

## What is a transit of Venus?

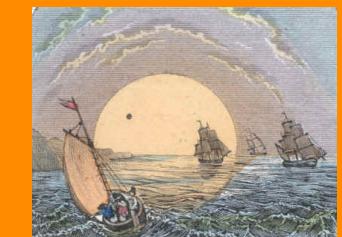
When Venus passes directly between earth and the sun, we see the distant planet as a small dot gliding slowly across the face of the sun. Historically, this rare alignment is how we measured the size of our solar system. The view is like a front row seat to the transit method, by which we now find planets around distant stars.

## When is it?

Observers in North America see Venus on June 5 around 6:04 p.m. EDT until sunset. The entire transit lasts over six hours. This will be the last transit of Venus to occur in your lifetime. Next chance: December 2117.

## What should I do?

Mark your calendar. Plan your observing location and eye safety. Tell friends. Download and support the ToV phone app. Enjoy the rare sight!



QUICK TIP: For map with transit times at your location, see [Transit of Venus Project](#).

### Phone App

New technologies, like the [free Transit of Venus phone app](#), will allow individuals to send their observations of the 2012 transit of Venus to a global experiment to measure the size of the solar system. Join this unique effort, spearheaded by the non-profit [Astronomers Without Borders](#), as a supporter and a participant.

- Download [free iOS app](#).
- Download [free Android app](#).

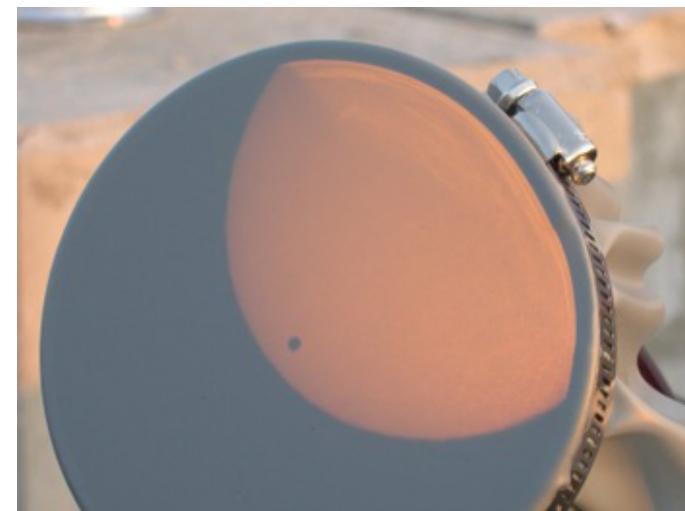
### Where to Be (and When)

#### 2012 Transit of Venus global visibility map

(Click map for PDF version.)

Much of the world can witness the 2012 transit of Venus. The date depends on what side of the International Dateline you will be observing. Observers in North America will see the transit in the evening on June 5, 2012, through sunset, so you want to have a clear western horizon.

### Safely See the Transit

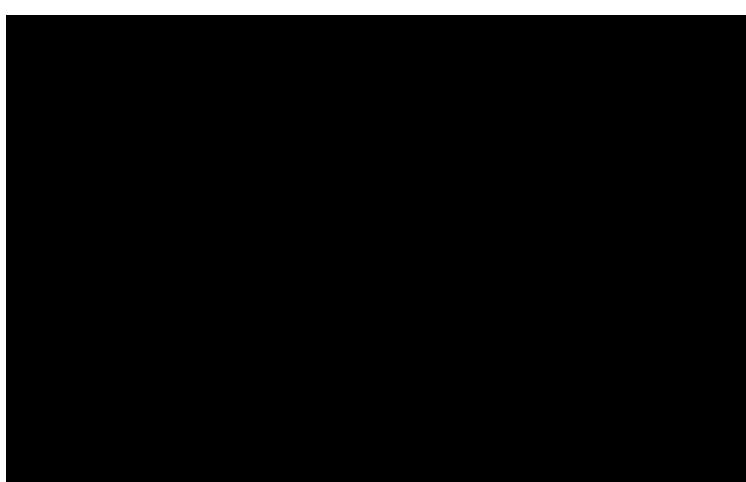


Protect your eyes. There are several safe ways to watch Venus transit the sun.

- Rear projection screen
- Solar filtered telescope
- Disposable "eclipse shades"
- Live webcast
- More

[Read More](#)

### 4-Minute Summary



Animation and visual effects by Patrick McPike.

[More Videos](#)

### Rare Alignment

### Midwest Treasure: TROVE

## TRANSIT VENUS

midwest treasure: TROVE

Art exhibits, family activities, a bus tour, historic artifacts, lectures, webcasts, telescope viewing, and more complement the visual spectacle near the Michigan-Indiana border. Join this hub of transit of Venus activity in Michiana to celebrate the math, science, history, and art of the celestial phenomenon. Telescopes set up for safe

### Latest News

- ⌚ [Time to Set Sail](#)
- ⌚ [What if it's cloudy?](#)
- ⌚ [You Can Learn a Lot From a Dot](#)
- ⌚ [Can I Use Welding Glass to View the Sun?](#)
- ⌚ [Transit of Venus in Pastel](#)
- ⌚ [Time Keg Seeks Your Imprint](#)
- ⌚ [Artifacts at Harris Branch Library in Granger, IN](#)
- ⌚ [Pizza Transit](#)
- ⌚ [Arise, Ye Artists, For Ale and Astronomy](#)
- ⌚ [TROVE Adventure](#)

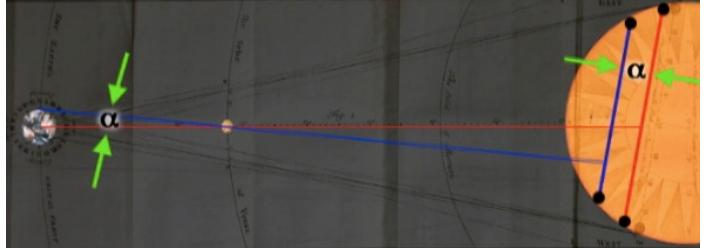


A transit of Venus occurs when Venus passes directly between the sun and earth. This alignment is rare, coming in pairs that are eight years apart but separated by over a century.

The most recent transit of Venus was a thrilling sight in 2004. After the June 2012 transit of Venus (the last one in your lifetime), the next such alignment occurs in 2117.

[Read More](#)

## Global Expeditions



Observers from two locations on earth see two distinct paths (red and blue) of Venus across the sun. The slight difference in times Venus takes, moving from edge to edge, can mathematically unlock the distance from earth to the sun, and thus the size of our solar system.

Edmund Halley admonished nations to send expeditions around the globe to time future transits of Venus across the sun. For 17th & 18th century transits, intrepid explorers challenged both the risks and the frustrations to answer a leading question of mankind. Not all of them made the voyage back home.

[Read More History](#)

## 2012 Doomsday & Solar System Alignment

### INCLUDES 2012 SURVIVAL GUIDE

Perhaps you have heard the suggestion that an alignment of earth and the sun is contributing to a doomsday scenario in 2012. When the page turns for the old Maya calendar and the solar system is aligned somehow, the world is supposed to end. In fact, **there is a significant alignment of planets in 2012** that much of the world will be watching.

[Read More](#)

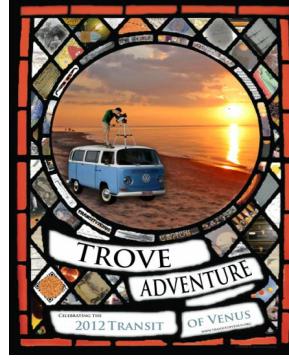
## Time to Set Sail

When reflecting on his transit of Venus experience in 1639, Jeremiah Horrocks wrote that he wanted to tell more people about the imminent celestial event but was hindered by two things. First, he wished he had had more time. Don't we all--a little more time to tell a few more people who might appreciate knowing about this rare Sun-Venus-Earth alignment. It was as if Horrocks sensed having privileged information about the workings of the firmament that he wanted to share.

Second, Horrocks lamented that he had to compete with sports. In *Venus in Sole Visa* he wrote, "I hope to be excused for not informing other of my friends of the expected

public observing:

- PHM Digital Video Theater (former Planetarium) in Mishawaka, IN ([map](#))
- Jordan Hall of Science on the campus of University of Notre Dame ([map](#))
- LaSalle Intermediate Academy in South Bend, IN ([map](#))
- New Carlisle Public Library, New Carlisle, IN ([map](#))
- Warren Dunes State Park, Sawyer, MI ([map](#))
- Andrews University on top of Price Hall ([map](#))

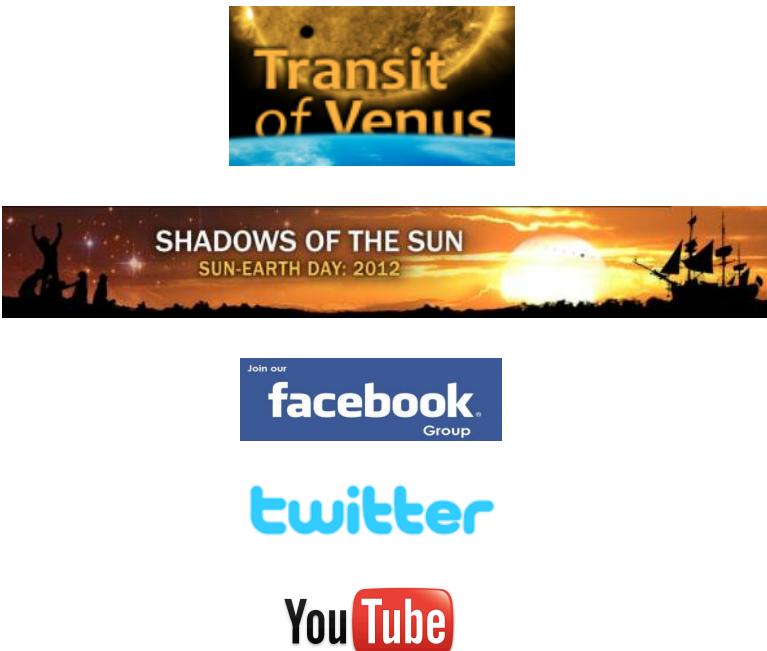


Finish with a [live Slooh webcast](#) from The Livery microbrewery at 11:00 p.m. EDT in Benton Harbor, MI.

[Click for brochure of events.](#)

[Read More TROVE](#)

## Recommended Links



## Mystery of "Black Drop"

Just before or after the circular black dot of Venus seems to touch the edge of the sun, a peculiar "black drop effect" sometimes occurs between the contact points. A ligament of darkness smears the juncture of Venus and the sun.

You can see a similar anomaly if you almost pinch your thumb and forefinger together. Just before you sense contact, a black feature spans your two digits.

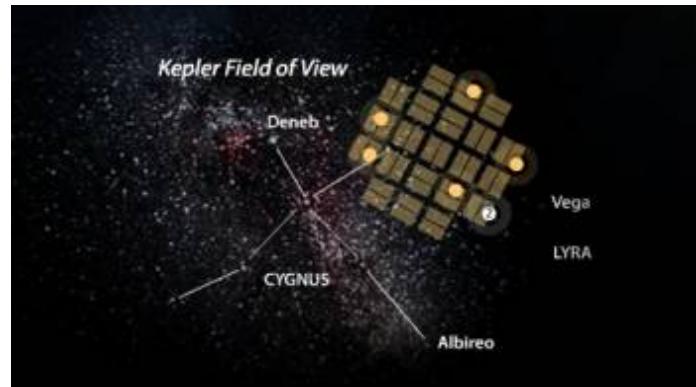


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[AstroFest in South Bend on April 28](#)

[Exclusive Tour of Transit Highlights](#)

## Transits: Leading the Hunt



Once again, transits are on the leading edge of new discoveries. The NASA Kepler mission and others are using the transit method to find habitable planets around distant stars. The Kepler spacecraft monitors over 150,000 stars, looking for periodic dips in their light curves which reveal the presence of companion planets. You, too, can join this quest for new worlds.

[Read More](#)

## Get Your Gear

T-shirts and gear from supporters of Transit of Venus outreach efforts.



[Taylor Design](#)



[Patrick McPike](#)



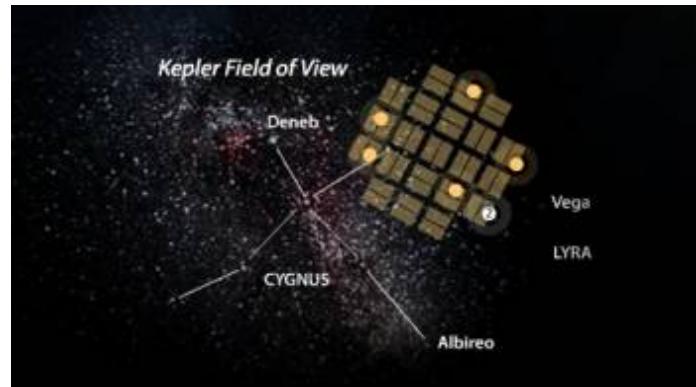
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## Your Perspective



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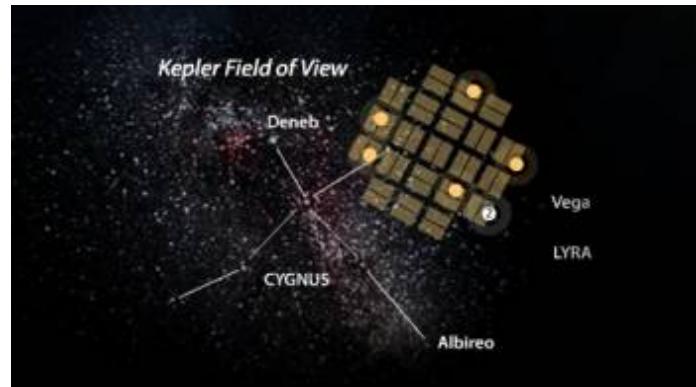


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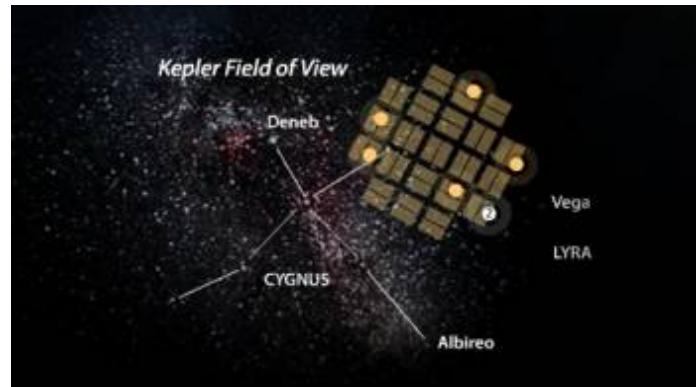


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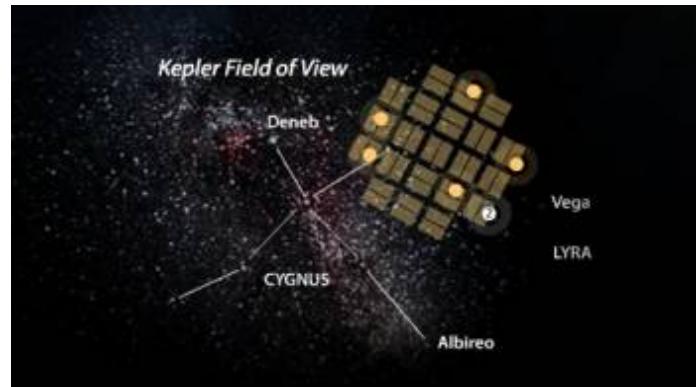


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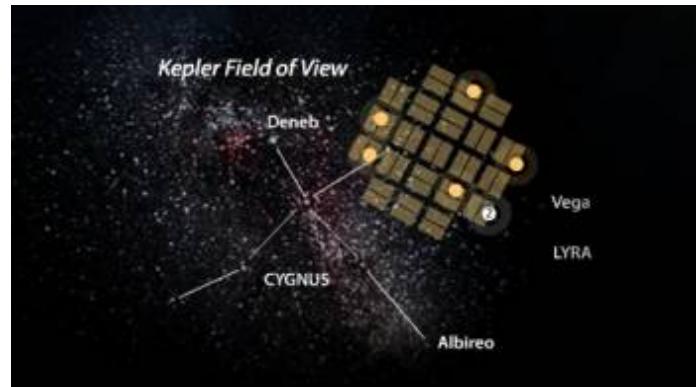


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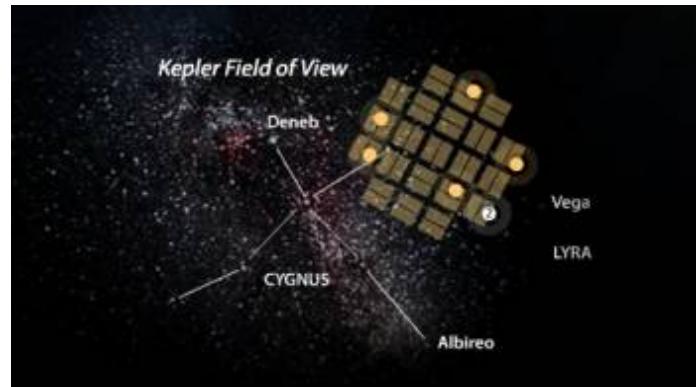


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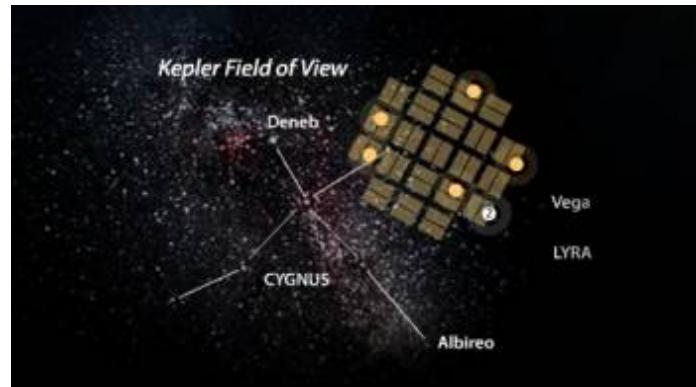


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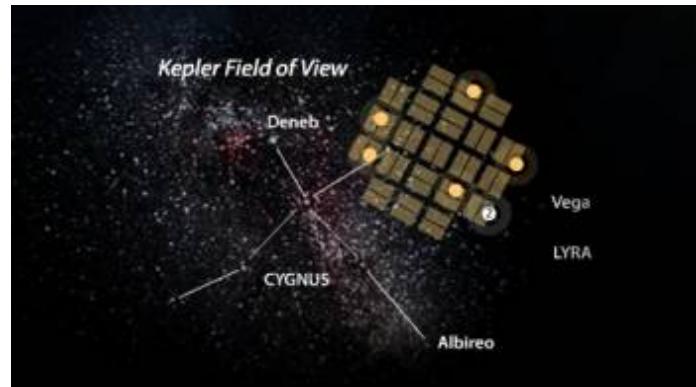


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## Get Your Gear



phenomenon, but most of them care little for trifles of this kind, preferring rather their hawks and their hounds." As I have said in [my stump speech](#) in the past few months, we are still competing with those hawks and hounds. I sympathize with Horrocks and share his sentiment.

If we as a nation want to prosper through math and science, then we need to celebrate math and science in action. The 2012 transit of Venus is a celebration of our ability to understand our place in the cosmos. We say we want to have a nation of critical thinkers capable of making informed decisions. So let's take that first step of science and observe. Witness nothing less than the solar system in motion, and extrapolate the passing of a planet in front of our star to the distant points of light in our night sky.

As we on earth get ready to watch the 2012 transit of Venus, [astronaut Don Pettit has been preparing](#) to capture the experience from his perch on the International Space Station (ISS). With great zeal, Pettit has undertaken a personal mission to photograph the transit on his own time, apart from the official ISS timeline. Pettit's story is just one of the many that I wish I had time to convey, but I've run out of earthly rotations to do it full justice.

Even if I were given the time, I'd only find more items to overload my calendar. Consider a small sampling of recent others waiting to be told... Irvin Stanley was an assistant photographer to the Kerguelen Island and Patagonia expeditions of the US Naval Observatory who twice

committed to the rigors and travails of shipboard travel, a huge tradition itself in the transit of Venus narrative. I wanted to write more about Stanley. I wish I'd had more time to promote the program celebrating the [transit of Venus in Timor-Leste](#). I just saw this [fabulous plate](#) from observations in Guadalajara, Mexico, courtesy of Durruty Jesús de Alba Martínez. I would like to learn about the [1769 Transit of Venus Observatory in Lewes, Delaware](#). I wish I could have delivered a sample of beer to the Transit of Venus Real Ale Competition coordinated by [David Henckel](#). These are just a handful of the stories told by and about people inspired by the transit of Venus.

We're on the cusp of the [last transit of Venus in the 21st century](#), a celestial happenstance that could be that singular event in a young person's life that inspires them to look deeper into some natural wonder. I hope our efforts have produced fertile ground to nurture such notions. I'd like to wax poetic about the transit of Venus and its implications for us who are fortunate enough to experience it, but time and the planets march on.

If you are in northern Indiana, I invite you to join the [TROVE celebration](#) with me. I'll be at Bittersweet School in Mishawaka, IN, through first and second contacts before heading to Warren Dunes State Park in Sawyer, Michigan. There I want to watch the sun set over Lake Michigan, reminiscent of the iconic Nitzschke image with sailing ships on the horizon, shown above. Afterward, we head to The Livery microbrewery in Benton Harbor, MI, to close out this subtle yet sublime spectacle. You can follow our celebration there at 11:00 p.m. EDT on the live [Slooh broadcast](#). Just before midnight, the ISS soars nearly overhead.

It's time for this ship to set sail. Thanks to all who have been so supportive, a tome unto itself. See you on the other side.

## What if it's cloudy?

Yes, a thwarted view would be disappointing, but there are options and anecdotes to calm your agitated soul.



If your observing site's weather may be marginal, consider traveling to the [TROVE celebration](#) near the Michigan-Indiana border. Multiple attractions will insure a memorable 2012 Transit of Venus experience. Immerse yourself in art exhibits, historical displays, planetarium programs, webcasts, public lectures, and even a Transit of Venus specialty beer! At the fourth contact we will seal a [Transit of Venus Time Keg](#), to be opened when the next transit of Venus pair approaches in 2117 and 2125.

If it's cloudy, you can still experience the transit of Venus in real time. Complement your transit of Venus experience with views and commentary that are broadcast from around the world, including a live webcast from [NASA EDGE](#) or from [SLOOH](#). For more featured destinations, see [Where to Be](#), or find a Sun-Earth Day Event Location through the [interactive NASA map](#).



There is plenty of historical precedence for disappointment because of the vagaries of weather, but, hey, that's the nature of studying nature. Many global expeditions outright failed due to poor weather. Consider Henry A. Severn, pictured in New Zealand. The [article](#) notes, "Mr. Severn's very complete and skilful arrangements were unfortunately defeated by cloudy weather occurring at the time of the transit. Our readers will probably find it easier to sympathise with his disappointment than to realise his feelings on seeing the labour and preparation of years thus rendered useless by circumstances far beyond his own control. Well might he exclaim, 'L'homme propose--Dieu dispose.'"

You can still get value out of the transit of Venus experience even if clouds disappoint,

[Read more: What if it's cloudy?](#)

## Exclusive Tour of Transit Highlights



Looking to maximize your transit of Venus experience in the United States? Then get a cushy seat on the [Transit of Venus Tour](#) of highlights in Indiana and Michigan on June 5, 2012. Not only will the tour complement telescope time during three hours of the solar spectacle's visibility, it also is a stand-alone winner if cloudy weather prevails that afternoon. The June 5 itinerary includes the following attractions:

- Full dome digital video about the transit of Venus.
- Personal introduction to Transit of Venus and safe viewing techniques.
- Transit of Venus in Pastel art exhibit.
- Historical artifacts on display, with emphasis on USNO expedition photographer from Indiana.
- Live program at Notre Dame Digital Visualization Theater.
- NASA webcast from Hawaii.
- Telescope observing of first and second contacts of Venus against the sun.
- Sunset with the transit underway, while overlooking beautiful Lake Michigan.
- TROVE Art Exhibit



- Venusian ale at The Livery microbrewery
- Transit of Venus send-off party with live music and camaraderie of ToV enthusiasts.
- Round-trip transportation on exclusive motor coach.

Tour is limited to 36 adventurers, and seats are filling up. The trip includes box lunch, solar shades, gratuities, Signal Travel escort, and some transit of Venus goodies. Cost is \$80.00 per person, with an early bird special if you book by May 1, 2012. See details and sign up now at <http://www.signaltravel.com/groups/pdf/venus2012.pdf>. You may also contact Signal Travel at 1-800-811-1522 or visit <http://www.signaltravel.com/groups/>.

## Artifacts at Harris Branch Library in Granger, IN



An exhibit of Transit of Venus artifacts and information is open to the public at the [Harris Branch Library](#) in Granger, IN, with a portion of the display offering a glimpse into the US Naval Observatory expeditions from the perspective of Assistant Photographer Irvin Stanley of Indiana. This is the first of two main exhibits in the region, with a second set of display cases to feature the transit of Venus theme on the campus of Notre Dame. Concurrently, individual historical artifacts are distributed locally at businesses and institutions as part of the [TROVE Adventure](#) treasure hunt.



The display in the left of the foyer as you enter will remain in place through May, whereas the exhibit on the right with the Irvin Stanley content will remain in place through the June 5 transit of Venus. The library, which also hosts the Transit of Venus in Pastels art exhibit, is one of the stops on the exclusive [Transit of Venus motor coach tour](#) on June 5.

[Read more: Artifacts at Harris Branch Library in Granger, IN](#)

## TROVE Adventure

### Join the Hunt for Treasure!

Collect 10 keywords and earn solar shades for your whole family!

[Note: though the opportunity to get free solar shades ended May 31, artifacts remain on display until after the June 5 transit of Venus. See [TROVE Adventure](#) map for the list of sites.]



The Transit of Venus (TROVE) Adventure is a treasure hunt to learn about the June 5 phenomenon and to be rewarded with protective eyewear that allows you to [view safely](#) the solar spectacle. Each participating site has a keyword and an exhibit with information relating to the Transit of Venus. Visit at least ten [sites](#) and collect the keywords. Answer as many [questions](#) as you can from the information at those sites. Once you finish, bring your list of answers and keywords to one of the three drop-off sites below by Thursday, [May 31](#), to receive solar shades for your family.

Notre Dame Community Relations  
217 South Michigan Street  
South Bend, IN 46601

Victorian Pantry  
226 West Cleveland Road  
Granger, IN 46530

Glance Eyewear Gallery  
7220 Heritage Square Drive, Ste. 560  
Granger, IN 46530

[View TROVE Adventure](#) in a larger map with list of sites

Here are the treasure hunting tools you need to find Keywords at each site:



1. Map of the TROVE Adventure treasure hunting grounds in Michiana:  
<http://maps.google.com/maps/ms?msa=0&msid=215418242007555476727.0004bc9e436b7aacea6c>
2. List of [participating TROVE Adventure sites](#) with space for you to write each Keyword.
3. List of [questions](#) that can be answered from clues at the sites.

Good luck, treasure seekers!

## More Articles...

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- [Eye Safety Warning](#)
- [Can I Use Welding Glass to View the Sun?](#)
- [Black Drop Effect Bistro Coffee](#)
- [Planetarian](#)
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 Google's *Zeitgeist* feature rated the 2004 Transit of Venus as the world's **#1 Most Popular Event** for all of June 2004! The 2012 transit of Venus is the last one in the 21st century--not seen again until 2117. You don't want to miss this rare dance of the planets!

#### We Recommend



#### Keep us posted.

Let us know what needs to be told.  
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articles and web links.

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