The Prairie Astronomer

October, 2011 Volume 52, Issue #10

The Official Newsletter of the Prairie Astronomy Club

October Program

Where Are We Going … And Can We Get There

By Jack Dunn

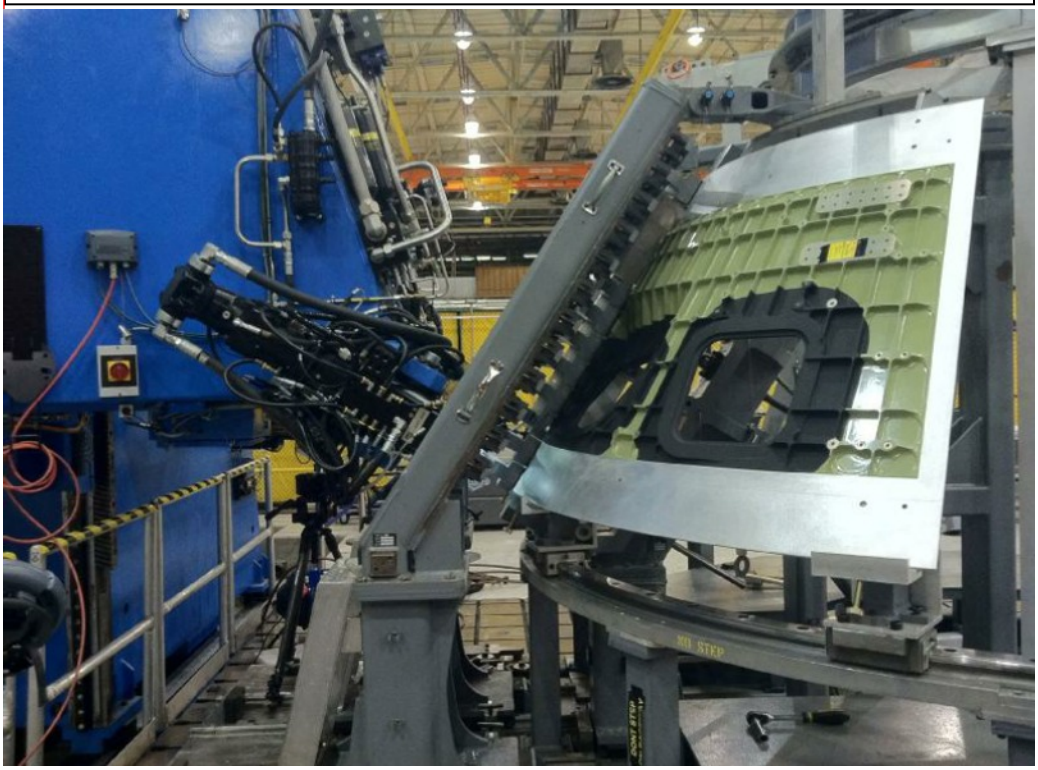
Jack Dunn will provide a description of where we are in human spaceflight with the end of the Shuttle program. Does NASA have a real vision for exploration or even low-orbit activities? What role will private companies play in getting humans into space?

In This Issue:

Construction on the first space-bound Orion Multi-Purpose Crew Module began with the first weld at the Michoud Assembly Facility on Sept. 9. 2011. This capsule will be used during Orion's first test flight in space. After welding is completed at Michoud, the Orion spacecraft orbital test article will be shipped to NASA's Kennedy Space Center, where the heat shield will be installed. At Kennedy, it will undergo final assembly and checkout operations for eventual flight.

Credit: NASA

Featured Photo



Meeting Minutes - Secretary Dale Bazan

Prairie Astronomy Club Meeting September 27, 2011

Dan Delzell called meeting to order at 7:31 PM
-28 people in attendance (24 adults, 4 children)

-Welcomed members and visitors, and announced program "Making Telescopes" by Brian Sivill. There was one visitor at the meeting.

-Next meeting Tuesday October 25th, 7:30. Program will be "Where We're Going" and update on NASA by Jack Dunn

Upcoming Events
-October 22: Howling Halloween at Homestead National Monument = Contact Kris Gainsforth to participate

Observing Report by Jim Kvasnicka
August 26th – One telescope/one member
Sept 2 Clouds & Storms

September 23 - Five scopes/members
September 30 – Star Party at the Farm
October 7 – Lunar Party at Jim's House 6300 Rebel Drive

Evening Planets
Venus – low in wet after sunset; -3.9 magnitude
Mercury – last week of October

Night Planets
Jupiter – half hour after sunset to start October; Mag -2.9
Uranus and Neptune – Both rise before midnight in Pisces and Aquarius

Morning Planets
Mars – will be in middle of M44; rises between 1 and 2 AM
Saturn – will rise about 1.5 hours before the Sun at end of October

Messier List
M11, M16, M17, M18/25/26 ,M24, M55, M75

Non Messier Objects
NGC 457, NGC 752, MGC 869/884, NGC 891, NGC 7009, NGC 7331

Observing Clubs
- Comet Observers Club
    - Silver Level – observe 12 different comets
    - Gold Level – observe an additional 18 comets (Total 30)
    - Name, email address,
    - Date and time of observation
    - Official designation of the comet and name
    - Telescope and magnification
    - At least 2 sketches of comet
    -Submit to Jim Kvasnicka
- No PAC members have received the Comet Observers Club award

Club Business
-Hyde volunteers are needed. Had a few after last meeting, but need more. Have enjoyed large crowds; about 80 September 24, 2011.
- Bylaw modification: changes to adding a student membership to full time high school or college student 16 years or older. Must volunteer at least twice.
- Moved Eric Hubbel; seconded by Jack Dunn. No opposition; passed unanimously.
- Nominations of officers (open until next month when vote will occur):
    - President
        - Dan Delzell
    - Vice President
        - Jason Noelle
    - Secretary
        - Dale Bazan
    - Treasurer
        - Bob Kavinsky
    - 2nd Vice President – Program Chair
        - Dave Churilla

Business portion of meeting closed at 7:55 by Dan. Brian Sivill was announced for program on building telescopes.

Club Events

Newsletter submission deadline, November 15, 2011

PAC Club Meeting
Tuesday October 25, 2011 7:30pm @ Hyde Obeservatory
Program: Astronomy/Space Update by Jack Dunn

PAC Club Meeting
Tuesday November 29th 2011 7:30pm @ Hyde Obeservatory
Program: How to Buy a Telescope

PAC Club Meeting
Tuesday December 27, 2011 7:30pm @ TBA
Program: Social Event?

2011 PAC Star Party Dates

October	Oct 21st	**Oct 28th**
November	Nov 18th	**Nov 25th**
December	Dec 16th	**Dec 23rd**

Lunar Party Dates:

Nov 4th

Dates in **BOLD** are closest to the New Moon. Lunar Party dates are possible dates and not official.

Area Star Parties and Events

The Great World Wide Star Count
October 14 - 28, 2011
Your backyard or observing site
This program is an international citizen-science event that encourages everyone, astronomers and non-astronomers alike, to measure their local light pollution and report their observations online.

ON THE NET

PAC:
www.prairieastronomyclub.org

PAC E-Mail:
info@prairieastronomyclub.org

NSP:
www.nebraskastarparty.org

NSP E-Mail:
info@nebraskastarparty.org

OAS
www.OmahaAstro.com

Hyde Observatory
www.hydeobservatory.info

Panhandle Astronomy Club
Panhandleastronomyclub.com

PAC-LIST: You may subscribe to the PAC listserv by sending an e-mail message to: imailsrv@prairieastronomyclub.org. In the body of the message, write "Subscribe PAC-List your-email-address@your-domain.com"

For example:
Subscribe pac-list me@myISP.com

To post messages to the list, send to the address

pac-list@prairieastronomyclub.org

PAC can also be found on Twitter and Facebook.

Buy club apparel through the club website. Shirts, hats, mugs, mouse pads and more.

October Observing: What to View--Jim Kvasnicka

This is a partial list of objects visible for the upcoming month.

Planets

Saturn: Rises around 6 am to start November and by 3:30 am at the end.

Jupiter: Visible all night. Shines brightly at -2.9 magnitude.

Uranus/Neptune: In Pisces and Aquarius. Both rise before midnight. For finder charts see page 53 in the September Sky & Telescope.

Mars: Rises around 1 am to start November and by 11:30 pm at the end of the month. It will increase in brightness from 1.1 to 0.7 throughout the month.

Venus: Very low in the southwest, look for it 15-30 minutes after sunset.

Mercury: Look for it 2° below Venus the first half of the month. The second half it becomes difficult to see.

Meteor Showers

Leonids: November 16-18 with the peak the morning of the 18th just before sunrise. Expect 15-20 per hour.

October Messier List

M27: The Dumbbell Nebula in Vulpecula.

M30: Class V globular cluster in Capricornus.

M56: Class X globular cluster in Lyra.

M57: The Ring Nebula in Lyra.

M71: Class XII globular cluster in Sagitta.

M72: Class IX globular cluster in Aquarius.

M73: Y shaped asterism in Aquarius.

Last Month: M11, M16, M17, M18, M24, M25, M26, M55, M75

Next Month: M2, M15, M29, M31, M32, M39, M110

NGC and Other Deep Sky Objects

NGC 55: Elongated galaxy in Sculptor.

NGC 253: The Silver Coin galaxy in Sculptor.

NGC 654: Open cluster in Cassiopeia.

NGC 7662: The Blue Snowball, planetary nebula in Andromeda.

Double Star Club List

Iota Trianguli: Yellow primary with a pale blue secondary.

Gamma Arietis: Two equal white stars.

Lambda Arietis: Yellow and pale blue pair.

65 Piscium: Equal yellow stars.

Psi 1 Piscium: Equal bluish white stars.

Zeta Piscium: White primary with a yellow secondary.

Alpha Piscium: Close white stars.

Gamma Andromedae: Almach, gold and bluish green stars.

Focus On Observing Clubs - Jim Kvasnicka

Double Star Club

The Double Star Club introduces observers to 100 of the finest double and multiple stars in the sky. You don't need large expensive equipment to view the objects on the list, a small refractor, reflector, or Schmidt-Cassegrain will do just fine. All objects on the list were originally observed using a three inch refractor between 75X and 150X.

Double stars can be very forgiving. You don't need the darkest skies, the clearest skies, or a moonless night to observe many of the objects on the list. Some can even be observed in your backyard under moderate light pollution.

To qualify for the Double Star certificate and pin you must observe the 100 selected objects on the Double Star Club list. Any telescope can be used. It is preferred that you find the objects by using star hopping methods and not use GO-TO, but they will accept them. It's encouraged to look at the stars with varying powers, some of the double stars are very close and require substantial power to separate the stars.

To record your observations you can use the logs provided on the Astronomical League website or you can use your own. Your observing logs should include: object, date, time, power, seeing conditions, telescope used, and a drawing of the double or multiple star. The drawing needs to show North and either East or West. Part of this observing club is to teach celestial direction. The angle and position of the stars will be judged by your directions.

Each month in my Observing Report in the Newsletter I list double stars from the Double Star Club. If you observe the double stars I have listed each month you can complete the Double Star Club in one year or sooner if you wish.

When you complete the Double Star Club you will need to submit a copy of your observing logs to me for review. If the logs are accurate and complete I will submit your name to the Double Star Club chair for approval. The chair will forward to me your certificate and pin that I will present to you at our monthly PAC meeting.

If you have any questions regarding the Double Star Club or need help getting started please ask me and I would be glad to assist you.

Double Star Club Awardees from PAC

Dave Brokofsky, Jim Kvasnicka, Bob Kacvinsky, Eugene Lanning

ANNUAL MEMBERSHIP

REGULAR MEMBER - $30.00 per year. Includes club newsletter, and 1 vote at club meetings, plus all other standard club privileges.

FAMILY MEMBER - $35.00 per year. Same as regular member except gets 2 votes at club meetings.

If you renew your membership prior to your annual renewal date, you will receive a 10% discount.

Club members are also eligible for special subscription discounts on Sky & Telescope Magazine.

Club Telescopes

To check out one of the club telescope contact **Jason Noelle.** If you keep a scope for more than a week, please check in with Jason once a week, to verify the location of the telescope and how long you plan to use it. The checkout time limit will be two weeks, but can be extended if no one else has requested use of a club scope.

100mm Orion refractor:
Available

10 inch Meade Dobsonian:
Checked Out

13 inch Truss Dobsonian:
Checked Out

Program Chair Minute - Dave Churilla

If you missed the September PAC meeting you missed a very entertaining program by Brian Sivill about telescope making. I think he had something for all levels of experience and it was a very good program.

I also want to take this opportunity to thank all the club members who have graced us with programs throughout this past year. You've all done a really great job and not only made my job easier but made me look good!!! If you have a topic you'd like to give a short program on please don't be afraid to let me know. We'll give you whatever help you need and it doesn't have to be any longer than 20-30 minutes…in fact we prefer that you don't go over 40 so as to allow for time for one-on-one questions and for club members to socialize.

This month's PAC Meeting will be on Tuesday, October 25th. As usual we'll have a short business meeting at 7:30 PM followed by Observing Chair Jim Kvasnicka's Observing Report followed by the evening's program, "Where Are We Going … And Can We Get There", by Jack Dunn.

Jack Dunn will provide a description of where we are in human spaceflight with the end of the Shuttle program. There are many questions to be answered. Does NASA have a real vision for exploration or even low-orbit activities? What role will private companies play in getting humans into space? Jack visited Space X's test facility in Texas in July. He'll report on exciting new ideas from Elon Musk. Jack will also give an update on the Curiosity Rover Mission to Mars (launching either late November or early December). For those of you who are new to the club, Jack is the Director of the Mueller Planetarium in Morrill Hall on the UNL Campus. I'm not saying Jack is old, but he does have vast years of experience concerning NASA, JPL, and space exploration. You'll enjoy this program.

Following are upcoming programs that we have planned or are in the process of planning that you won't want to miss.

Nov 2011: *How to Buy a Telescope* This will be our now annual public seminar on how to buy a telescope. We'll need your help assisting guests.

Dec 2011: *PAC Holiday Get-Together* Last December we moved the PAC Meeting to Mueller Planetarium for a club gathering for the Holiday Season. We had some refreshments and club members and their families enjoyed a social get-together to visit other members and enjoy Jack Dunn's hospitality at the planetarium with a few shows. We hope to do the same this year. More to come.

Jan 2012: *How to Use Your Telescope* This is the follow up public program to our November "How to Buy a Telescope". We will invite the public once again to bring their telescopes so we can help them learn how to use them. We'll need your help assisting guests.

Feb 2012: *Update on Mars Exploration* Jack Dunn will be giving us a multimedia update on Mars exploration. More to come.

Mar 2012: *Fun Astronomy Night (still working on this program)* The Executive Board will present a humorous look at the media, film, and astronomy supplemented with a star party if the weather cooperates. Snacks might be available. We're still working on this program so stay tuned for details.

Apr 2012: *Astronomy and the Internet (still a working title)* Dale Bazan is working on a presentation on astronomy and the internet. More to come as he refines the topic.

May 2012: *Tentative: Near Star Party:* We are considering another Near Star Party that will begin early and go until about 8:00 PM with the business meeting afterward. We'll let you know.

June 2012: *BBQ Social (tentative)* We are considering once again a BBQ social perhaps featuring Cajon Bob's Pulled BBQ Pork and an enjoyable evening of visiting with one another. Stay tuned for more info.

I'll try to keep you apprised of upcoming programs so you can plan to attend.

The members of the PAC Executive Committee work together to plan the monthly PAC Programs. Our goal for the programs is to provide a good mix of information, entertainment (including time to visit with one another), and to make them relevant for all experience levels as well as to hit all interests in astronomy. In addition we want to get club members involved with giving presentations as there is a lot of expertise in different areas that we all could benefit from. So we would love to have your comments and suggestions concerning what you would like see in our programs. Call me at 402-467-1514 or email me at weber2@inebraska.com.

Challenge Observing Objects for July/August

Each month I will have two objects, one for the more seasoned observer and one for the beginning observer. Each object I hope will challenge you just a little bit. I will provide you with a little bit of information about the object. It is your job to find it and if you would write a little report or draw what you see. The first person to report back on each object will have their report published in the next issue of the newsletter. Happy Hunting!

Advanced Object

IC 351

Discovered Dec 5, 1890 by Edward Barnard. IC 351 is a small planetary nebula with a bluish, green tint located in Perseus. It has a magnitude of 11.9 and is 18 arc seconds across.

Beginner Object

NGC 7009

NGC 7009, also known as the Saturn Nebula is a small planetary nebula in Aquarius. Discovered by William Herschel on September 7, 1782. The Saturn Nebula gets its name from its superficial resemblance to the planet Saturn with its rings nearly edge-on to the observer. It has a magnitude of 8.9 and is 41 × 35 arc seconds.

Faster-than-Light Neutrino Puzzle Claimed Solved by Special Relativity
By technologyreview.com

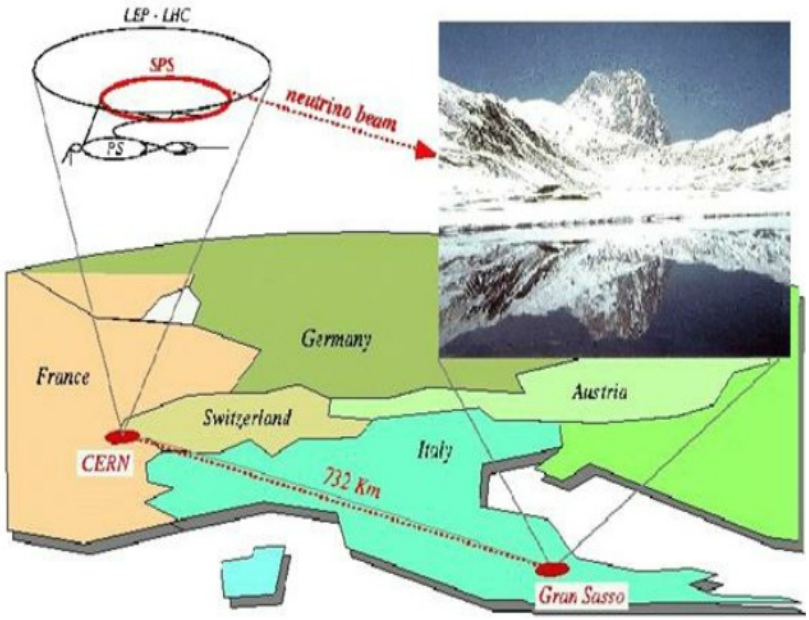
It's now been three weeks since the extraordinary news that neutrinos travelling between France and Italy had been clocked moving faster than light. The experiment, known as OPERA, found that the particles produced at CERN near Geneva arrived at the Gran Sasso Laboratory in Italy some 60 nanoseconds earlier than the speed of light allows.

The result has sent a ripple of excitement through the physics community. Since then, more than 80 papers have appeared on the arXiv attempting to debunk or explain the effect. It's fair to say, however, that the general feeling is that the OPERA team must have overlooked something. Today, Ronald van Elburg at the University of Groningen in the Netherlands makes a convincing argument that he has found the error.

First, let's review the experiment, which is simple in concept: a measurement of distance and time. The distance is straightforward. The location of neutrino production at CERN is fairly easy to measure using GPS. The position of the Gran Sasso Laboratory is harder to pin down because it sits under a kilometre-high mountain. Nevertheless, the OPERA team says it has nailed the distance of 730 km to within 20 cm or so.

The time of neutrino flight is harder to measure. The OPERA team says it can accurately gauge the instant when the neutrinos are created and the instant they are detected using clocks at each end. But the tricky part is keeping the clocks at either end exactly synchronised. The team does this using GPS satellites, which each broadcast a highly accurate time signal from orbit some 20,000km overhead. That introduces a number of extra complications which the team has to take into account, such as the time of travel of the GPS signals to the ground. But van Elburg says there is one effect that the OPERA team seems to have overlooked: the relativistic motion of the GPS clocks.

It's easy to think that the motion of the satellites is irrelevant. After all, the radio waves carrying the time signal must travel at the speed of light, regardless of the satellites' speed. But there is an additional subtlety.



Although the speed of light is does not depend on the the frame of reference, the time of flight does. In this case, there are two frames of reference: the experiment on the ground and the clocks in orbit. If these are moving relative to each other, then this needs to be factored in.

So what is the satellites' motion with respect to the OPERA experiment? These probes orbit from West to East in a plane inclined at 55 degrees to the equator. Significantly, that's roughly in line with the neutrino flight path. Their relative motion is then easy to calculate. So from the point of view of a clock on board a GPS satellite, the positions of the neutrino source and detector are changing. "From the perspective of the clock, the detector is moving towards the source and consequently the distance travelled by the particles as observed from the clock is shorter," says van Elburg. By this he means shorter than the distance measured in the reference frame on the ground. The OPERA team overlooks this because it thinks of the clocks as on the ground not in orbit.

How big is this effect? Van Elburg calculates that it should cause the neutrinos to arrive 32 nanoseconds early. But this must be doubled because the same error occurs at each end of the experiment. So the total correction is 64 nanoseconds, almost exactly what the OPERA team observes.

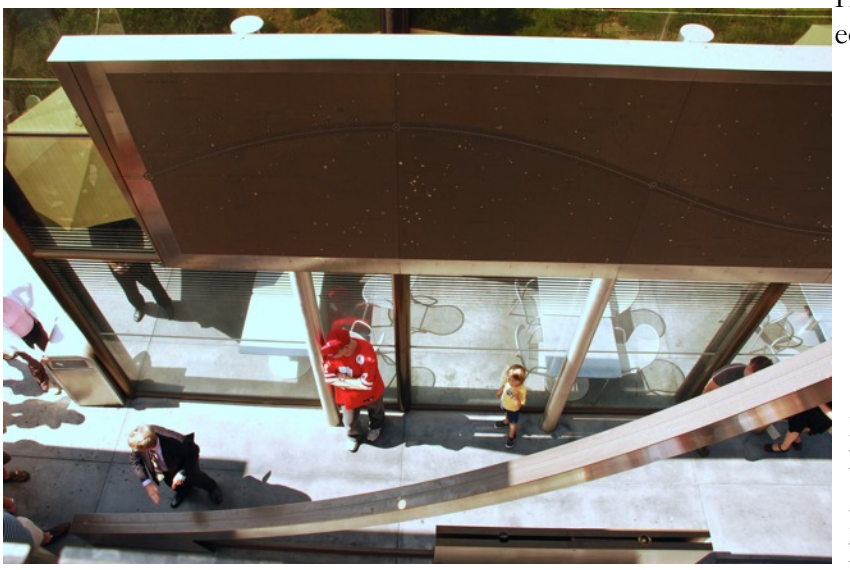
That's impressive but it's not to say the problem is done and dusted. Peer review is an essential part of the scientific process and this argument must hold its own under scrutiny from the community at large and the OPERA team in particular. If it stands up, this episode will be laden with irony. Far from breaking Einstein's theory of relatively, the faster-than-light measurement will turn out to be another confirmation of it.

The Gottlieb Transit Corridor

Transit Corridor sponsored by Robert J. and Suzanne Gottlieb
Griffith Park Observatory, Los Angeles, California
September 23rd, 2011

Just past Solar Noon

Husker fan David Beams of Omaha gazes at the ecliptic chart.



The ecliptic chart and meridian arc with Observatory Director Dr. Edwin Krupp explaining how the Gottlieb Transit Corridor works.

As focused sunlight illuminates photosensors on the Transit Corridor's meridian arc the constellation through which the sun is currently passing is backlit on the ecliptic chart.

For more information,
http://www.griffithobservatory.org/btransit.html

Photos by PAC member John W. Reinert who just happened to attend this celestial event.

THE *Prairie Astronomy Club*

Amateur Astronomy --
A Hobby as Big as the Universe

The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc. Membership expiration date is listed on the mailing label. Membership dues are: **Regular $30/yr, Family $35/yr**. Address all new memberships and renewals to: **The Prairie Astronomy Club, Inc., PO Box 5585, Lincoln, NE 68505-0585**. For other club information, please contact one of the club officers listed to the right. Newsletter comments and articles should be submitted to: **Jason Noelle at oegrad2002@yahoo.com,** no less than ten days prior to the club meeting. The Prairie Astronomy Club meets the last Tuesday of each month at Hyde Memorial Observatory in Lincoln, NE.

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FIRST CLASS MAIL

Next PAC Meeting
Tuesday
October 25, 2011
7:30 PM
Hyde Observatory