

Last month's meeting – by Hein Stoltz

Although the winter chill is bound to affect attendance figures, the meeting of 27 May was attended by approximately 50 people, including a number of visitors. Percy Jacobs was acting treasurer, handling membership applications and marketing and sale of Sky Guides and the last few remaining Pretoria Centre caps. Johan Smit reminded everyone of Scopex which took place on the Saturday following the meeting.

Beginner's Corner was presented by Pat Kühn and the topic was on the use of binoculars for astronomy. Pat pointed out that binoculars were often underrated as astronomical instruments in their own right and went on to list the many advantages they offer to the amateur astronomer, including the fact that they were relatively inexpensive, compact and portable, offered a wide field of view with an image "right side up", and even modest magnifications offered significantly improved resolution over the unaided human eye. He also provided some technical advice, pointing out that in general porro-prism designs with BAK4 glass and full metal coatings offered better optics than the more compact roof-prism designs with either BAK7 glass and/or orange/red coatings. Generally, magnifications greater than 10x require some form of stabilization in the form of a steady rest, tripod or binocular stand. Useful information on choosing binoculars can be found at: http://calgary.rasc.ca/downloads/RASC_Choosing_Binoculars.doc and the website www.skymaps.com/downloads has a large binocular object section.

Neville Young, past chairman of the Pretoria Centre, gave a brief introduction to a software programme he is developing to aid people in getting to know the positions of the constellations, using a puzzle-building system. Although the software development is a commercial endeavour, Neville has offered the beta version as a free download to members of the Pretoria Centre to allow members to comment on it and provide some feedback whilst still in the developmental stage. The downloads are available at: www.nevyoung.co.za/starwaders.

What's Up was presented by Percy Jacobs and some highlights for June include the fact that, although this month offers some of the last opportunities to observe Saturn (early evening) before it gets too close to the Sun, it does show the rings closed to the extent that they are almost invisible (seen edge-on from earth's point of view). This offers a rare opportunity to observe transits of Saturn's moons over the planetary disk. June 21st also heralds the beginning of winter in the southern hemisphere and with Jupiter being visible almost all evening, the skies promise to provide many hours of exciting planetary and deep-sky observations (albeit in several layers of warm clothing!). With New Moon on 22 June, the best dates for dark-skies would be from 18 -27 June and for those wanting to observe galaxies, the constellations Leo and Virgo may prove very rewarding.

The Main Speaker for the evening was a visitor from Spain, Dr Maria Diaz-Trigo. Dr Diaz-Trigo obtained a Physics degree from the University of Santiago de Compostela in Spain and a Master degree in particle physics from the University of Heidelberg, Germany. This was followed by a PhD in the field of Astroparticle Physics at the Max Planck Institute of Munich. After spending a year working for the German Space Agency on the European module of the International Space Station, she joined the European Space Agency (ESA) in 2004. At ESA she spent the first 2 years at ESTEC (European Space Research and Technology Centre), which is the engineering centre of ESA in the Netherlands, where she started to work with XMM-Newton (X-ray Multi-mirror Mission – Newton, an orbiting X-ray observatory named in honour of Sir Isaac Newton and launched by ESA in 1999) doing purely scientific research. In 2006 she moved to ESAC (European Space Astronomy Centre) at Villafranca in Spain where she is currently involved in the scientific operations of XMM-Newton.

She introduced her topic on Space Science at ESA, by reviewing the various orbiting space observatories and their specific missions, including Hubble, XMM-Newton, the most recent launches of Herschel and Planck, and future launches of LISA Pathfinder, Gaia and the James Web Space Telescope, the latter being a joint NASA/ESA/Canadian Space Agency mission to

replace the Hubble Space Telescope and which will have a primary mirror 7.3X the size of Hubble's! She then continued to elaborate more specifically and in greater detail on XMM-Newton, highlighting some of the major discoveries of the mission. These included, amongst others, discovery of a QPO (Quasi Periodic Oscillation) in a super massive black hole, detection of the first double pulsar, observation of Einstein's predicted distortion of space-time around a neutron star, discovery of part of the so-called "missing matter" (dark matter) in the form of low-density gas, and several accreting binary systems. The latter, in particular, has allowed the changes that take place over thousands of years in super massive black holes, to be observed within days. All in all a very interesting and informative talk presented by a most charming speaker!

The evening's proceedings were concluded by some lively informal discussions over tea, coffee and biscuits.

Last month's observing evening - by Johan Smit

A typical crisp clear winter evening welcomed the viewers. Many people came and at some stage during the evening at least 50 people were counted. It was because Johan Hartmann invited people from his church for a visit and many did arrive.

This made it the probably busiest evening we had as far as I can remember.

We ask our members to do the same and invite their friends for an evening's entertainment under the stars.

Seven telescopes of various sizes were used for viewing. Because of the number of visitors we did not use the 12 inch telescope in the observatory. That gave me time to talk to many people and do some observing myself instead of just driving the big scope. I did open the dome to show the first-time visitors how the instrument operates.

Because most of the people were first-time visitors, we spent most of the evening showing them the favourite sights. The jewel box, Omega Centauri, Mars, Saturn, Jupiter and of course the moon featured high on the agenda.

While showing the visitors these sights the opportunity was used to explain the daily and annual movements of these objects. In fact I did two informal introductory talks to introduce the many visitors to astronomy.

I made sure that my favourite NGC 2547 (the heart shaped cluster) was shown to the ladies present.

The favourite double stars, Alpha Centauri, Alpha Crux and Gamma Velorum, were not neglected.

We used binoculars to view some bigger open clusters like M6 and M7 and NGC 6231 (in the tail of Scorpius).

Everyone had the chance of seeing a variety of objects through a variety of instruments enabling them to experience the differences and strengths or weaknesses of each type of instrument. Information like this is very valuable for anyone that thinks for buying optical equipment like a telescope.

I am glad to say that I have seen some of these visitors again, at our monthly meeting on 27 May.

I invite every-one to attend our next observing evening on 19 June 2009. I can guarantee that you will learn something new.

We expect many visitors to the next viewing evening again and need as many telescopes as possible. You will also most likely receive an introductory talk as well.

Sirius

Kos Coronaios, the chairman of the Soutpansberg Astronomy Club, took a few images of Sirius through a telescope. He then stacked them. The result is shown below.

Sirius, a.k.a. as α Canis Majoris or the Dog Star, is the brightest star in the night sky and has an apparent visual magnitude of -1.46 . It is almost twice as bright as Canopus, the next brightest star. Sirius is actually a binary star system, consisting of a white main sequence star of spectral type A1V and a faint white dwarf companion of spectral type DA2.



Simple star maps by Wayne Mitchell

Bosveld Stereo 107.5 FM radio station has an astronomy talk show in Afrikaans every Sunday evening a between 21:00 and 21:30 called "Ons en die Heelal". Wayne Mitchell, a former committee member of the Pretoria Centre, occasionally joins in for a 10 minute chat on what there is to see in the sky for the following week. He mainly discusses the positions of the planets, hence the star maps he compiles which are available on the radio station's website. The star maps show the positions of the planets in the evening and morning sky for the following week and are updated weekly.

Visit www.bosveldstereo.co.za home page for a link to the star maps and click on "Ons en die heelal kry die sterkaarte hier" or use the "Programme" tab to visit the "Ons en die Heelal" program scheduled for Sunday evenings and click on "Hier is Wayne Mitchell se foto's".

Wayne has also been working on an improvement of the first edition (not a second edition) of his star atlas since it was reviewed by the SAAO.

The Double Star Gamma Virginis, a.k.a. Porrima — by Michael Poll

Gamma Virginis is the second brightest star in Virgo. This star's name is actually Latin based as opposed to most star names which are Arabic. The name honours a Roman goddess of prophecy. In Roman mythology, Porrima was the goddess of the future and one of the two Carmentes (along with the goddess Postverta). During childbirth, prayers were offered to summon the Carmentes to preside over the labour. Porrima was said to be present at the birth when the baby was born head-first; Postverta was present when the feet of the baby came first.

Prior to, and during the 1990s, Porrima was a showpiece double, but in the early 2000s the pair closed up and it was not possible to split them in amateur telescopes. The period is 169 years - the pair last closed up in 1836.

Porrima is now opening up again, as discussed in the first reference below. Observers may be interested in trying to split the pair. Note that this reference is dated June 2008, so the pair may now be easier to split than was suggested at that time.

References:

1. Scope Test. Alan MacRobert. Sky & Telescope, June 2008, p 68. (Duplicated on the right).
2. Roman Goddesses: Wikipedia.

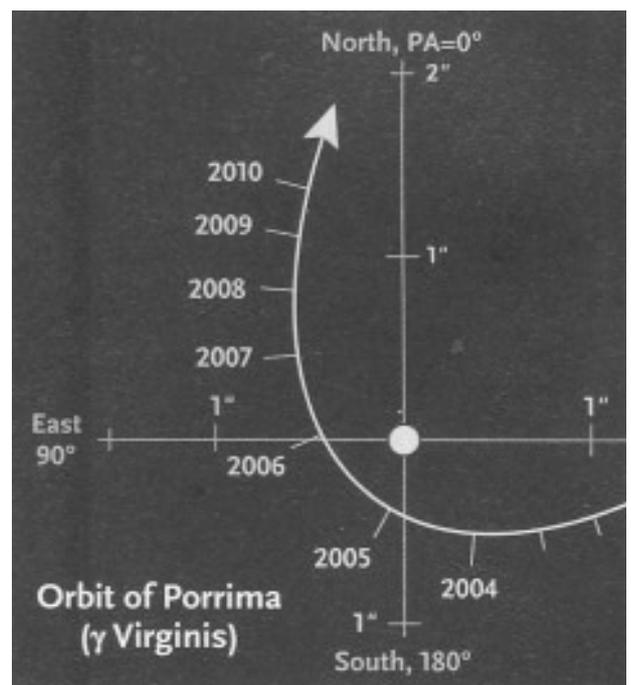
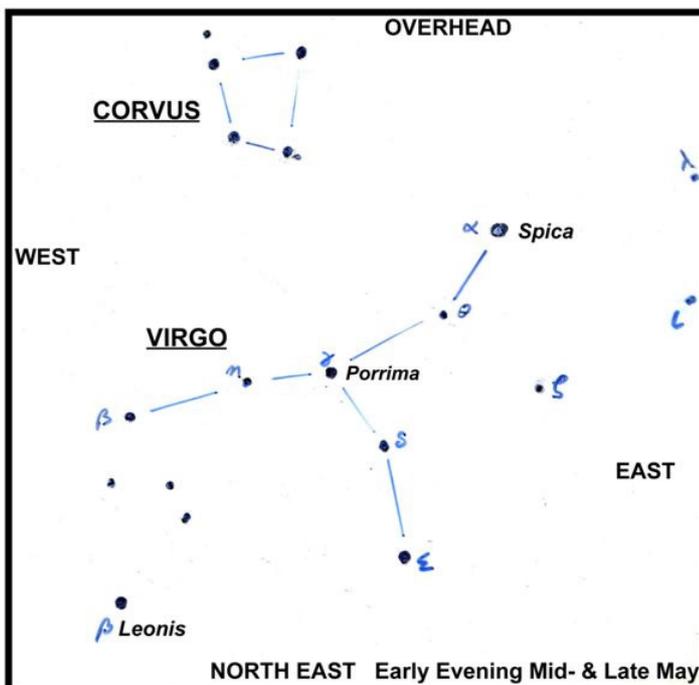
Scope Test

SITUATED ONLY 39 light-years away, the springtime double star Porrima, or Gamma (γ) Virginis, is becoming barely splittable again in many backyard scopes.

Its twin stars, each magnitude 3.5 and type F1, loop around one another every 169 years. They appeared just 0.35" apart when closest in May 2005. Now the pair has widened enough to test a telescope as small as 4 or 6 inches. But even with a bigger aperture, you'll need a night of very steady seeing. The predicted separation is 1.0" on April 20th and 1.1" on September 15th. Use your highest power.

And keep watch for the rest of your life. Porrima will continue widening to a maximum separation of 6.0" around 2088. ♦

— Alan MacRobert



ASSA - Pretoria

Dark Sky Weekend 2009

(Settlers)

ASSA Pretoria will again be hosting a Dark Sky Weekend on Friday the 17th and Saturday 18th of July 2009. (The dark sky weekend in 2008 was supported by over 60 ASSA members from the Pretoria and Johannesburg centres. Feedback indicated that the quality of the observing was of a high standard).

The venue lends itself to 1st class observing due to its location (approx. 20km East of Bela Bela). Observing conditions should be near perfect at this time of the year. The entire campus has 24hr security and the observing fields are situated far from any lights.

Accommodation has been provided for in the dormitories. Each member will have access to their own room. Each room has four beds that will lend itself to family / children etc. The dormitories are fully equipped with showers and baths. You are required to bring your own linen.

Food & Beverage: Each member is responsible for their own requirements. There is a hotel near to the school, overall feedback has been positive. Braai facilities are provided.

Date: 17/18th July 2009.

Venue : Lord Milner School

Directions: Map Attached.

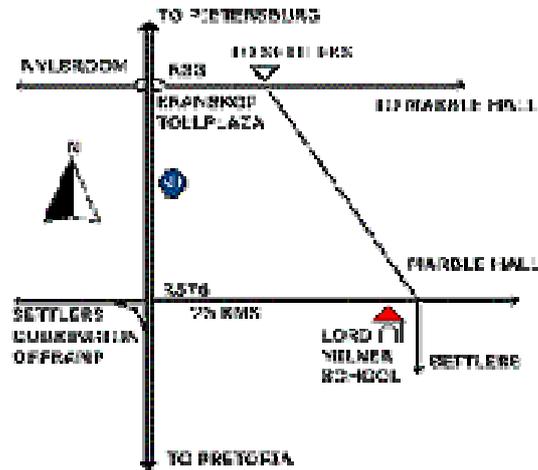
Cost: R50pp per night

Provided:

- Dark Sky
- Dormitories
- Braai Facilities
- Braai Wood
- 24hr Security

You need to bring:

- Linen
- Food & Beverage
- Mosquito Repellent
- Skottel for breakfast



RSVP – SMS name and number of people to 073 220 6824 or e-mail gareth.gregory@gregoryint.com.

To confirm your booking please deposit the total funds (No. of people x number of nights @ R50 pp/pn) + optional breakfast @ R40pp.

Bank – Nedbank

Account Number – 1634 049 209

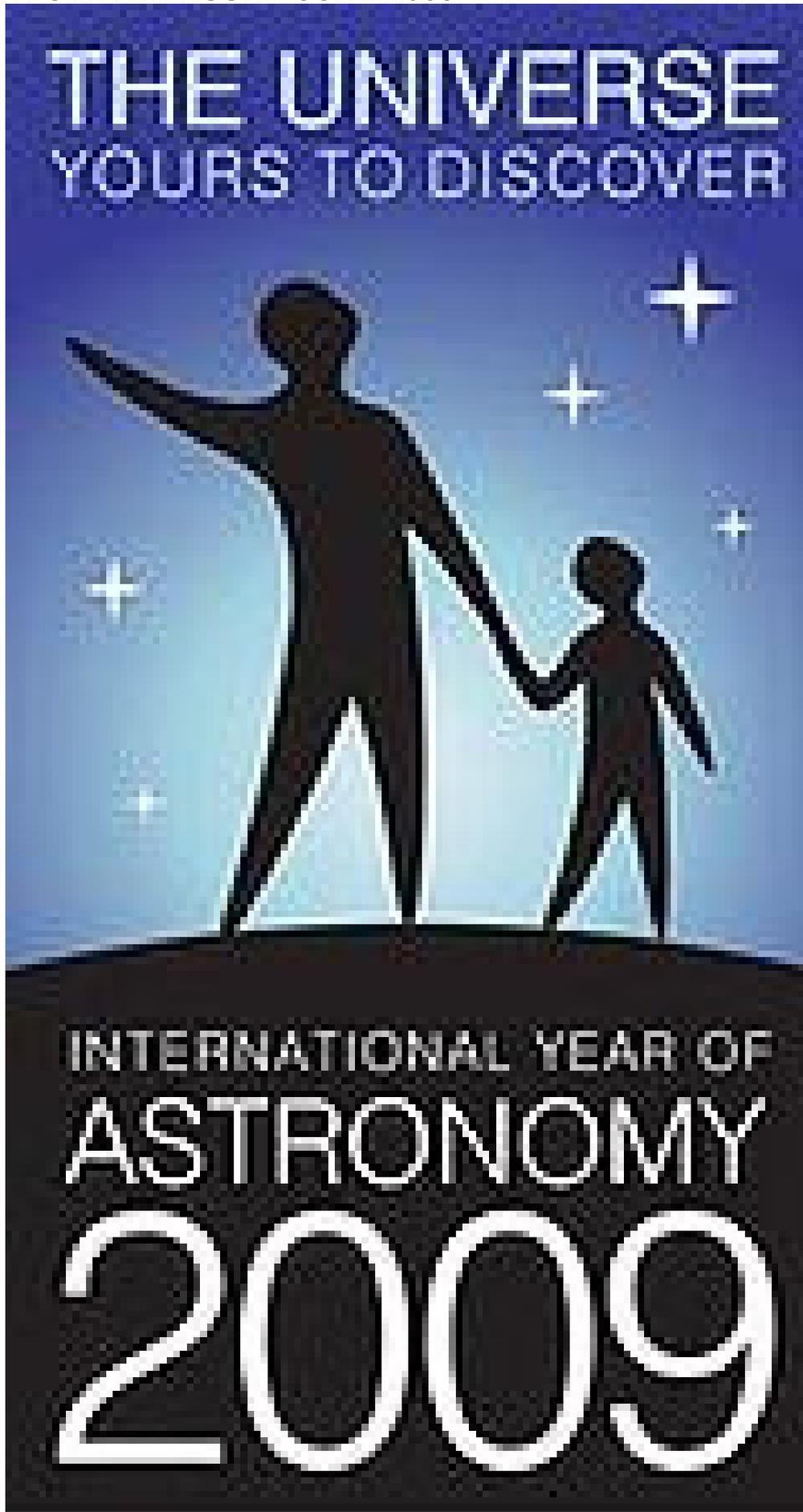
Branch Code – 163 445

Reference – Surname / 1 or 2 nights / no. of people / breakfast (y/n)

The Settlers hotel has planned a **breakfast** for Saturday morning @ 9:30. Cost R40 per person. Please confirm numbers by the **3rd of July 2009**.

Main talk this month

Michael Melville was the pilot of the X-prize winning craft, Spaceship One. On June 21, 2004, 27 000 people watched the launch of Spaceship One, the first private-venture craft to attempt to leave Earth's atmosphere and enter space, defined as an altitude of 100 kilometers.



News notes

- ESA launched two orbiting telescopes, Herschel and Planck, into space aboard the same Ariane 5 rocket on 14 May 2009. They will be deployed at L2, the Lagrange point 1.5 million km away from Earth on the opposite side of Earth than the Sun. The telescopes established their first contact with Earth about 10 minutes after the launch. Herschel separated from the rocket 26 minutes after launch and Planck followed 2 minutes later in order to begin their separate journeys towards their respective orbits around L2. It will take the telescopes 60 days to reach L2.

<http://astronomynow.com/090506HerschelandPlanckgearupfor14Maylaunch.html>

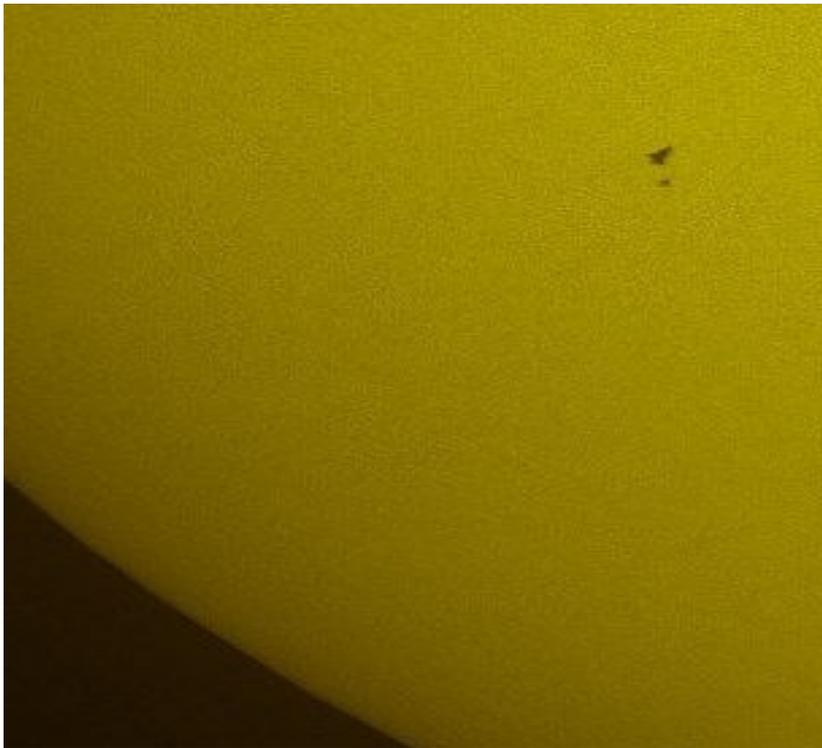
<http://www.esa.int/esaMI/Planck/index.html>

- NASA had planned a space shuttle launch on 14 October 2008 for the fifth and final mission to service and upgrade the Hubble Space Telescope (HST), but it was postponed. NASA finally launched space shuttle Atlantis on 11 May 2009 on this mission. The mission was successful. The life of the HST will now be extended well into the next decade.

http://en.wikipedia.org/wiki/Hubble_Space_Telescope

<http://www.universetoday.com/2009/05/22/more-stunning-images-from-the-hubble-servicing-mission/>

<http://www.universetoday.com/2009/05/17/hubble-servicing-mission-4-in-pictures-part-1/>



Space shuttle Atlantis and the HST

Award winning astrophotographer Thierry Legault wanted to image the HST and space shuttle Atlantis traveling together around Earth. From a location 100 kilometers south of the Kennedy Space Center, he pointed his telescope at the Sun and there they were. The transit duration was only 0.8 seconds and the transit bandwidth on Earth only 5.6 km. The photo was taken several minutes before the HST was grappled by Atlantis.

<http://www.astrophoto.fr/>

This was brought to my attention by Tony Viljoen, one of our committee members.

Bounty of space telescopes fuels golden age of astronomy

With the new facelift of the HST completed, and the successful launch of the Herschel and Planck observatories, a golden age of astronomy is truly under way. "We have the largest set of assets in space for astronomers ever," said Jon Morse, NASA's Astrophysics Division Director. "It really is a golden era to be a practicing astronomer. It entices me to leave my desk job and go back to the field."

There are now more than a dozen major observatories in space eyeballing everything from the Sun to planets around other stars to radiation from the dawn of time. Morse said: "We cover essentially the entire electromagnetic spectrum now, all the way from the gamma rays out to the microwaves and everything in between. It's an exciting time to be an astronomer."

<http://www.space.com/scienceastronomy/090518-space-telescopes.html>

The LSST

The LSST (Large Synoptic Survey Telescope) is a planned telescope that will gather huge amounts of astronomical data. The database and resulting catalogues will be made available to the public on the Internet with no proprietary restrictions. A sophisticated data management system will provide easy access, enabling simple queries from individual users. The public will actively share the adventure of discovery.

The 8.4-meter telescope will be constructed on Cerro Pachon, a mountain in northern Chile's Atacama Desert — the world's Southern Hemisphere astronomical observatory Mecca. Its design of three large mirrors and three refractive lenses in a camera leads to a 10-square-degree field of view with excellent image quality. The telescope's 3,200-megapixel camera will be the largest digital camera ever constructed. The telescope is projected for "first light" in 2014. It will be able to survey the entire visible sky deeply in multiple colours every week.

It is partially funded by Bill Gates of Microsoft fame and Charles Simyoni, the developer of Word and Excel. The project exemplifies characteristics Simyoni and Gates have exhibited in their careers — innovation, excitement of discovery, cutting-edge technology and a creative energy that pushes the possibilities of human achievement.

Bill Gates said of it: *"LSST is truly an Internet telescope, which will put terabytes of data each night into the hands of anyone who wants to explore it. The 8.4-metre LSST telescope and the 3-gigapixel camera are thus a shared resource for all humanity — the ultimate network peripheral device to explore the universe."*

The image is an artist's depiction of the observatory and associated buildings to be erected on Cerro Pachon.

http://www.dailygalaxy.com/my_weblog/2009/03/futuristic-inte.html

This was brought to my attention by dr. Adam Viljoen, one of our members. — Editor.



Book Your Tours of Titan and Enceladus Today!

Want to go somewhere far-flung and exotic? Now is the time to book! The Cassini spacecraft has several flyby tours of the moons Titan and Enceladus scheduled for the next few months. With Cassini, you can travel for **FREE!** just by following along with the website to which the link is given below.. Thrill with some of the closest flybys ever of the mystery moon Titan, and delight in explorations of the geyser plumes at the south pole of Enceladus. You can experience Saturn's equinox, as in August the Sun crosses from its southern to its northern hemisphere.

<http://www.universetoday.com/2009/06/02/book-your-tours-of-titan-and-enceladus-today/>

Planet X



Scientists at a Japanese university said they believe another planet up to two-thirds the size of the Earth was orbiting in the far reaches of the solar system. The researchers at Kobe University in western Japan said calculations using computer simulations led them to conclude it was only a matter of time before the mysterious "planet X" was found. "Because of the very cold temperature, its surface would be covered with ice, icy ammonia and methane," Kobe University

professor Tadashi Mukai, the lead researcher, said. Planet X — so called by scientists as it has not been found — would have an oblong elliptical solar orbit and circle the sun every thousand years, the team said, estimating the radius of its orbit to be 15 to 26 billion kilometers.

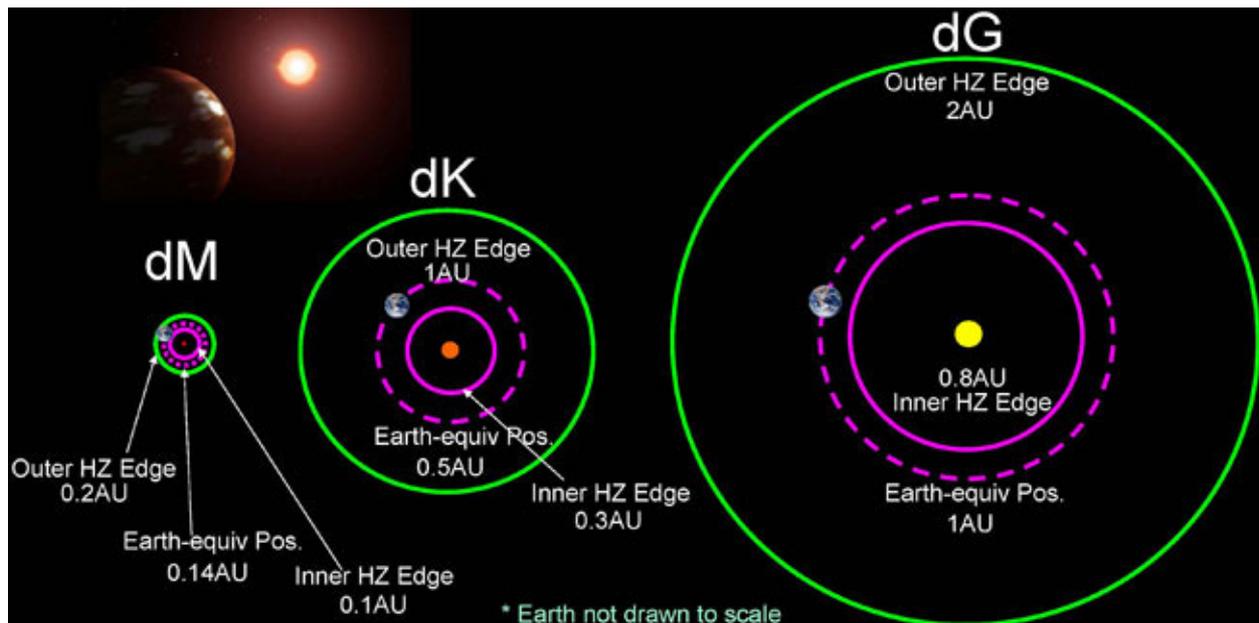
The image is an artist's depiction of the hypothetical planet X with the Sun in the background.

<http://dsc.discovery.com/news/2008/02/28/planet-solar-system.html>

Can life thrive around a red dwarf star?

Roughly three quarters of the stars in the galaxy are red dwarfs, but planet searches have typically passed over these tiny faint stars because they were thought to be unfriendly to potential life forms. But new preliminary results from a dedicated research program have shown that planets around red dwarfs could be habitable if they can maintain a magnetic field for a few billion years.

Red dwarfs — also called M dwarfs — are between 7 and 60 percent as massive as our Sun. Their lower mass means they don't burn as hot or as brightly, emitting less than 5 percent as much light as the sun. However, they have strong magnetic activity, which makes them relatively bright in X-rays and UV radiation and causes them to flare frequently.



The image shows the habitable zone (HZ) around a red (dM), orange (dK) and yellow (dG) dwarf star. The dotted pink circles are orbits where planets would have Earth's temperature.

<http://www.space.com/scienceastronomy/090409-sm-reddwarf-life.html>

Summary of "What's Up in the Sky?" to be presented on 24 June 2009 by Danie Barnardo

Phases of the Moon

Full Moon – 17 July
 Last Quarter – 15 July
 New Moon – 22 July
 First Quarter – 28 July

Best viewing

18 to 23 July.

Planets

Mercury (mag -1.0) is visible in the early morning one hour before sunrise for the first week and becomes an evening object by the middle of the month, but is too near to the Sun. **Venus** (mag -4.1) is visible from about two hours before sunrise all month. **Mars** (mag 1.1) is visible in the morning sky all month. **Jupiter** (mag -2.7) is visible all night, rising just after sunset. **Saturn** (mag 1.0) is visible for about four hours after sunset. **Uranus** (mag 5.8) rises two hours before midnight in Pices and is up till sunrise. **Neptune** (mag 7.9) is in Capricornus and rises a few hours after sunset. On 4 July, **Earth** is at aphelion (most distant from the Sun for the year) at 152.1 million km.

Specials to watch out for

On **14 July**, at 05:00, Mars is 8.5 degrees W of Venus in Taurus. On **18 July**, at 04:00, the Pleiades is 1 degree SW of the Moon, which passes through the cluster, also known as the Seven Sisters. On **25 July**, Saturn is 5.9 degrees N of the Moon in Leo.

Constellations

The following constellations is at midnight culmination, which means they reach the highest point of their course across the sky:

1 July: **Scutum**; 2 July: **Lyra**; 5 July: **Sagittarius**; 6 July: **Telescopium**; 12 July: **Aquila**;
 13 July: **Pavo**; 17 July: **Sagitta**; 26 July: **Vulpecula**; 29 July: **Cygnus**; 31 July: **Delphinus**.

Crux is high in the southern sky and **Scorpius** is overhead, with the bright red giant Antares forming its body. Near Antares is the spectacular globular cluster M4. Next to Scorpius is **Sagittarius**, marking the centre of the Milky Way. To the north of Scorpius is **Ophiuchus**. **Vega** and **Lyra** is low in the north. High in the north-west is the reddish star Arcturus, in **Bootes**. In the West is Spica in **Virgo**.

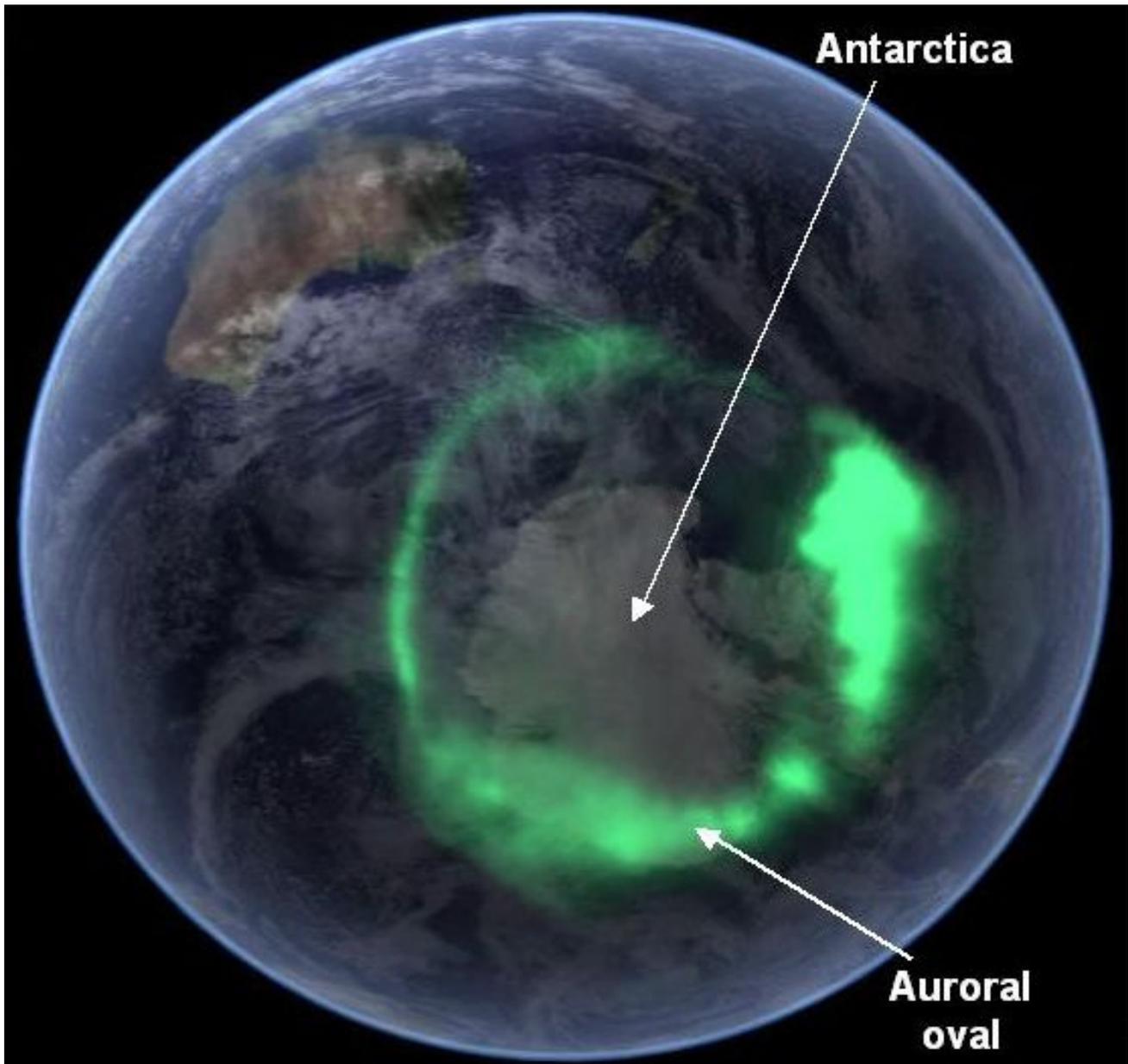
Notice to members

If you have already paid your membership fee for the coming financial year (that stretches from 1 July 2009 to 30 June 2010), then just discard the included subscription form and don't read any further.

The included subscription form must be filled in and sent in together with the fee by new members as well as by existing members who wish to continue their membership. **Please note that the membership fee for a financial year has been increased to R130-00.**

**THIS IS YOUR LAST NEWSLETTER, UNLESS YOUR
MEMBERSHIP FEE IS PAID BY JUNE 30.**

The Aurora Australis seen from space



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