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# Desert Sky Observer

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NEWSLETTER OF THE ANTELOPE VALLEY ASTRONOMY CLUB, INC  
P.O. BOX 4595, LANCASTER, CALIFORNIA 93539-4595  
*The Antelope Valley Astronomy Club, Inc., is a 501(c)(3) Non-Profit Corporation. Visit the Antelope Valley Astronomy Club website at [www.avastronomyclub.org/](http://www.avastronomyclub.org/) The A.V.A.C. is a Sustaining Member of The Astronomical League and the International Darksky Association*



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## Up-Coming Events

**October 6:** Last Quarter Moon

**October 8:** Monthly Club Meeting\*

**October 9:** [Mt. Wilson](#)

**October 9-10:** Palmdale Fall Festival

**October 13:** New Moon

**October 16:** Star Party, [Devil's Punchbowl](#)

**October 20:** First Quarter Moon

**October 27:** Full Moon

\* Monthly meetings are held at the S.A.G.E. Planetarium at the Cactus School in Palmdale on the second Friday of each month. The meeting location is at the northeast corner of Avenue R and 20<sup>th</sup> Street East. Meetings start at 7 p.m. and are open to the public. *Please note that food and drink are not allowed in the planetarium*

## President's Report

*Terry Babineaux*

It's all about perspective. Some of you probably know that I am a serious NASCAR fan. People frequently question where lies the fascination watching cars going around in circles. I've even been asked about whatever happened to my buck teeth! I frequently reply that I enjoy mindless entertainment as much as the next guy, but racing cars is actually not as simple as it appears.

If you are familiar with the sport, you are probably aware of all the complex and interactive factors that have to work in harmony to make a car capable of travel at 200 or more miles per hour, quite a different thing altogether than slightly evading the speed limit as we work our way down the nearest freeway. At well over twice the maximum speed most of us have ever driven, cars behave very differently than what we are used to. Wedge, tire pressure, track bar, spring rate and brake bias are among the many things that get adjusted during the course of a race. Changing any one of these interacts with the others; a mis-adjustment will quickly result in a pile of scrap metal. Changing race track conditions, tire wear and decreasing fuel weight must be accounted for to keep a race car out of the wall, a task of surprising complexity.

I doubt any of us has ever been asked what is so fascinating about a rock orbiting a ball of gas when we watch a moon transit Jupiter. It took centuries for scientists such as Newton and Kepler to finally sort out the physics of things moving in circles, things taken entirely for granted nowadays. One of the most fascinating modern applications of these physical laws lies in the detection of planets orbiting distant stars. The gravity of an orbiting planet will yank its sun back and forth ever so slightly. This miniscule yanking (or "perturbation") can be detected by modern instruments. These instruments, along with the signal processing techniques that analyze the data from them, are extremely complex.

Again, it's all about perspective: things are not always what they seem and sometimes relate in surprising ways.

**Dir. of Community Development***Michael Roberson*

Hello everyone. The club needs volunteers to help set up and take down for the Palmdale Fall Festival. We need someone with a truck to haul the big stuff. Two trucks would be even better. We plan to meet at Larry Ochsner's house on Friday, Oct. 8th, at 2:30 pm. If you can help, please e-mail me or call my cell phone at 661-492-6578.

If anyone can help with the setup or breakdown on Saturday or Sunday, please let me know that as well. Any help I can get will be a huge blessing and will make the club look good at this public event.

**Doug Drake's Planet Watch****Moon**

There is a total eclipse this month- on Wednesday, October 27th. The Sun will set in the west as the moon rises in the east. Start looking to the east just after sunset on this evening and see the moon come up. Hint: Get out your binoculars and look to the eastern horizon. You should see the moon better as twilight gets darker. The moon will become an orange shade darker as the eclipse time approaches. At 7:23 p.m. the total eclipse begins and at 8:45 p.m. the eclipse ends. Note that the top half of the moon will be lighter during this eclipse. The next lunar eclipse is three years away, in late 2007, so take advantage of this night.

Okay photographers (CCD, CAMs, or film), test your talents and share your pictures with us. Hint: Remember to use moon tracking rather than sidereal tracking on your motor mount. For the film photographer, try using ISO 400 with a 500 mm lens and between 1 and 2 second exposures when the Moon is in full eclipse. You should get away with a stationary tripod, but using longer exposure times or focal lengths will smear the picture. We will love to see your pictures, so bring them to our November club meeting and we will take time out during the intermission to see them.

**Venus**

This month, on Sunday, October 3rd, our lady Venus joins the star Sir Regulus, which is located at the bottom of Leo the Lion's question mark. The star Regulus is considered the Little King, or Knightly One, and played a significant role in discovery of the earth's processional rotation movement.

A long time ago the Babylonians, in 2100 B.C., recorded positions of bright stars with Regulus being one of them. Then in 130 B.C. the Greek astronomer Hipparchus made his bright star recordings and found that Regulus had changed some 28 degrees in longitude- about 2 hours right ascension. This led to the discovery that the earth has a slow processional rate of change just as a spinning toy top begins to wobble, called a processional rotation. By the way, the next astronomer to record star positions was Tycho Bray, in the late 1500's A.D. Does any one know this fellow?

**Saturn**

Saturn rises in the east around midnight so you will need to observe this wonderful ringed planet between 4:00 a.m. and sunrise for the best observations. You can observe the globe's shadow on the rings at this most favorable time. Saturn is positioned between Castor and Pollux in the Gemini constellation.

**Jupiter**

It is not in a good observation position this month because it is just rising in the east at sunrise.

**Uranus and Neptune**

You will need a dark sky to observe these two jewels. Uranus is near the star Sigma Aquarius, which is high in the south just after midnight. Neptune is close to Theta Capricorn, just right of Aquarius.

## ***Did you know?***      ?

That funny little blue bar on the front page of the Club website? It tells you local viewing conditions for the coming 42 hours. If you would have checked it out before last month's star party, you wouldn't have missed a good night of viewing at Saddleback. Don't let a few early rumbles of thunder keep you from a good night of star gazing. Doh!

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## **Einstein and Gravitational Waves**

by Patrick L. Barry and Dr. Tony Phillips

Among the mind-blowing implications of Einstein's general theory of relativity, direct verification is still missing for at least one: gravitational waves. When massive objects like black holes move, they ought to create distortions in space-time, and these distortions should spread and propagate as waves- waves in the fabric of space-time itself.

If these waves do exist, they would offer astronomers a penetrating view of events such as the birth of the Universe and the spiraling collisions of giant black holes. The trick is building a gravitational wave detector, and that's not easy.

Ironically, the gravitational waves spawned by these exceedingly violent events are vanishingly feeble. Gravitational waves exert a varying tug on objects, but this tug is so weak that detecting it requires a device of extraordinary sensitivity and a way to shield that device from all other disturbances.

Enter Space Technology 7 (ST-7). This mission, a partnership between NASA's New Millennium Program and the European Space Agency (ESA), will place a satellite into a special orbit around the Sun where the pull of the Earth's and Sun's gravities balance. But even the minute outside forces that remain -- such as pressure from sunlight -- could interfere with a search for gravitational waves.

To make the satellite virtually disturbance-free, ST-7 will test an experimental technology that counteracts outside forces. This system, called the Disturbance Reduction System (DRS), is so exquisitely sensitive that it can maintain the satellite's path within about a nanometer (millionth of a millimeter) of an undisturbed elliptical orbit.

DRS works by letting two small (4 cm) cubes float freely in the belly of the satellite. The satellite itself shields the cubes from outside forces, so the cubes will naturally follow an undisturbed orbit. The satellite can then adjust its own flight path to match that of the cubes using high-precision ion thrusters. Making the masses cube-shaped lets DRS sense deviations in all 6 directions (3 linear, 3 angular).

ST-7 is scheduled to fly in 2008, but it's a test mission; it won't search for gravitational waves. That final goal will be achieved by the NASA/ESA LISA mission (Laser Interferometer Space Antenna), which is expected to launch in 2011. LISA will use the DRS technology tested by ST-7 to create the ultra-stable satellite platforms it needs to successfully detect gravitational waves.

If ST-7 and LISA succeed, they'll confirm Einstein (again) and delight astronomers with a new tool for exploring the Universe.

Read more about ST-7 at <http://nmp.jpl.nasa.gov/st7>. For kids in a classroom setting, check out the "Dampen that Drift!" article at [http://spaceplace.nasa.gov/en/educators/teachers\\_page2.shtml](http://spaceplace.nasa.gov/en/educators/teachers_page2.shtml).

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



### The *Telguide*.

Our own Steve Trotta has invented the Telguide to aid you in your galactic hunts. To purchase a Telguide, [click here](#).

## \* \* FOR SALE \* \*

C-8 with equatorial mount, Byers drive, Losmandy accessory plate for astrophotography, outstanding optics, heavy-duty metal tripod, Telrad, dew shield, Thousand Oaks solar filter, motor drive, hard case, optical polar-alignment tool. \$1300.00, Call Brian Peterson at 661-273-1693 or e-mail (address below).

\* \* \* \* \*

C102 with a G-4 mount; wood tripod legs; dew shield; motor drive; carrying case for the tube; good 'scope for the planets; help Brian clean out his closet- \$450. 661-273-1693 or e-mail (address below).

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### Astrophoto of the Month:



M4 - Photographed by Terry Babineaux, Lake Elizabeth

Submit your "Astrophoto of the Month" to the following address by the 20<sup>th</sup> of each month:  
[newsletter@avastronomyclub.org](mailto:newsletter@avastronomyclub.org)



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### **A.V.A.C. Membership Information**

Membership in the Antelope Valley Astronomy Club is open to any individual.

The Club has three categories of membership.

- Family membership at \$30.00 per year.
- Individual membership at \$25.00 per year.
- Junior membership at \$15.00 per year.

Membership entitles you to...

- Desert Sky Observer—monthly newsletter.
- The Reflector—the quarterly publication of the Astronomical League.
- The A.V.A.C. Membership Manual.
- To borrow club telescopes, binoculars, camera, books, videos and other items.

The Desert Sky Observer is available as a separate publication to individuals at a cost of \$10.00 per year. Subscription to the Desert Sky Observer does not entitle the subscriber to membership in the Antelope Valley Astronomy Club and its associated privileges.

### **Astronomy Links on the Web**

<http://www.astro-tom.com/>

(Tom Koonce's website)

<http://www.actonastro.com/>

(Steve Trotta's website)

<http://www.astropaws.com>

(Terry Babineaux's astrophotos)

<http://www.noexitrecords.com/zerobox/astro.htm>

(Tom Varden's website)

<http://www.astromart.com/>

(time to go shopping)

<http://saturn.jpl.nasa.gov/multimedia/images/latest/index.cfm>

(the latest Saturn pics from Cassini)

<http://chandra.harvard.edu/index.html>

(The latest from the Chandra X-ray Observatory)

[www.avastronomyclub.org/](http://www.avastronomyclub.org/)

(us desert astronomy folks)

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## Think Christmas

by Tom Koonce

The holiday season is approaching and perhaps you are considering the purchase of a telescope for your child. If so, read on (if not, you can still read on). Does your child show signs of sharing your interest in science and astronomy? This article will provide advice that you should consider as you shop. These are my opinions based on owning many scopes over 25 years.

Let's talk price first. Plan on spending at least \$200-\$600 for an introductory-level telescope that will be fun for the entire family.

As the sticker shock settles in, I'll tell you straight - if you get a cheaper telescope, you will not be happy with the scope within a week or two, let alone a month or two, period. You want to buy a telescope that your child will use for quite a while, and one that they will look forward to using. The best telescope is the one that gets taken outside and used.

A good beginner telescope should have a VERY sturdy tripod. If it looks flimsy, it is, and it won't provide a steady view— it will move around in the slightest breeze and you won't be able to track anything.

The telescope should use standard-sized 1 1/4" eyepieces, not 0.96" eyepieces. The 0.96 eyepieces are frequently of a poor quality and are an indication that the rest of the telescope is probably of second quality, too.

I recommend choosing between the following telescopes:

Meade ETX-70 AT - \$199 – new, including tripod. The telescope can be used to observe the moon, some deep sky objects like the Pleiades and the Andromeda Galaxy, and with a special (optional) solar filter, sunspots on the Sun. The price includes an electronic hand controller for easy sky object location and tracking. This is a good scope for watching birds too, but if you want to see the rings around Saturn, you'll need more magnification than this scope can offer.

Meade ETX-90 EC - \$300 -used, but in new condition from <http://www.astromart.com>, or \$595 brand new from Meade. This is an excellent choice for a first telescope for many reasons. It can be used for beginner and intermediate observation of the moon, planets, and most deep sky objects. It features the amazing and easy to use "Autostar" controller to locate and track celestial objects, and comes with a sturdy tripod, a good eyepiece and software to locate thousands of objects. (As a side note, it also has excellent resale value to other amateur astronomers.)

Orion SkyQuest XT-6 Dobsonian - \$359 from <http://www.telescope.com> (1-800-447-1001). This is an extremely easy to use telescope. It is essentially "point and shoot." An optional \$149 system called the "IntelliScope Computerized Object Locator" allows novices to easily find thousands of objects, but this telescope does not automatically track objects— it's hand powered. You simply grab the end of the telescope and provide the motion to keep the object centered in your eyepiece. It is very simple to point and with a simple finder on top of the scope, you can find and observe the moon and planets easily without the computer. Because of the bigger 6" aperture of this scope, you can see more deep sky objects including star clusters, and some galaxies.

There are certainly other telescopes to choose from, but any one of these three will be a rewarding instrument for your child that provides real astronomical views, not just a wobbly, out of focus, frustrating night that will dampen their enthusiasm for astronomy and science in general. When in doubt, ask any one of our experienced club officers or members,



### News from the Astronomical League

by Tom Koonce

The Astronomical League has started a new observing club called "Constellation Hunters" that looks pretty fun. Here is the weblink for more info: <http://www.astroleague.org/al/obsclubs/consthunt/const.html>

**A.V.A.C. Board Members**

**President:** Terry Babineaux (661) 724-1248 [president@avastronomyclub.org](mailto:president@avastronomyclub.org)  
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**Webmaster of Club Site:**  
 Steve Trotta (661) 269-5428 [webmaster@avastronomyclub.org](mailto:webmaster@avastronomyclub.org)

**Our Sponsors**

**Al's Vacuum and Sewing:** 904 West Lancaster Blvd. (661) 948-1521. Stop by and say "hey" to Matt and Sue and run from Michael.

**QNET:** 1529 E. Palmdale Blvd., Suite 200. (661) 538-2028. As an Internet provider, they are kind enough to provide us with a free website.

**High Desert Broadcasting:** General Manager, Vicky Connors (661) 947-3107; They assist us in advertising our Club.

**Woodland Hills Camera:** 5348 Topanga Canyon Blvd., Woodland Hills. 888-427-8766. [www.telescopes.net](http://www.telescopes.net)

**Thank you to our sponsors for their generous support!**

**Don't Forget:**

The October club meeting is the annual Business Meeting. To help shape the future of your club, please show up, run for office, or vote for someone else who shares your vision for the Antelope Valley Astronomy Club. Remember, votes are limited to one vote *per membership*, which is not necessarily the same as to the *individual*.