

The Night Sky

Astronomy Club of Akron
Akron, OH USA

[HTTP://WWW.ACAOH.ORG](http://www.acaoh.org)

On The Road

By Gregg Crenshaw

As I compose this article I received a message that the Sun had done it again. Many of you may have seen the surprising auroral activity October 29, 30, (and 31?) from the X17.2 and X17.4 flares from giant active solar region 10486. At that time these flares ranked as the third and fourth strongest flares ever recorded since record of these events began to be kept in the late 1970's., the largest being X20s on 02/02/01 and 06/08/89.

The Sun had more surprises! On Tuesday, November 4 at 2:47 PM EST active solar region 10486 spawned what scientists are calling the largest solar flare ever recorded. Luckily this flare, estimated as an X28, took place as this active region neared the solar limb. Otherwise who knows what kind of disruption to wireless communications may have taken place. Of course our cell phones may not have worked, but what an auroral display that would have been.

As you read this active region 10486 has begun to traverse the far side of the Sun. Two weeks from now I'm sure many professional and amateur astronomers will be watching the Sun's Eastern limb to see if this active region has survived to put on another dazzling display. I thought solar max was over back

in 2001. Surprises like this is what makes astronomy so fun and interesting.

I hope many members got out to the observatory, to Dave Jessie's program, the many other programs in the area, or just in your back yard to view the total lunar eclipse November 8. As I am composing this prior to the eclipse there are high hopes for clear but cold skies.

The ACA's November meeting is November 21 at 8 PM. This is a week early this month due to the Thanksgiving holiday. ACA member Glen Cameron will show images he took over the past observing season and talk on how he processed them.

I hope to see you there.

CLUB MEETING

November 21
8:00 PM

Our very own, Glen Cameron will talk about how he acquired and processed his amazing astronomical images.

Upcoming Events

November 17
Leonid Meteor Shower
Peak #1

November 19
Leonid Meteor Shower
Peak #2

November 21
ACA Club Meeting
(Glen Cameron)

November 23
New Moon

November 24
Moon at perigee

December 4
Moon at apogee

December 8
Full Moon

December 13
Open House & Star Party

December 13
Geminid Meteor Shower

December 22
Winter solstice

December 31
First Night - Akron

The Night Sky	
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The Night Sky is published monthly and contains information on upcoming meetings, observing sessions, and articles by members.

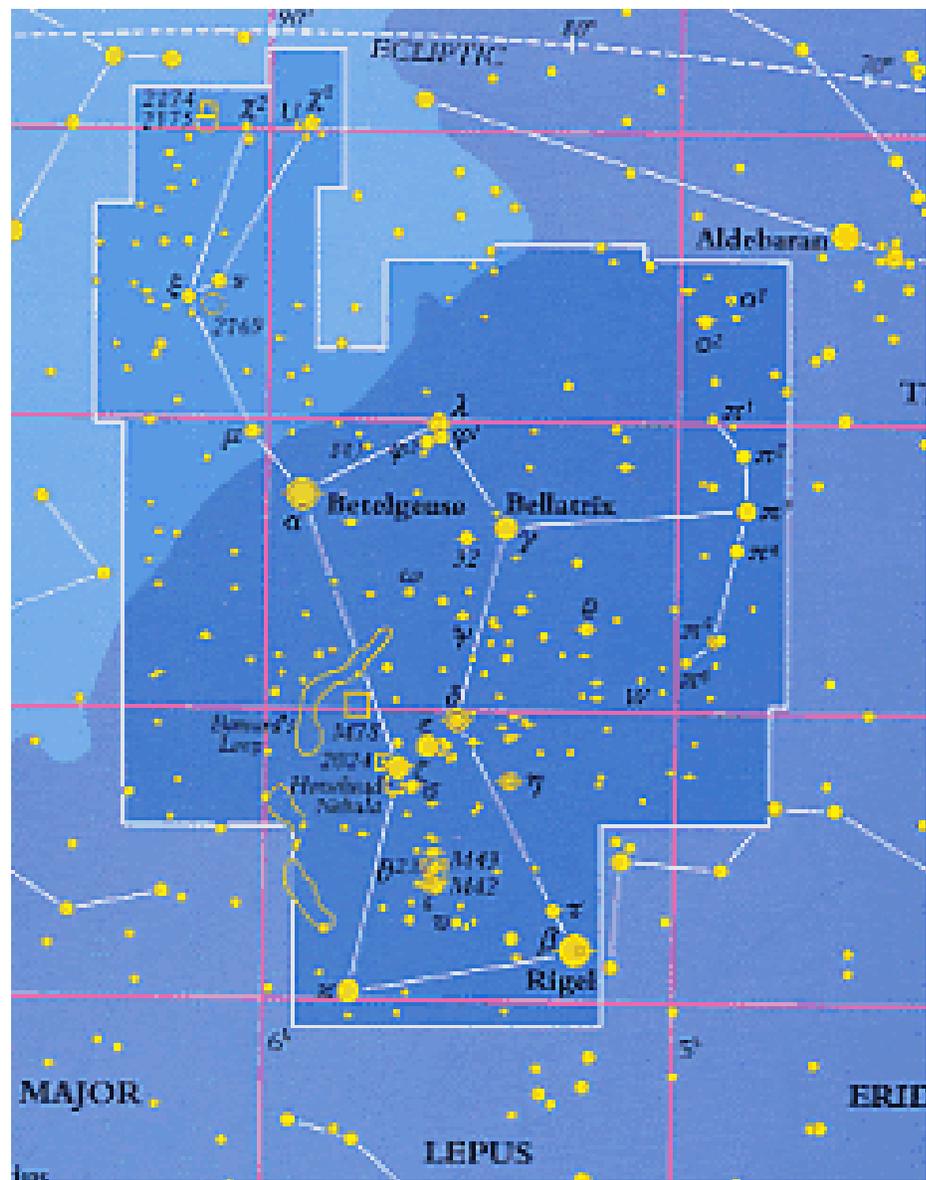
**Submission Deadline
December 17, 2003**

Welcome New Members

Richard F. Cameron

Russ Calvert

Vic Saker



Using a Laptop to Control a
Digital Camera/Video Surveillance/Web Camera
For Astrophotography
By
Lynn M. Laux

Before getting started, it should be said here that **the use of a laptop in the field is not necessary to achieve quality digital images of celestial objects**. In my case, however, I found that the use of simply a monitor connected to my camera did not improve my ability to focus the camera when attached to the telescope because adjustments in shutter speed, aperture, and focus usually meant disconnecting the camera from the telescope. Additionally, I found that some of the objects I was interested in photographing were too dim to be seen in either the LCD screen in order to achieve focus, or I could only view the result after taking the shot. If an adjustment in focus had to be made on a dim object, first I had to focus on a nearby, brighter object, slew the scope to the object I wanted to image, make sure it was centered in the field of view, attach the camera, then shoot (and hope for the best!) Since my telescope is a 5" achromatic refractor, on a GEM, with go-to capabilities, I did not want to manually move the scope (as this would cancel the scope's go-to computer capabilities), nor did I want to have the camera attached when I had the scope slew from the bright object back to the item I was interested in photographing.

I was sure that there was an alternative means of controlling my camera through my laptop, maintaining tracking and go-to control of my telescope, and viewing images real time as they were acquired. This document is for those who are interested in using their laptop to do just that.

Hardware

Basically the set up is my laptop connected to a video capture device, my camera, and a special RS232 cable capable of being connected to the hand controller of my telescope. This all seems simple enough... yet it represents weeks of research and trial and error to find the correct cables, adapters and software!!

Laptop

The laptop is a **Dell Inspiron 8100** with an Intel Pentium III 1200MHz processor with 256 MB of RAM. The RS232 port can be used for communicating with the Meade LXD55 5" Achromatic refractor. One of the USB ports has the red LED, everything else is connected through the Targus 4-port Ultra Mini USB port. When the **Targus Hub** is connected to the computer, and the computer is powered up, then this device is also powered up and ready to go.

The **iREZ USB Live! Video capture cable** plugs into the hub, and then the video out cable that came with the camera plugs into the iRez cable and into the video out port of the camera (either the Olympus **C-4040Z** or the **PC 164 C** video surveillance camera). The Phillips ToUCam Pro WebCam connects directly to the Targus 4-port Ultra-Mini USB port.

When using the Olympus camera controller software to change aperture settings, shutter speeds, or digital/optical focus settings, then the USB driver cable that also came with the camera is plugged into the USB hub as well. If it is more comfortable to use a cordless mouse, rather than the laptop scroll ball or pad, then this can also be installed into the USB hub. The laptop is powered with the Microsoft AC adapter that came with the computer.

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This in turn is connected to the **Power-2-GO DC to AC inverter** which is then connected to a **portable 12V battery pack**. I could have used the laptop's ability to run on its own batteries, but there is a limited amount of battery storage and I have found that when using a great deal of RAM and running two or more programs, these batteries tend to drain rather quickly. It is also an issue Dell has yet to resolve!! Rather than risk losing power in the middle of a photographic session, and thus losing any captured images, I prefer to have a reliable (and redundant) means of maintaining power. Powering up with this method means that I can also image at a remote site where there is no AC power available!

Camera(s)

I have the capability to use three different cameras. For digital still images, the **Olympus C-4040Z** is employed. For star parties and more samples the **Phillips ToUCam Pro WebCam** is utilized.

Additionally, although with less success, the **PC164C video surveillance** camera can also be connected.

The Olympus camera is connected to the telescope using an **Orion tele-extender**, with an eyepiece inserted into it. The eyepiece is connected to the camera using the **Digi-T adapter** and ring.

The Phillips ToUCam pro is connected to the telescope using an **Orion tele-extender**, with an eyepiece inserted into it. The eyepiece is connected to the camera using a **Mogg adapter** which replaces the front lens of the camera.

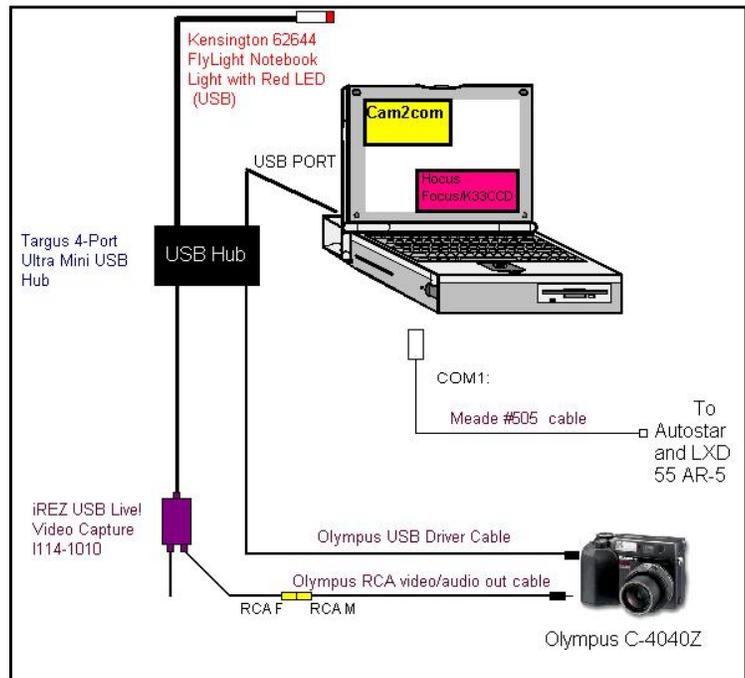
The **PC164C** is connected to the telescope using an **Orion variable T-adapter**. The eyepiece is inserted into that and the adapter is then connected to a **Celestron 93636 T-to-C 16 mm adapter** threaded onto the camera.

Software

The laptop is running Windows XP Pro. The advantage to this software is immediately apparent when installing new hardware or software.

Camera Control (for the Olympus)

Camera control is performed using the freeware program **Cam2Com** which controls Olympus digital cameras directly from the computer. It is based on the Olympus SDK 2.0 "Wheat" and SDK 3.0 "Rye" ActiveX controls, which allow a limited control over the camera, but still good enough for taking pictures. Different camera models may have a slightly different set of features controlled; it depends on how Olympus ActiveX controls work with those cameras, and if the feature is present in the camera (like zoom or LCD modes).



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Video Preview/Focus

Video preview is used mainly to focus and any video capture software that allows preview can be used for this purpose. I use either **Hocus Focus** or **K3CCDtools**. A modified version of the Phillips ToUCam Pro software called "VRecord" can also be used in place of K3CCD tools for the webcam.

Telescope control

Telescope control can be achieved using any software that has **ASCOM** support. ASCOM supports a variety of robotic telescopes and mounts. My personal favorite is **Starry Night Pro**, but there are a variety of planetarium programs such as **The Sky** and **Earth Centered Universe** which I have also used and liked. Generally though, I merely use the AutoStar controller database to choose the object I wish to view/image. Needless to say, polar alignment is critical for this mount!

At the ACA Observatory

I do most of my observing at the **Astronomy Club of Akron**. The observatory is located in Portage Lakes State Park near Akron, Ohio. The ACA Observatory houses a **12.5 inch F=8 Newtonian reflector telescope**. With its long focal length and large mirror it gives superb views of the moon, various planets, star clusters, and other objects in the heavens. The observatory also has a **Celestron C-11** which was donated to the club by Mrs. Lee Mayer in memory of her husband, the late Mr. Ernie Mayer. Mr. Ray Paul, ACA observatory director, had the idea to hook up a video surveillance camera to the C-11 in order to facilitate public views of "what is showing" in the large Newtonian, as one has to climb a ladder to view objects in the eyepiece of the club reflector. The video surveillance camera-to-TV monitor also has the added value of allowing those who can not or do not want to climb the ladder of seeing various objects on view. As of this writing, there is some fine tuning which must be done to get the telescope prepared for the vidcam, although the prognosis looks good for its use down the road.

Pieces and Parts

Irez USB Live New Edition USB Video Capture: approximately \$50

Linksys L03040 Power 2GO Inverter - Car Cigarette Lighter Power Supply: \$38

Targus 4-Port Ultra Mini USB Hub : \$21

Kensington 62644 FlyLight Notebook Light with Red LED (USB) : approximately \$20

Celestron adapter: \$27 - \$35

Orion tele-extendors: \$19.95 - \$39.95

Orion variable camera adapters: \$29.95 - \$39.95

Scopetronix Digi-T adapters: \$30 - \$110

Battery supply: \$39.99 - \$79.99

Carrying case: \$25 - \$27

Starry Night Pro: \$179.95 US

Other Useful Links

Astronomy Club of Akron <http://www.acao.org>

Video Astronomy with Surveillance Cameras <http://www.lafterhall.com/surveillancecameras.html>

Steve's Digicams <http://www.steves-digicams.com/digivideo.html>

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QuickCam and Unconventional Imaging Astronomy Group <http://www.qcuiag.co.uk>

Meade LXD 55 telescope group <http://groups.yahoo.com/group/LXD55telescopes>

Registax software <http://aberrator.astronomy.net/registax>

ImagesPlus! software <http://www.mlunsold.com>

Adirondack Video Astronomy <http://www.astrovid.com>

Meade Instruments Corporation <http://www.meade.com/support/auto.html>

Celestron International Corporation <http://celestron.com/>

Oceanside Photo and Telescope <http://www.optcorp.com/index.asp>

Acknowledgements

Many thanks to Ted Faix for his time, input, knowledge and support!

Universe Today

SLOAN BUILDS 3D MAP OF THE UNIVERSE

Astronomers from the Sloan Digital Sky Survey have gathered data to build a precise 3-dimensional map that details the clusters of galaxies and dark matter. The map includes images of 200,000 galaxies up to 2 billion light-years away, accounting for six percent of the sky. The SDSS team - 200 astronomers in 13 countries - measured the Universe to contain 70% dark energy (a mysterious force that repels galaxies apart), 25% dark matter, and 5% normal matter.

<http://www.sdss.org/sdss.html>

GIANT MIRROR ARRIVES AT NEW OBSERVATORY

The construction of the world's most powerful optical telescope took a significant step forward this week when the first of its huge mirrors was delivered. The Mount Graham International Observatory's Large Binocular Telescope will eventually have

twin 8.4 metre mirrors linked together, giving it an effective size of 11.8 metres. But the observatory will be able to view extremely faint objects as if it was 22.8 metres across - that's 10 times the resolving power of the Hubble Space Telescope. The observatory will be completed in 2005.

CONSTRUCTION ON ALMA RADIO TELESCOPE BEGINS
Workers in Chile broke ground today in the construction of the Atacama Large Millimeter Array (ALMA) - a giant radio telescope made up of 64 high-precision radio antennas. ALMA is scheduled to be completed in 2012, but radio astronomers will be able to start using it in 2007, when some of the antennas have been completed. Using interferometry, the radio signals from the individual 12-metre dishes will be combined to act like a single radio telescope 14 kilometres across.

NEW DARK MATTER DETECTORS

Astronomers don't know what

Dark Matter is, but they can see the effect of its gravity on regular matter. One possibility is that it's regular matter, but isn't emitting enough light for us to see. Another idea is that Dark Matter is an exotic form of matter that's much more massive than regular particles, but interact so weakly that they're almost impossible to detect. Researchers with the Cryogenic Dark Matter Search II have set up a series of detectors in an old iron mine in Minnesota that's shielded from cosmic radiation and might sense these particles.

GAMMA RAY MAP OF THE MILKY WAY

The European Space Agency's Integral gamma-ray observatory has produced a new map of the Milky Way in the gamma-ray spectrum.

<http://www.esa.int/export/esaCP/index.html>

More information at <http://www.universetoday.com/>

2003 Leonids

By Jeff Hudson

The 2003 Leonid Meteor Shower is predicted to be an unusual double meteor shower and will peak over parts of Asia and North America, next month.

The first shower is expected on Nov. 13th around 17:17 UT. For about three hours centered on that time Earth will be close to some dust shed by Tempel-Tuttle in the year 1499. Sky watchers in Alaska, Hawaii and along the Pacific rim of Asia are favored. There will be anywhere from a few to 40 meteors per hour.

The second shower is expected on Nov. 19th around around 07:28 UT (2:28 a.m. EST), when Earth approaches a trail shed in 1533. Sky watchers up and down the US east coast are favored for this visit. There could be more than one meteor per minute.

Both visits are caused by comet Tempel-Tuttle, which swings through the inner solar system every 33 years. With each visit the comet leaves behind a trail of dusty debris. The comet's old trails litter the mid-November part of Earth's orbit, thus causing our yearly meteor showers.

The moon will be at third quarter, so fainter meteors will be washed out, but the brighter ones will still streak across the sky for everyone to see.

Watch for meteors after midnight as the constellation Leo gets higher in the east. The higher Leo is above the horizon, the more meteors will appear all over the sky. Regulus can serve as a marker for the Leonids.

More information about meteor showers is available from the American Meteor Society at <http://www.amsmeteors.org/showers.html>.

Reminder

Thomas A. Dobbins Contributing Editor for SKY & TELESCOPE will be speaking at the November 28 meeting of the Wilderness Center Astronomy Club in Wilmot. His topic will be "Adventurers in Webcamming".

The talk will be at 7:30, and will be free - but donations will be accepted.

If you need directions, go to <http://www.twcac.org/Store/map.htm>.

The TWCAC observatory is located at 9877 Alabama Ave., Wilmot OH 44689.

Planets

By Jeff Hudson

Mars will appear high in the south-southeast as the sun sets during November, fading but still a bright yellow-orange that stands out clearly in that part of the sky.

Venus will be visible about a half hour after sunset, much brighter than Mars but still very low in the southwest. Venus will increase in altitude as the month advances, and it will be prominent in the evening sky by December.

After you locate Venus, use binoculars to find Mercury to the lower right of Venus. You will need a good view of the southwestern horizon. Both Venus and Mercury will be gone an hour or so after sunset.

Saturn will rise in the east-northeast around 9 p.m. in early November and two hours earlier by month's end. The planet will be easy to spot in the constellation of Gemini.

Jupiter will rise nearly five hours after Saturn, brighter than every planet except Venus. Jupiter will be high in the southeast by the start of morning twilight.