



The Observer

May 2012 (#31)

Schedule of public programs on last page!

HEAVENS CONSPIRE TO BLOCK SETTING SUNS!!

OK, so that's a bit of a silly exaggeration. But, at two times in three weeks two rare events will occur in which a heavenly body blocks the Sun — at least partially.

The Eclipse...

The first will be on Sunday, May 20, when the moon blocks the sun — a **partial solar eclipse**. The eclipse will begin at 8:25 P.M. (Eastern Daylight Time). The sun sets at 8:50 P.M. on the 20th, so the eclipse is going to be very slight, and very brief. However, it will occur during Sunset, so it will be very “cool”. If you have a view of the sunset over a clear, relatively flat horizon, you should get to watch a setting, partially eclipsed sun.

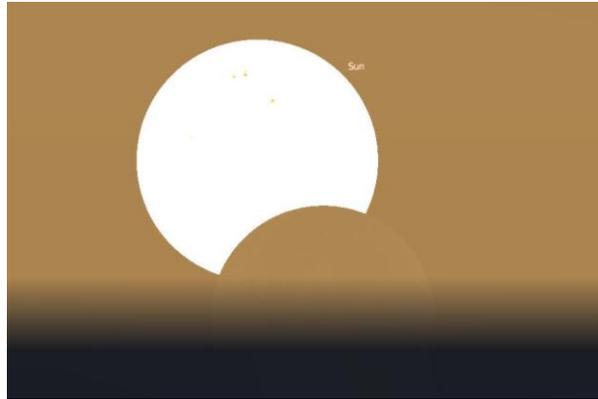


Simulation of the eclipsed sun on May 20 as seen from Louisville, showing the sun's appearance at about 8:30 P.M. (produced using the *Stellarium* planetarium software package).



www.jefferson.kctcs.edu/observatory

Use reasonable precautions when watching the eclipse. Staring at the sun is definitely not good for your eyes. On the other hand, the sun is setting, and during sunset the light from the sun has to pass through a lot of air, which renders the sun much easier to look at, and makes it look golden-red and quite pretty. Because sunsets are pretty, people watch them all the time. Because the air diminishes the sun's light at sunset, people usually watch sunsets with no ill effects. Watching this eclipse will be no harder on your eyes than watching any other sunset, but just like watching the sunset, use some sense — don't stare; don't watch if it bothers your eyes. Do not use binoculars, a telescope, or another optical instrument that intensifies the light from the sun to watch the eclipse, unless you have a safe solar filter for that instrument. If you want a very safe method to watch the eclipse, buy a pair of cheap solar filter glasses, a piece of shade 14 welder's glass, or make a pinhole eclipse viewer.



Simulation showing the appearance of the sun while it is setting. Note how the moon has noticeably covered more of the sun in less than half an hour.

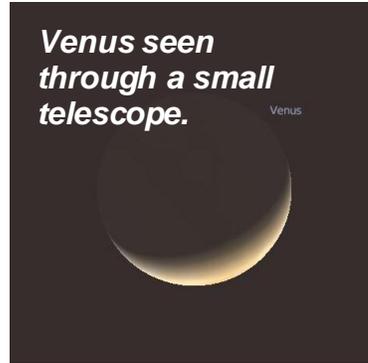
People living further to the west will see more eclipse. The western U.S. and the Pacific region will see a spectacular annular eclipse (somewhat like the photo at right) as the moon moves directly in front of the sun. However, we will have to be happy with our cool little sunset partial eclipse.



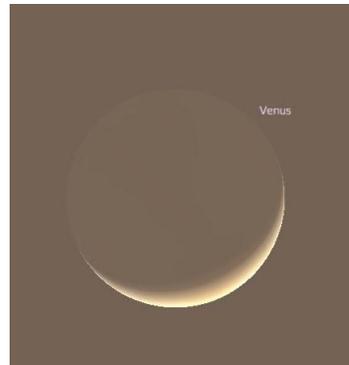
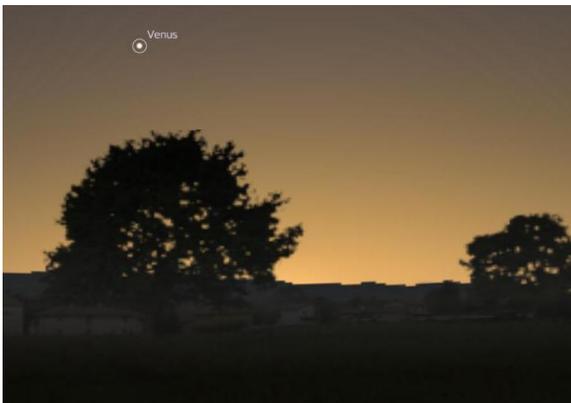
The Transit...

So the moon passes between Earth and the sun on May 20, but then on June 5 the planet **Venus** passes between Earth and the sun in an event that is known as a **transit**.

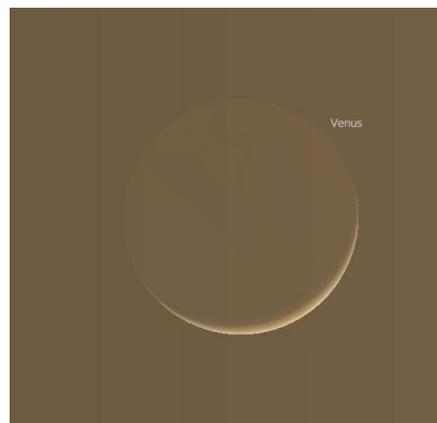
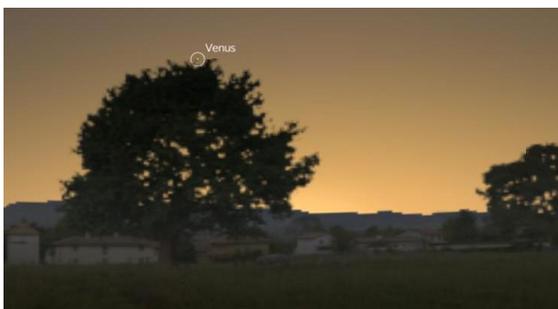
If you have been watching the western sky after sunset this Spring, you have seen Venus rise high in the sky above the sun (see the January 2012 *Observer#30* newsletter). Recently Venus has begun sinking back toward the sun. It is starting to pass between Earth and the sun. If you have a telescope, you can watch Venus grow nearer and watch the portion of it that is illuminated (Venus's *phase*) change — almost from night to night, definitely from week to week — as shown below.



May 11



May 18



May 24

Usually Venus does not pass directly between the Earth and sun (passing rather a little above or below the Earth-sun line), but this time it does, and it does it on June 5. Venus transits come in pairs — the last one was in June 2004, and the next two will be in December 2117 and December 2125! Venus transits are truly rare events! The transit will begin at 6:04 P.M. (Eastern Daylight Time) and will continue until the sun sets.

If you want to watch the transit you will need a telescope with a safe filter, or binoculars that can project an image of the sun, or some other such safe method. If you are not familiar with such equipment, transit showings are being held at the Rauch planetarium in Louisville and the Falls of the Ohio State Park in Clarksville (across the river from downtown Louisville). The information here is from these respective organizations' web sites.

Rauch Planetarium (Louisville) *“4:00 PM - 7:00 PM*

Family fun for all!

Register to win a FREE TELESCOPE and other prizes including a one-year subscription to Astronomy Day Magazine. View the RARE transit of Venus in the dome.”

**Falls of the Ohio State Park
(Clarksville – across the river
from downtown Louisville)**

*Venus Transit of the Sun
June 5, 2012 from 6:00 p.m. to sunset*

Meet us at the front of the Interpretive Center for a program we can't offer again for another 105 years! Venus will pass between the Sun and the Earth and appear as a silhouette. This observation event is a partnership with the Louisville Astronomical Society and the Gheens Science Hall and Rauch Planetarium. Telescopes with safe solar filters will be on hand to observe this rare astronomical event.

\$2 pay-to-park fee applies, but there is no other fee to observe.

You may be able to see the transit at sunset without equipment, keeping in mind the precautions mentioned previously for watching the eclipse at sunset.

The diagram below, from NASA, shows how the transit will progress, and also shows the size Venus will appear compared to the sun. Note that all times in this diagram are in “universal time” or U.T. Subtract 4 hours to get the times in Eastern Daylight Time. The sun will set before the transit is over.

FIGURE 2
Transit of Venus of 2012 June 05/06

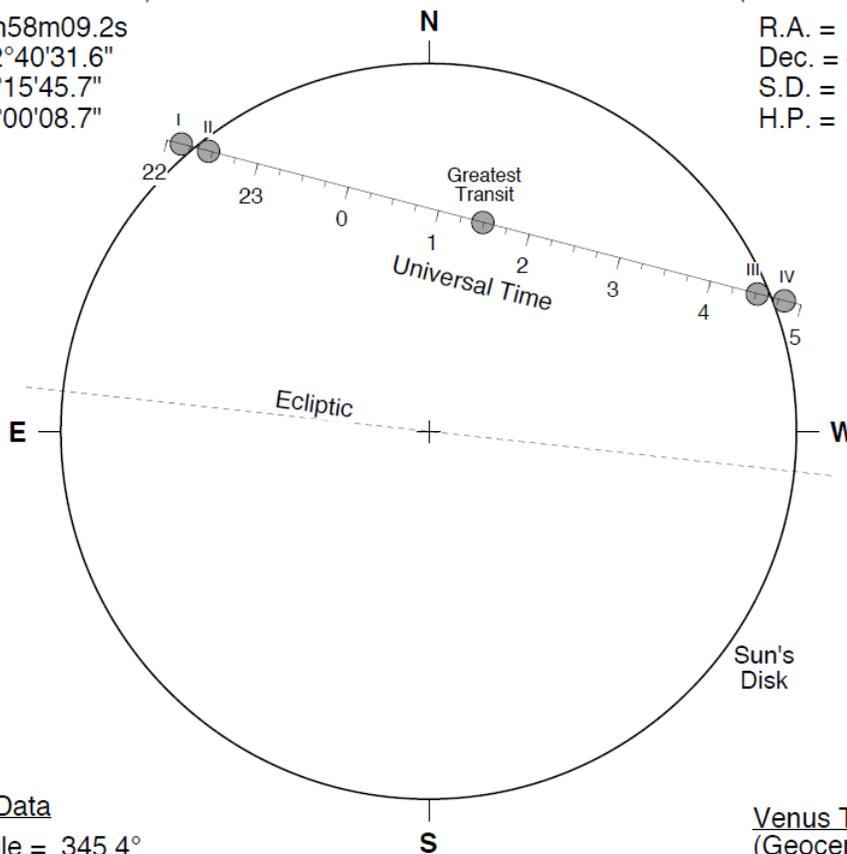
Greatest Transit = 01:29:36.3 UT J.D. = 2456084.562225

Sun at Greatest Transit
 (Geocentric Coordinates)

R.A. = 04h58m09.2s
 Dec. = +22°40'31.6"
 S.D. = 00°15'45.7"
 H.P. = 00°00'08.7"

Venus at Greatest Transit
 (Geocentric Coordinates)

R.A. = 04h57m58.8s
 Dec. = +22°49'25.9"
 S.D. = 00°00'28.9"
 H.P. = 00°00'30.5"



Geocentric Data

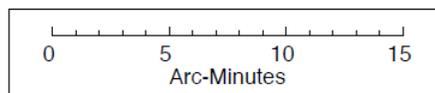
Position Angle = 345.4°
 Separation = 554.4"
 Duration = 06h40m

Ephemeris Data

Eph. = VSOP87
 $\Delta T = 66.7$ s

Venus Transit Contacts
 (Geocentric Coordinates)

I = 22:09:38 UT
 II = 22:27:34 UT
 Greatest = 01:29:36 UT
 III = 04:31:39 UT
 IV = 04:49:35 UT



F. Espenak, NASA's GSFC - 2011 Jun
eclipse.gsfc.nasa.gov/OH/transit12.html

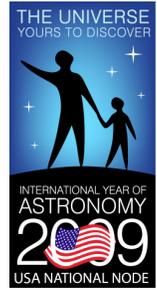


Jefferson



Community & Technical College

HIGHER EDUCATION BEGINS HERE



2012 Schedule

South Harrison Park Observatory Events

Nighttime Programs

Jan 21	6:30pm to 8:30pm
Feb 18	7:00pm to 9:00pm
Mar 17	8:30pm to 10:30pm
April 14	9:00pm to 11:00pm
May 5	9:30pm to 11:30pm
June 2	9:30pm to 11:30pm
July 7	9:30pm to 11:30 pm
Aug 4	9:30pm to 11:30pm
Sept 1	8:30pm to 10:30pm
Sept 29	8:00pm to 10:00pm
Oct 27	7:30pm to 9:30pm
Dec 1	6:30pm to 8:30pm

Daytime Programs:

Feb 4	11:00am to 1:00 pm
Mar 3	11:00am to 1:00pm
Mar 31	11:00am to 1:00pm
April 28	11:00am to 1:00pm
May 26	11:00am to 1:00pm
June 23	11:00am to 1:00pm
July 21	11:00am to 1:00pm
Aug 18	11:00am to 1:00pm
Sept 15	11:00am to 1:00pm
Oct 13	11:00am to 1:00pm
Nov 10	11:00am to 1:00pm
Dec 15	11:00am to 1:00pm

All programs at South Harrison Park are open rain or shine.

Daytime programs allow you to safely view the Sun using solar filters.

Nighttime programs allow you to view the Moon, Stars, Planets, and more.

The facility is handicapped accessible and we feature a video display system for cloudy days and/or nights.

Contacts: Park Astronomer – Henry Sipes Home 270-828-6191
Cell 270-668-2103
Harrison County Park Office – 812-738-8236

Websites: <http://www.harrisoncoparks.com/Observatory.html>
<http://www.jefferson.kctcs.edu/observatory/>
<http://astronomy2009.us/>

