
8/7/04 Sat 9:00 p.m.	The Autumn Constellations— ACA Observatory
8/14/04 Sat	MVAS OTAA convention
8/21/04 Sat 6:00 p.m.	Solar/Lunar/Hot Dog Roast— ACA Observatory
9/11/04 Sat 7:30 p.m.	The Planets Uranus & Nep- tune— ACA Observatory
9/18/04	Black River OTAA convention
9/24/04 Fri 8:00 p.m.	ACA General Membership Meeting— Kiwanis Club
10/16/04 Sat 7:30 p.m.	ACA Observatory Open House— ACA Observatory
10/22/04 Fri 8:00 p.m.	ACA General Membership Meeting—Kiwanis Club
11/6/04 Sat 7:30 p.m.	ACA Observatory Open House—ACA Observatory
12/11/04 Sat 7:30 p.m.	ACA Observatory Open House—ACA Observatory

## 2004 ACA Calendar-Detail

### Saturday, July 10

ACA program at the observatory on "The Jewels of Summer." The program begins at 9:00 p.m. and focuses on the Ring Nebula, the Dumbbell Nebula, the Hercules cluster, the Andromeda Galaxy and many others. Please bring your telescopes for the public star party which follows the program.

### Sunday, July 18

The ACA annual picnic to be held at Carl and Betty Hervol's private residence. The club will supply the main dish and members should bring a covered dish, place setting(s), and chairs. **This is a members-only event.**

### Saturday, July 24

ACA program at the observatory beginning at 9:00 p.m. The program will be on the Summer constellations: Hercules, Lyra, Ophiucus, Sagittarius, Scorpius and others. Please bring your telescopes for the public star party which follows the talk.

### Saturday, August 7

ACA program at the observatory featuring the Autumn constellations Andromeda, Aquarius, Capricornus, Pegasus and Delphinus. The program begins at 9:00 p.m. Please bring your telescopes for the public star party which follows the talk.

### Saturday, August 21

ACA annual Solar/Lunar event. Solar viewing begins at 6:00 p.m. for

the public followed by a Hot Dog culinary feast at 7:30 p.m. Lunar viewing begins at 9:00 p.m. for the public. All members are encouraged to bring their scopes and appropriate filters for this event.

### Saturday, September 11

ACA program featuring the planets Uranus and Neptune beginning at 7:30 p.m. Come view the gas giants as they appear as tiny blue green disks in the southern night sky. Please bring your telescopes for the public star party which follows the program.

## Sky Events for July 2004

**July 1 Moon at perigee** (closest to Earth) at 23h UT (distance 357,448 km; angular size 33.5').

**July 2 Full Moon** at 11:09 UT. The full Moon of July is called the "Thunder Moon" or "Hay Moon". Occurs twice this month.

**July 5 Mars very near the Beehive cluster** at 8h UT (24° from Sun, evening sky). Magnitude +1.8.

**July 8 Mercury passes through the Beehive cluster** at 21h UT (20° from Sun, evening sky). Magnitude 0.3.

**July 9 Last Quarter Moon** at 7:34 UT.

**July 11 Mercury 0.16° from Mars** at 0h UT (22° from Sun, evening sky).

Magnitudes  $\Delta 0.2$  and  $+1.8$ . This is the closest pass of two planets this year.

**July 12 Moon near the Pleiades** at 20h UT (morning sky).

**July 13 Venus at its brightest** at 6h UT (morning sky). Magnitude  $-4.5$ .

**July 14 Moon at apogee** (furthest from Earth) at 21h UT (distance 406,192 km; angular size 29.4').

**July 17 New Moon** at 11:24 UT. Beginning of lunation 1009.

**July 20 35th Anniversary of the Apollo 11 Lunar Landing.**

**July 25 First Quarter Moon** at 3:37 UT.

**July 27 Mercury at greatest elongation**,  $26^\circ$  east from the Sun (evening sky) at 3h UT. Mercury (mag.  $+0.5$ ) visible very, very low in the west about 40 minutes after sunset.

**July 30 Moon at perigee** (closest to Earth) at 6h UT (distance 360,323 km; angular size 33.2').

**July 31 Full Moon** at 18:05 UT. The second full Moon, known as a "Blue Moon".

All times Universal Time (UT).  
(USA Eastern Summer Time = UT - 4 hours)

**More on July Sky Events  
By Thom Bemus,  
Director of Cherry Springs Park**

July is one of the best months to enjoy the constellation Scorpius the scorpion, which is at its maximum elevation above the horizon for the year at our latitude, just above the southern horizon.

A line of three, nearly equal brightness stars mark the claws of the scorpion. Heading to the lower left toward the horizon we come to scorpion's heart, Antares, the rusty colored super-giant star. Antares is often mistaken for the planet Mars and its name actually means "rival of Mars" in arabic.

Just to the right of Antares your

binoculars will spy a sizable soft glow of stars, this is the huge globular star cluster M-4. If you get to more southerly areas make sure to take time to revisit Scorpius, it is even more beautiful when it rides higher in the sky.

Even in this dense area of the Milky Way it is easy to continue to follow the line of brighter stars that make up the rest of the scorpion. In the early evening sky, from Antares follow the line straight down toward the horizon and as you approach the horizon you'll notice the line curve sharply around to the left and end in a pair of stars that mark the tip of the deadly celestial stinger.

On a clear night you'll notice a couple of bright patches just to the upper left of the stinger, these patches will resolve themselves into two of the largest and brightest open star clusters (M-6 and M-7) in the sky. The two objects have very different characters, one is composed of fewer brighter stars, while the other is a large spray of many dimmer stars.

*—Contributed by Rich Ruggles*

**Upcoming Astronomy Events**

**July 8 thru July 11**

Green Bank Star Quest  
Green Bank, West Virginia.  
[www.caacwv.org](http://www.caacwv.org) or  
[www.KVAS.org](http://www.KVAS.org)

**July 17**

Cuyahoga Astronomical Association  
OTAA Convention at Letha House.  
Registration begins at 4:00 p.m. For more details see:  
<http://www.geocities.com/cuyastro>

**August 17 thru August 22**

AstroBlast 2004  
Oil City, Pennsylvania  
<http://www.oras.org>

**September 25**

Scope Out 2004  
Cincinnati, Ohio  
[www.cincinnatiobservatory.org](http://www.cincinnatiobservatory.org)



**Treasurer's Report: June 2004**

<b>Total Beginning Assets</b>	<b>\$5080.00</b>
<i>Income</i>	
Dues and Misc.	\$855.80
Interest	\$0.51
<i>Expenses</i>	
ACA Newsletter	\$72.32
Ohio Sales Tax	\$12.29
Subscriptions	\$226.70
<b>Total Ending Assets</b>	<b>\$5625.00</b>

Submitted 7-07-2004 Gary Smith

**Vice President's Corner**

CIVILITY

It's great to see the Club focusing on core issues, especially outreach. As a nonprofit organization, the Club has accepted tax-exempt status in exchange for a commitment to provide educational opportunities for the public. In honoring this obligation the Club also benefits by exposing the public to the hobby we all enjoy, thus encouraging the growth of amateur astronomy and, of course, this Club.

When we invite the public to our activities, we give them a chance to learn about astronomy, cosmology, optics, and our Club. What they learn will determine whether they are motivated to become involved with the hobby, and with the Club. Recognizing this, our Observatory Director has formulated some policies regarding member behavior at the Club site; these were published in the last issue of "The Night Sky". This is an important step, as it is very easy to alienate potential new hobbyists and/or Club members by careless and unnecessary comments about non-astronomical issues. This topic has frequently been discussed by the Club's Board, and the consensus is that we don't intend to permit the Club to be damaged or destroyed by this sort of thing.

It's common in our society for some people to feel superior to those who

don't belong to their particular group, especially in the areas of religion and politics. The negativity inherent in this kind of thinking is the reason that those subjects are not discussed in polite society. Topics of discussion suitable for some living rooms or taverns are simply not suitable for public events hosted for the purpose of sharing our hobby. This is especially true when such discussion degenerates into personal attacks on public or nonpublic figures. Civil people aren't comfortable around that sort of thing, whether they like, dislike, or don't know the target individuals.

How can you tell when you have crossed the line? That's an easy one. If a stranger at a Club activity learns your political or religious affiliation, you haven't been discussing astronomy. The time spent spewing hate speech was time which wasn't spent fulfilling the purposes of the Club - in fact, it was time spent in a destructive way. That's not why the Club exists, and it's not why members and officers donate a great deal of time and effort to keep the Club going. Trash talk has its place, but those of us with no interest in hearing it should be able to avoid it by not going to that place. I don't care to know what party or religion you think is superior - and neither does the public.

John Crilly

## From the President

What a month we've just had! First, we had the long awaited Venus transit and actually got to see it since the weather gods smiled on us, as hard to believe as THAT was. The ACA fulfilled our goal of outreach to the public by staging events at the four corners of the compass. At Chapel Hill we had **Freddy Huffman**; at Kent State airport in Stow we had **Gary Smith**, **Rosaelena Villasenor** and **yours truly**; at TOPS in Fairlawn we had **Jason Shinn** and **Jeff Hudson**; and at the Portage Lakes State Park we had **John Crilly**, **Ray Paul**, **Glenn Cameron**, **Jim Anderson**, **Gregg Crenshaw**, **Ted Faix** and **Jennifer Robinson**. All telescopes were fitted with proper solar filters for safe viewing. If I've omitted anyone, please forgive me...your participation was much appreciated. Several newspapers covered our ef-

forts and gave us our due of very positive press.

Then we had the successful launch of Space Ship One - a private effort to put a human in space...and it worked! Perhaps space travel in our lifetime is closer than we imagined just a month ago. On top of that, we had a magnificent pinpoint rendezvous with Saturn by our Cassini and Huygens orbiters after a nearly seven year trip.

The Cassini mission is truly fascinating and is receiving continual coverage on international news. The Internet is just overflowing with information including nearly instantaneous release of the unprocessed images from the orbiter of Saturn's highly complex ring structure. Huygens - a joint effort of the European Space Agency and the Italian Space Agency - is sure to reveal many surprises from Titan, Saturn's largest moon and the second largest in the solar system behind Jupiter's Gany-mede. Titan's atmosphere is thought to closely resemble that of Earth of four billion years ago. What a full plate of astronomy subjects to discuss with the public and fellow members! Why would anybody want to talk about non-astronomical topics - especially when we're out under the stars?

Dave Jessie-Future Past President

## Observatory Director's Report

The Fifteenth Annual Telescope Seminar on the 26<sup>th</sup> of June was, I felt, a resounding success and one of the best we've had in a number of years. This success is, of course, due to the excellent presentations by **Ted Faix** on binoculars, **Lynn Laux** on refractors, **John Crilly** on reflectors, and **Dave Jessie** on Schmidts. I couldn't have asked for a more professional and informative job by each of them. I had a number of visitors approach me later who expressed how impressed they were with the program. We can also measure its success by having obtained at least one new membership that I know of, from the crowd.

The consensus seemed to be that we had between 50 and 60 guests that evening. It was very gratifying to have such an animated and interested group of guests, as evidenced by the volume of questions asked of each presenter. I had to cut most of them short in order

to get them all in before it was time to order breakfast.

There were at least three, by my count, brand new scopes accompanied by newcomers who had no clue on their operation. Thanks to Ted, Lynn, Dave, John and anyone else who helped them, I'm sure they went home happier and a little more knowledgeable from the experience.

Amazingly, the sky stayed relatively clear for the remainder of the evening. Hopefully, summer has finally arrived. An extra treat that night was the blazing meteor, which turned out to be a re-entering Russian rocket, in the north-east at about 11:00 p.m. It must have lasted for nearly a minute or so with a long bright tail from each of at least two pieces.

Thanks again to everyone who participated and don't forget The Jewels of Summer on July the 10<sup>th</sup> and The Summer Constellations on July the 24<sup>th</sup> at the observatory. C'mon out, it's so much more fun for everyone with a crowd.

Ray Paul

## 2004 ACA Picnic

The ACA is holding its annual club picnic at the home of Carl and Betti Hervol after they so charitably opened their home for our use. The club is supplying hamburgers, hot-dogs, sloppy joes, buns and soft drinks for the event while each attending member is to bring chairs, place settings and a dish to share in sort of a 'pot luck' type of event. These dishes could be desserts, salads, veggie plates, chips, etc. If you've ever been to the OTAA convention at Mahonning Valley, you know what a magnificent event these pot luck events can be!

This year, especially since the picnic is at the home of one of our members, the event is definitely a 'MEMBERS ONLY' party. As was so succinctly pointed out to me at a recent public event at the observatory, "Why should I be a member of the club when I, as a non-member, can take advantage of anything the members can do?" It got me thinking. There are going to be more 'Members Only' events in the future, but this is a place to start! For directions to Carl and Betti's - or for any other questions about the event - please contact me by telephone or email...I'll be more than happy to an-

swer your questions or give directions. Remember...MEMBERS ONLY!!

Dave Jessie

## Outreach

What a great success the ACA enjoyed at the programs at Camp Christopher this year. The kids and counselors had a great time both nights as well as the ACA members that participated in both programs.

Kimberly Shaffer, Director of Camp CHOPS and JoAnn Bedore, Director of Camp WONDERLUNG were very pleased with the programs that we presented. They are looking forward to seeing all of us again next year.

I would like to say thank you to the following ACA members for showing up and giving their best at Camp Christopher this year. For Camp CHOPS:

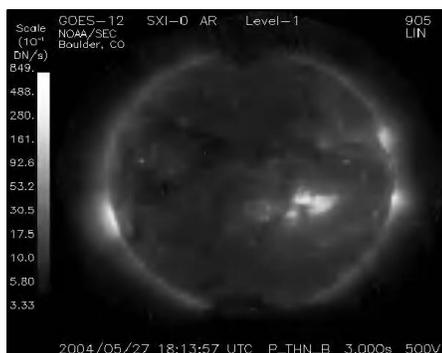
**Dave Jessie, Rosaelena Villasenor, John Shulan, David Owen, Jeff Hudson and myself.** For Camp Wonderlung: **Dave Jessie, Rosaelena Villasenor, John Shulan, David Owen, Jeff Hudson, Paul Woodward, Glenn Cameron, Gary Smith, Gregg Crenshaw and myself.** I would also like to thank **Jeff Hudson** for doing a great job on organizing the two programs and giving the kids a night to remember.

Jim Anderson

## NASA Space Place

### Space Weather

By Patrick Barry and Tony Phillips



This image shows the outer solar atmosphere, or corona, as viewed by the GOES 12 Solar X-ray Imager (SXI). It shows the plasma at 4.0 MK (million degrees Kelvin). Bright areas are associated with sunspots seen in white light images and may produce explosive events known as flares. Dark regions are coronal holes where the fastest solar wind originates. Image courtesy of the Space Environment Center/NOAA.

Radiation storms, 250 mile-per-second winds, charged particles raining down from magnetic tempests overhead ... it sounds like the extreme weather of some alien world. But this bizarre weather happens right here at Earth.

Scientists call it "space weather." It occurs mostly within the gradual boundary between our atmosphere and interplanetary space, where the blast of particles and radiation streaming from the Sun plows into the protective bubble of Earth's magnetic field. But space weather can also descend to Earth's surface. Because the Earth's magnetic field envelops all of us, vibrations in this springy field caused by space weather reverberates in the room around you and within your body as much as at the edge of space far overhead.

In fact, one way to see these "geomagnetic storms" is to suspend a magnetized needle from a thin thread inside of a bottle. When solar storms buffet Earth's magnetic field, you'll see the needle move and swing. If you live at higher latitudes, you can see a more spectacular effect: the aurora borealis and the aurora australis. These colorful light shows happen when charged particles trapped in the outer bands of Earth's magnetic field get "shaken loose" and rain down on Earth's atmosphere.

And because a vibrating magnetic field will induce an electric current in a conductor, geomagnetic storms can have a less enjoyable effect: widespread power blackouts. Such a blackout happened in 1989 in Quebec, Canada, during a particularly strong geomagnetic storm. These storms can also induce currents in the metallic bodies of orbiting satellites, knocking the satellite out temporarily, and sometimes permanently.

Partly because of these adverse effects, scientists keep close tabs on the space weather forecast. The best way to do this is to watch the Sun. The NASA/ESA SOHO satellite and NOAA's fleet of GOES satellites keep a constant watch on the Sun's activity. If a "coronal hole"--where high-speed solar wind streams out from the Sun's surface--comes into view, it could mean that a strong gust of solar wind is on its way, along with the geomagnetic storms it will trigger. And an explosive ejection of hot plasma toward the Earth--called a "coronal mass ejection"--

-could mean danger for astronauts in orbit. The advancing front of ejected matter, moving much faster than the solar wind, will accelerate particles in its path to near the speed of light, spawning a radiation storm that can threaten astronauts' health.

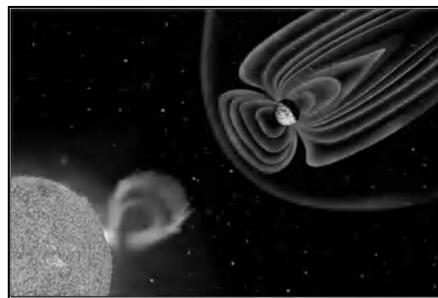
Look for coming articles for more about space weather and about NOAA's efforts to forecast these celestial storms. Meanwhile, read today's space weather forecast at <http://www.sec.noaa.gov/>.

Kids can learn about the geostationary and orbits of the GOES satellites at [http://spaceplace.nasa.gov/en/kids/goes/goes\\_poes\\_orbits.shtml](http://spaceplace.nasa.gov/en/kids/goes/goes_poes_orbits.shtml).

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*

*Contributed by Rich Ruggles*

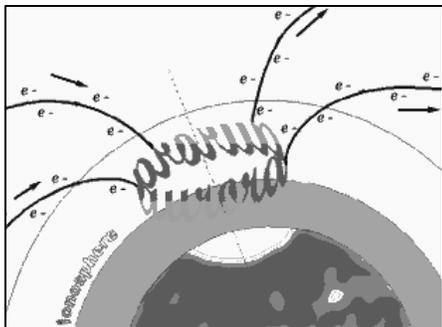
## Did You Know?



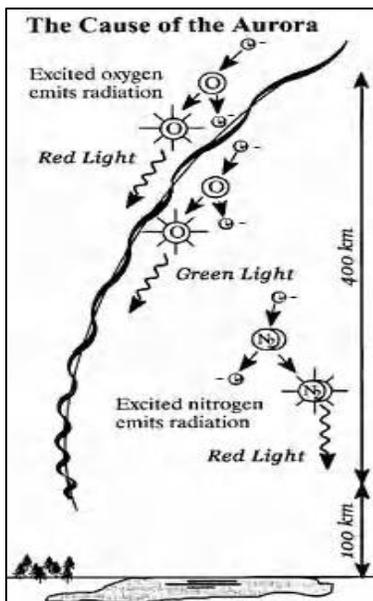
Polar aurora is an optical phenomenon characterized by a colorful display of light in the night sky, sometimes accompanied by a humming and/or crackling sound. An auroral display in the Northern Hemisphere is called the aurora borealis, or the northern lights; in the Southern Hemisphere it is called the aurora australis. Auroras are the most visible effect of the solar wind upon the Earth's atmosphere. The aurora occur when the Van Allen radiation belts become "overloaded". The most powerful aurora tend to occur after coronal mass ejections.

The origin of the aurora is 93 million miles (149 million km) from Earth at the Sun. Energetic particles from the Sun are carried out into space along with the ever present hot solar wind. This wind sweeps supersonically toward Earth through interplanetary space at speeds ranging from 300 to over 1000 km per second, carrying with it the solar magnetic field. The solar wind distorts the Earth's magnetic field

to create the comet-shaped, plasma-filled magnetosphere. The terrestrial magnetic shield acts as a barrier, protecting the Earth from energetic particles and radiation in the hot solar wind. Most of these energetic particles are deflected around the Earth by the magnetosphere, but some get trapped. Electrons trapped in the Earth's magnetic field (the magnetic mirror effect) are accelerated along the magnetic field toward the polar regions and then strike the atmosphere to form the aurora.



These high energy particles can excite (by collisions) valence electrons that are bound to the neutral atom. The excited electrons can then return to their initial, lower energy state, and in the process release photons (light particles). This process is similar to the plasma discharge in a neon lamp.



Any particular color of the aurora depends on a specific atmospheric gas and its electrical state, and on the energy of the particle that hits the atmospheric gas. Atomic oxygen is responsible for the two main colors of green (wavelength of 557.7 nm) and molecular oxygen for red (630.0 nm).



Auroral features come in many shapes and sizes. Tall arcs and rays start brightly 100 km above the Earth's surface and extend upward along its magnetic field for hundreds of kilometers. These arcs or curtains can be as thin as 100 meters while extending from horizon to horizon. Auroral arcs can nearly stand still and then, as though a hand has been run along a tall curtain, the aurora will begin to dance and turn.

After midnight, the aurora can take on a patchy appearance and the patches often blink on and off once every 10 seconds or so until dawn. Most of the auroral features are greenish yellow but sometimes the tall rays will turn red at their tops and along their lower edge. On rare occasions, sunlight will hit the top part of the auroral rays creating a faint blue color. On very rare occasions (once every 10 years or so) the aurora can be a deep blood red color from top to bottom.

The distribution of auroral intensity with altitude shows a pronounced maximum near 100 km above the Earth. Auroras may occasionally be observed within 40° or less of the equator.

Courtesy of SpaceWeather.com

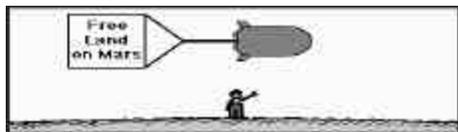
### Special Relativity: Length Contraction By Lynn Laux

One of the peculiar aspects of Einstein's theory of special relativity is that the length of objects moving at relativistic speeds undergo a contraction along the dimension of motion. An observer at rest (relative to the moving object) would observe the moving object to be shorter in length. That is to say, that an object at rest might have been measured to be 200 feet long and 40 feet high; yet the same object when moving at relativistic speeds relative to the observer/measurer would have a measured length which is less than 200 ft but still 40 ft high. This phenomenon is not due to actual errors in measurement or faulty observations; the object is actually contracted in length as seen from the *stationary reference frame*. The amount of contraction of the object is dependent upon the object's speed

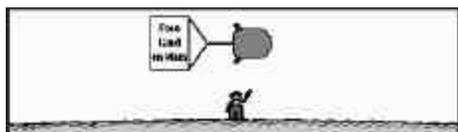
relative to the observer.

Note that the length contraction is only significant when the object is moving at relativistic speeds - i.e., speeds which are a significant fraction of the speed of light. Furthermore, note that the contraction only occurs in the dimension of the object's motion. That is, if the object is moving horizontally, then it is the horizontal dimension which is contracted; there would be no contraction of the height of the object.

Speed of Spaceship	Observed Length	Observed Height
At rest	200 ft	40 ft
10 % the speed of light	199 ft	40 ft
86.5 % the speed of light	100 ft	40 ft
99 % the speed of light	28 ft	40 ft
99.99 % the speed of light	3 ft	40 ft



A ship traveling at 10% the speed of light.



A ship traveling at 86.5% the speed of light



A ship traveling at 99% the speed of light



A ship traveling at 99.99% the speed of light.

**The Equation:**

$$L = \left( L_o \sqrt{1 - \frac{v^2}{c^2}} \right)$$

**Remind me again...what is L, L<sub>o</sub>, v, and c?**

L = the length of an object as viewed for a mover by a stationary frame.

L<sub>o</sub> - the length of an object as viewed by a mover for the mover.

v - the velocity of the mover relative to the stationary observer. The velocity is a measurement of the speed an object is traveling along with the direction of that object. If an object's speed is 50 miles per hour, its velocity could be 50 miles per hour, to the right. For velocity, direction must be included. **Constant velocity** means the object is maintaining a constant speed and direction.

c - the speed of light in a vacuum which is a constant value of 300,000,000 meters/second or 186,000 miles/second. This value is constant as viewed by all observers.

**mover for the mover** - this is a reference to the reference frame in which the object being measured is at rest. For example, if we are measuring the lifetime of a muon, it is the time in the muon's frame that has the actual lifetime of the muon. This would be referred to as the time for the mover for the mover. If we are measuring how far a muon travels in our frame of reference, the actual thing being measured is length within our frame. Therefore, in this case the length in our frame would be referred to as the length for the mover for the mover.

**Where does that come from?**

Let's consider a ship that the earth observes to be moving at 50% c. Both a moving frame and a stationary frame want to measure the length of a meterstick with respect to a vertical line in our frame. Both the earth's frame and the ship's frame will determine the length of the meterstick by knowing v, and measuring time within their own reference frame. Once v and t are known, each frame can determine L by using the equation for distance, d = v times t. (Remember that: speed = distance/time but velocity = displacement/time. Rearranging the equation

v = d/t will give us displacement = velocity times time.)

**Ship's Frame of Reference:**

The ship measures the time for the meterstick to pass the reference line that is stationary in the earth's frame of reference. In this case, the time is being measured with respect to the earth's reference line. Therefore, the moving frame (mover for mover) is defined to be the earth's frame.

With the ship measuring its stationary frame to have the earth speeding by with a speed of **50 % c**, it measures a time for the mover by the stationary frame to be 2.31 seconds. Because the rocket's passenger knows the equation for distance or length he measures the meterstick's length to be:

$$d = v \text{ times } t$$

$$L_o = v \text{ times } t \text{ (Eqn. 1)}$$

$$L_o = (150,000,000 \text{ m/s})(2.31 \text{ s})$$

$$L_o = 346,400,000 \text{ meters.}$$

The keen reader notices that we used L<sub>o</sub> for length, which is the length of the mover by the mover and yet used t for time which is the time for the mover by the stationary frame. This is not a mistake. The meter stick being measured is at rest on the ship's frame, thus we used L<sub>o</sub>. However, the time measurement is made with respect to the earth's frame so the earth uses t<sub>o</sub> and the ship uses t!

**The Earth's Frame of Reference:**

Now consider the same time measurement taken from the earth's frame (the moving frame). The earth's frame measures the time to be different as we saw in time dilation. With the earth measuring its frame to have the ship speeding by with a speed of 50 % c, it measures a time for the mover by the mover to be 2.00 seconds. Because the earth's passenger knows the equation for distance or length he measures the stick's length to be:

$$d = vt$$

$$L = vt_o \text{ (Eqn. 2)}$$

$$L = (150,000,000 \text{ m/s})(2.00 \text{ s})$$

$$L_o = 300,000,000 \text{ meters.}$$

However, from above, we see that the distance covered for the mover by the mover is L<sub>o</sub> and from:

$$L_o = vt. \text{ (Eqn. 1)}$$

Now let's remember that:

$$t = \frac{t_o}{\sqrt{1 - \frac{v^2}{c^2}}} \text{ (Eqn. 3)}$$

So when we consider Equation 1 and Equation 3 together, we get:

$$L_o = (v) \frac{t_o}{\sqrt{1 - \frac{v^2}{c^2}}} \text{ (Eqn. 4)}$$

Now, if we rearrange Equation 2 and substitute it into equation 4, we get:

$$L = vt_o$$

$$t_o = \frac{L}{v}$$

$$L_o = (v) \left( \frac{\frac{L}{v}}{\sqrt{1 - \frac{v^2}{c^2}}} \right)$$

$$L_o = \left( \frac{L}{\sqrt{1 - \frac{v^2}{c^2}}} \right)$$

$$L = \left( L_o \sqrt{1 - \frac{v^2}{c^2}} \right)$$

The most intriguing aspect of this weird effect (length contraction) is that the effect itself is relative. In other words, the travelers on board the spaceship experience no change either in the length of their spaceship or in any meter stick that may be on board. According to the theory of relativity, the meter stick has no official length. It all depends upon the viewer!



## Lining Up Those Astronomical Ducks

By Glenn R. Cameron

### 6/7/2004 – 9:30 PM

With great anticipation, I finally lay down to bed at 9:30 PM. The younger kids laid down a few minutes before. Tomorrow morning at sunrise, the Venus transit will already be in progress with about 90 minutes of its remainder visible to us here in Ohio. It has been a hectic evening, what with me getting all of my astronomical ducks in a row. Tomorrow morning the two biggest astronomical ducks that need to get in a row, will be in, uh, a row. The question is, will I see it? Will Finagle and Mother Nature cooperate for a change and open the normally closed cloud curtains over Northeast Ohio? The forecast is favorable but the percentages of forecast accuracy are low. I have a theory that all of the weather forecasters that really can predict the weather quickly learn that they can also predict winning lotto numbers and stop predicting the weather.

### 6/7/2004 – 11:00 PM

Still lying here, not asleep. Are all my batteries charged up? Did I remember the solar filter? The camcorder? Is everything packed? I check the alarm clock again. Yep, it's set to go off at 4 AM.

### 6/8/2004 – 1:30 AM

I wake up and use the intercom to call my oldest child, who is downstairs in the living room still awake. I know this because I can hear her still chatting with her girlfriend who is spending the night. "Why are you still awake?" I demand. She promises that they're going to bed soon. I groan. The sun rises at 5:53 AM. I want to be up at 4 and out the door by 4:30 so I can be at the beach in Portage Lakes State Park by 5. I'm going to be groggy.

### 6/8/2004 – 2:05 AM

I'm still awake. I intercom my daughter again and insist that she go to bed, "Now!" She was, "just on the way." I mentally assure myself again that everything is in the car and ready. The coffee maker is poised and ready.

### 6/8/2004 – 4:00 AM

Wow! I actually had gone to sleep

again. I moan audibly but roll out of bed. I look out the window. It's not raining! I can see stars without the help of beer or brawl! Woo hoo! I hit the shower and manage to get out the door a little after 4:30 AM. I head north from Canton, speeding a little, and then slowing to the speed limit. I don't think a cop would appreciate my excuse if I get pulled over for speeding.

### 6/8/2004 – 5:20 AM

I get to the beach at Portage Lakes State Park. I realized about fifteen minutes ago that I've never been to the beach and had no idea where it was. I think I only flailed around in the park for about ten minutes before finding it. Whew! I'm happy to see some of my fellow ACA club members already in attendance. I set up my scope and fudge an alignment since I can't see any stars in order to perform a unfudgy alignment. The sky is already well into dawn and no stars are peeking through. I cheat by synchronizing on the moon, which is barely visible through many branches of some tall pine trees. Close enough.

### 6/8/2004 – 5:53 AM

The sun has risen! But we can't see it! We're looking across the lake but there are some trees on the far side. We figure we've got fifteen or twenty minutes until the sun clears the trees. In the mean time, we pose for the Akron Beacon Journal photographer. She asks questions. She takes many pictures of my telescope, my video monitor, and me. "Hey!" I think, "I might get my picture in the paper!" She's taking all kinds of pictures. Gregg Crenshaw also has a video camera and monitor on a telescope using a hydrogen-alpha filter. Jim Anderson has his telescope equipped with a bino-viewer. Down the beach a little, someone is using his telescope to project the sun's image on a white piece of cardboard. We wax lyrically to the Akron Beacon Journal reporter, who also roams around and watches our various anxious preparations. The reporter, Jim Carney, asks several questions and seems genuinely interested and entertained by our enthusiasm. I put my Paul Simon "One Trick Pony" CD into my car's player and turn it up just a bit so everyone can enjoy it.

### 6/8/2004 – 6:15 AM

The Sun peaks above the trees! We all home in on that great giver of life and energy. In no time, one of us exclaims, "There it is!" Actually it was more like a chorus as most of us quickly zeroed in on the lady Venus parading past the great furnace. I fiddle with my video camera, piping the view to my monitor and also looping it on to my camcorder. Life is grand!

### 6/8/2004 – 7:00 AM

We all continue to ooh and ah at this too rare event. It's a ton of fun chatting with my non-professional astronomer colleagues. I chuckle to myself and at my earlier duck metaphor each time I yell at someone to "duck" as they pass in front of my telescope. "I should have piggybacked the grenade launcher to my telescope," I laughed, kidding, mostly. I change the CD in my car's player to Boston's "Third Stage" album. I thought the rocket theme was apropos. I think about calling home to make sure the kids are awake and are getting ready for school. Today is their last day of the school year. I realize that I've forgotten my cell phone at home. Well, of all the things I could have forgotten, I can live with that. I figure that oversleeping on the last day of school isn't the end of the world. All the finals are through anyway.

### 6/8/2004 – 7:26 AM

After watching Venus' "teardrop effect" as it reached third contact, then the all too sudden fourth contact, where "Venus has left the building," we all sighed contentment. I say something clever like, "Hey, remember that great Venus transit of 2004?" I'm sort of grinning like an idiot at this point. This is the most unique and exciting astronomical event I've ever witnessed. I begin to dismantle my setup and pack it in.

### 6/8/2004 – 7:55 AM

After much jawing with the rest of the partygoers, I sigh and head on in to Akron and to work. I'm actually fifteen minutes earlier than usual. It's a long day as I've also got an afternoon meeting up in Independence Ohio. Later in the day when I finally get home, weary from the long hours, I still manage to capture my Venus transit video to my computer and begin analyzing individ-

ual frames. It's been a great day!

### 6/9/2004 – 8:30 AM

The next day, I pause at the employee entrance at work and buy a copy of the Akron Beacon Journal. The front page features a picture of the sun and Venus doing their tango. Excitedly, I turn to page A6 where the article continues. There is a single photograph accompanying the article. I laugh. It's a picture of Gregg Crenshaw and his setup. Wouldn't you know it? They used the guy with the bigger monitor!

Editor's Note: Here is one of Glen's amazing pictures!!



### Apollo Rendezvous By Ray Paul

On June 11 and 12, 2004 the Miami Valley Astronomical Society held its Annual "Apollo Rendezvous" event at the Boonshoft Museum of Discovery in Dayton. Apollo Rendezvous is an annual gathering of amateur astronomers from the Ohio area and surrounding states, coming together to exchange information and ideas concerning astronomical interests as well as to have fun.

We arrived on Friday evening as the event was starting at the museum. Friday night's



schedule consisted of a workshop given by internationally recognized amateur astronomer and astro-imager Jack Newton on solar imaging; additionally, Ron Wodaski, author of "The New CCD Astronomy" had been scheduled to give a workshop as well, but he had cancelled. The only other event scheduled therefore was the vendor area with McAllister Camera, Apogee Instruments, and OberWerk Binoculars to name a few.

We noticed that the sky began to clear so we tried to find someone who knew where we could go to observe. In speaking with the few MVAS members who were present, we found out that no plans had been made for any observing on Friday night. So it was shop 'til you drop! We managed to pick up an Orion Telescope bag and a parallelgram mount for binoculars from McAllister Camera at nice prices. Other than that, there wasn't much else to do.

On Saturday, MVAS scheduled several speakers. Doug Askew, a local astronomer from the Columbus area, spoke on the challenges and successes of astro-imaging with a Dobsonian. Since Ron Wodaski had cancelled, MVAS brought in Scott Ireland who gave a delightful presentation on volcanism and spoke impromptu on using PhotoShop. Finally, Jack Newton gave a nice talk on his new observing site and home near Tucson, Arizona called "Arizona Sky Village." We noticed that in discussing his equipment that he had a RG Meade 16-inch SCT and a Meade Pictor camera which boasts a 1-inch CCD chip. No wonder his pictures are so amazing! You can view his image gallery at [http://www.jacknewton.com/image\\_gallery.htm](http://www.jacknewton.com/image_gallery.htm)

The MVAS opened up the museum's observatory that boasts a 10" Cassegrain. We took a tour but as the skies were cloudy, there really was nothing to view!

On Saturday evening, MVAS had scheduled their stargaze and BBQ at their dark sky site at John Bryan State Park. However, the sky conditions were not that favorable so we opted to come back.

All in all this was a pleasurable event, but NOT worth the registration fee. Also, despite promises to post updates to their website as plans finalized, essentially their website remained unchanged from the moment we first registered (in March). In fact, the only way we knew Ron Wodaski had cancelled was by downloading their June newsletter, where they made that information available to its members.



## Article Submission

Please note the change in the deadline for article submission. All articles are due **12 days after the last meeting**. In the summer months, when there is no meeting, the deadline is **12 days after the fourth Friday of the month**. This has been revised in order to get the newsletter into the mail **2 weeks after the last meeting or 4th Friday of the previous month**. All word processing files should be saved in any version of **Word** to minimize import problems. If you don't have access to a computer, don't hesitate to write something out long hand.

Send in your articles, items for sale, and comments to:

**Lynn M. Laux**  
14274 Bridle Trail  
Strongsville, OH 44136

Or email:  
[gemma lady@msn.com](mailto:gemma lady@msn.com)

If you have any pictures of club events, astronomical images, rig pictures and the like, please submit them to:

<http://groups.yahoo.com/group/astromyclubofakron>

## Welcome!

Welcome, new ACA Members!

The ACA wishes to extend a warm welcome to new members...

Tom Erickson & Kathy Cook  
Timothy & Sharon Herceg  
Jeannette Jensen  
Paul & Linda Koberg  
Paul Martin  
Mary Mihiylov  
Ben O'Connell  
David Owen  
Jeremy Reeves and family  
John Ruppert

We look forward to seeing you at all club functions!

