



The PRETORIA CENTRE

of the

Astronomical Society of Southern Africa

www.pretoria-astronomy.co.za

NEWSLETTER JULY 2010

Next meeting

Venue: The auditorium behind the main building at Christian Brothers College (CBC), Mount Edmund, Pretoria Road, Silverton, Pretoria.

Date and time: Wednesday 28 July at 19h15.

Programme:

- **Annual General Meeting:** It will be short and sweet. Come and speak your mind. It will last only about 30 minutes.
- **What's Up in the Sky:** by Percy Jacobs
- 10 minute break — library will be open
- **Main talk:** "The Tswaing Meteorite Impact Crater" by Danie Barnardo
- Socializing over tea/coffee and biscuits.

The chairperson at the meeting will be Johan Smit

Next observing evening: Friday 23 July at Pretoria Centre Observatory, also at CBC. Turn left immediately after entering the main gate and follow the road. Arrive from sunset onwards. **NOTE: Observing evening for delegates on July 30th at same venue. See pp. 3 & 4.**

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Last month's meeting – by Pat Kühn

Despite the winter chill and the football world cup, the meeting of 23 June was well attended by 31 people including 10 visitors and even a couple of new members.

Beginner's Corner was presented by Fred Oosthuizen, his topic being "Astronomical Space Observatories". Fred took us through the background to space observatories, their features and benefits and summarized the different types currently in operation.

Until the middle of the twentieth century, astronomers could only study visible light emitted by stars and galaxies. While this rendered valuable information it limited the understanding of the true nature of the universe. With the dawning of the age of space exploration it became possible to launch observational platforms into space where they could operate beyond the interference of the earth's atmosphere. Advances in technology also meant that telescopes could be built which together covered a much wider portion of the EM spectrum, including microwave, infrared, visible, ultraviolet and gamma-ray frequencies. The advantages of operating beyond the atmosphere and covering a wider spectrum have resulted in greatly enhanced data becoming available, which has triggered enormous advances in astronomy and astro-physics in recent years.

What's Up was presented by Johan Smit. Apart from an comprehensive presentation of interesting objects and groupings to observe during July, Johan also included a substantial list of anniversaries of astronomical interest that occur during the coming month.

The main talk was presented by Trevor Gould from the Johannesburg ASSA Centre where he has served three terms as centre chairman. Trevor has previously presented talks at our monthly meetings and is well known to many members. As amateur astronomer and telescope maker he has a particular interest in planetary impact and meteorites.

We were treated to an entertaining and wide-ranging presentation depicting two major excursions that Trevor has undertaken in the past year or so. The presentation was illustrated by many truly spectacular photographs, suggesting that Trevor has yet another talent...

First up was his trip to Namibia to attend the International Conference on Galaxy Morphology. The event was held at Sossusvlei and was used to celebrate the 70th birthday of renowned astronomer Professor Ken Freeman. Needless to say the event was graced with a "who's who" in the field of astronomy. Unfortunately, due to pending publishing rights, Trevor could not share much in the way of conference content with his audience. However, his pictures showed many interesting scenes and personalities from the event.

The Sossusvlei area is world-renowned for its dune scenery and wildlife and Trevor treated us to an interesting photographic tour of this fascinating region.

The next part of his talk dealt with a trip to Lesotho's highland winter landscape. It became clear that snowscapes, frozen lakes – and would you believe – frozen waterfalls, are not just the prerogative of remote and exotic destinations, but are available for us to enjoy right here in our own "backyard" Again Trevor's spectacular pictures brought his subject to life and were a joy to behold.

Finally a series of eye opening and very interesting shots of solar effects combined with cloud formations captured by Trevor in his back garden, showed that observing is not limited to nocturnal astronomical objects, but is something we can practice anywhere, at any time – even when it is cloudy!

Last month's observing evening - by Michael Poll, Johan Smit, Percy Jacobs

This was a clear, cloudless evening – but there were a couple of other "c"s – c-c-cold. Nevertheless, about 15- 20 people were there with about half a dozen telescopes. The moon, Venus and Saturn were the highlights in the northwest, with the Moon and Saturn fairly close together. Mars was also in the same area, quite near Regulus, in Leo, with the red colour of the planet contrasting nicely with the blue of the star. At the July observing evening, Mercury will also be visible. These four planets in the evening sky are going to make a spectacular grouping from the end of July into the first half of August.

The Moon was not-quite-first-quarter. Prominent craters at this phase are Theophilus,

Cyrillus and Catharina, and a little way off, Piccolomini. Wayne Mitchell noted a linear feature near the Mare Vaporum / Serenitatis area, which has been tentatively identified retrospectively by MP as either Rima Hyginus or Rima Ariadaeus. Perhaps another look at another time? – but the phase may be too much at the next observing evening. “Rima” is Latin for a rille, and “rille” comes from the German for “cleft”. Rilles look like channels, and are thought to be the remains of collapsed lava tubes (http://en.wikipedia.org/wiki/Lava_tube) or extinct lava (<http://en.wikipedia.org/wiki/Lava>) flows. Typically a rille can be up to several kilometers wide and hundreds of kilometers in length.

Saturn's rings are still presented in such away that they appear very thin. One moon of Saturn was close to the ring edge.

In the south there were a number of favourite objects to be seen. In Scorpius we looked at the open cluster Messier 7, and the region around NGC 6231, an area also known as the “False Comet”. A couple of globular clusters noted in Scorpius were NGC 6388, near Upsilon (u) Scorpii, and NGC 6641, near the star G Scorpii (G itself is near M7). A-not-often-visited cluster we looked at was NGC 6025 in Triangulum Australe.

We also looked at some double stars, including Alpha Circinii and Sigma Scorpii. These two doubles are similar in that there is a bright primary and a speck of a secondary. The Scorpius pair is just a bit wider than the Circinus pair. A third double is Beta Scorpii, a nice bright pair. Michael also had a look at Gamma Virginis (Porrina), which closed up earlier in the decade, and are now opening. The pair was still not split in his 6 inch reflector.

Johan had the 14 inch telescope there, and showed one of his favourite clusters to everyone who cared to look - NGC 2537, the heart shaped cluster in Vela. At the July observing, this object will be getting too low on the horizon for easy viewing, so if you missed it this time, you can try again in the evenings next year in January or February! After that the 14 inch spent time on a number of objects. These included the Eta Carinae nebula, the open cluster known as the Jewel Box (NGC 4755) and the globular cluster Omega Centauri (NCC 5139), which, of course, resolved nicely in to separate stars with the aperture used. Also, quite some time was spent on Saturn and the Moon with the 14 inch. The tracking capabilities of this telescope was really be able to get the most out of these targets. Although the Moon was a bit *too* bright for such an aperture, the high magnification provided spectacular detail. In the Scorpius region the 14 inch was at various times, aimed at M6 (the Butterfly Cluster), M7, as well as NGC 6231. Lastly Percy found the Swan Nebula, which was a bit dull in the 14 inch, but in Percy's 10 inch used with a filter it was quite spectacular.

During the evening some technical advice was also provided to two visitors with a brand new telescope, still in the box. Percy and Casper assisted with the assembly and alignment, while Johan was on hand with “suitable comments”! The operators soon experienced “first light” with their new telescope, and were shown where to find some targets to view. Another person present was considering expanding his eyepiece collection, and tried a selection from Johan's collection, and soon found one to suit his purpose - the viewing evening is not only about viewing. We will help you to get the most out of your equipment!

Of the telescopes that were there, one notable one was the one built by Zachariah, who at 13 years old, is our youngest telescope maker. Zack brought his completed 6" scope for all to see. Zach was quite pleased when he was able to split the double star Alpha Centauri. Once again, well done Zach, the mirror you have made, is made to the same high standards as other mirrors from the telescope making class. Zach spent many hours building his telescope, and the attached photographs show the telescope at various stages of construction – shown in the photos are the mirror cell, the spider assembly, the nearly completed tube, and Zach with finished article which was “officially unveiled” at this observing evening.

Our next observing evening is on Friday July 23rd, but members are asked to take note of an **observing evening for CBC delegates on July 30th 2010**.

Christian Brothers College is hosting a teacher's conference over the weekend of July 30th 2010, for approximately 25 persons. (The theme is “Religion and Science”). The Headmaster, Mr Ross, has enquired of the Centre, via Gordon Britz, whether we could arrange an observing eve-

ning for the delegates on Friday July 30th. Michael has confirmed with Johan and Gordon that we will do this.

Members of the Pretoria Centre will be aware that CBC has allowed us to use their facilities for our meetings, free of charge, for more than 20 years. The feeling is that we need to put on a **good show**, with **as many telescopes as possible**, as a way of **showing our gratitude to CBC!** Accordingly, if you have telescope, please bring it along! The intention is to start as soon as it gets dark, so, if possible, please be set up by then.

Gordon has indicated that the delegates may not want to go on too late. However, we have said that we will stay as long as they want us to – there will be so many things to see that they may not want to stop! However, as many telescopes as possible are needed, so that if they do want to finish early, they will not have to queue to have a look at anything.



Summary of coming presentation “What’s Up in the Sky” - by Percy Jacobs

Phases of the Moon

- Last Quarter – 3rd Aug 10 (rises 00:13)
- New Moon – 10th Aug 10 (rises 06:38)
- First Quarter – 16th Aug 10 (rises 10:45)
- Full Moon – 24th Aug 10 (rise 17:48)
- Dark Sky – from about 1st Aug to 13th Aug (good viewing time)

Planets

Mercury - mag. 0.2

Seen in the west after sunset at its greatest altitude on the 5th Aug

Through a telescope, you should be able to see Mercury in a “half moon phase”

Venus - mag. -4.2

Visible until about 21:00 after sunset in the west – brightest object in the sky- through a telescope, you should be able to see Venus in a “half moon phase” – therefore its brightness

Mars - mag. 1.5

Visible in early evening in the west / north west until about 21:00
Beware of annual “Mars Hoax” doing its round

Jupiter - mag. -2.7

Another bright object in eastern part of sky appearing well before midnight at about 22:00 in the evening

Saturn - mag. 1.1

Can only been seen in the west for about 2 to 3hrs after sunset

Uranus - mag.5.8

Risers a few hrs after sunset in the east. At mag. 5.8, a very faint and small object

Neptune - mag. 7.8

Can be seen in the eastern part of the sky for most of the month. However, at mag. 7.8 object is very faint and small

Events & highlights

NOTE: On about the 12th to 14th Aug, at about 19:00, a nice grouping of the crescent moon, along with Mercury, Mars, Saturn and Venus can be seen – look towards the low west part of the sky

NOTE: In the first week of Aug, in the west, you will have 4 of the planets in a group - Mercury, Venus, Mars, Saturn

NOTE: Towards the end of Aug, in the east, you will see 3 of the planets, Neptune 1st, then lower down, Uranus, then Jupiter

NOTE: For the people with telescopes, look out for the Ganymede transit across Jupiter on the 27th Aug at 20:30. Ganymede’s shadow can be seen to move across Jupiter’s Red Spot.

Meteor Showers

No favourable meteor showers listed for Aug

Some interesting Constellations – shall be discussed in more detail at meeting

Cygnus - ID star Deneb (also Albireo)	- in the north east
Lyra - ID star Vega	- in the north
Capricornus	- in the east
Sagittarius	- in the north east
Sagitta	- in the north east
Delphinus	- in the north east
Scorpius - ID star Antares	- zenith
Libra	- zenith
Southern Cross	
Centaurus ID stars Alpha & Beta Centauri	

Telescope for sale

Skywatcher Blue 150mm / 1000mm Reflection Tube.

1 x Super 10 Long Eye relief eye piece

1 x Super 25 Wide angle Long Eye relief eye piece

1 x 2X Barlow lens

GOTO Sky scan system with 12V Battery Pack.

1 x Heavy duty Tripod with all fittings.

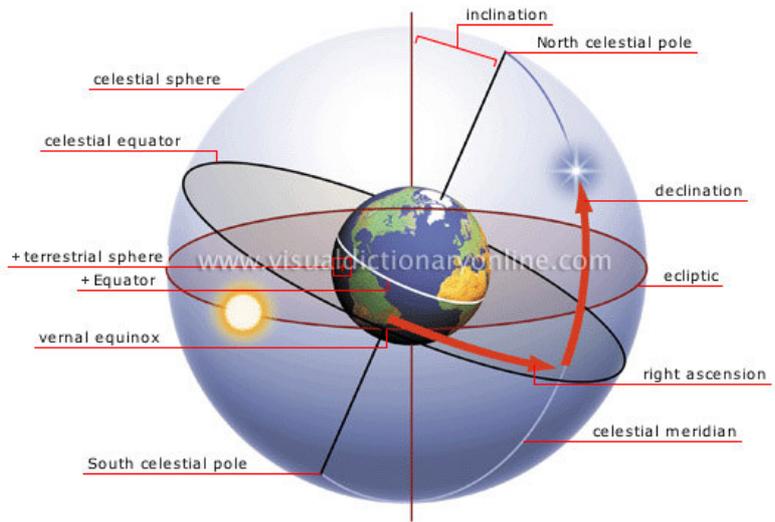
It was never used due to change of work and other responsibilities.

Price R6000 cash. Worth over R9000. In Groblersdal. Marcus Botha Cell 083 305 6160

Basics: Coordinate systems - by Pierre Lourens

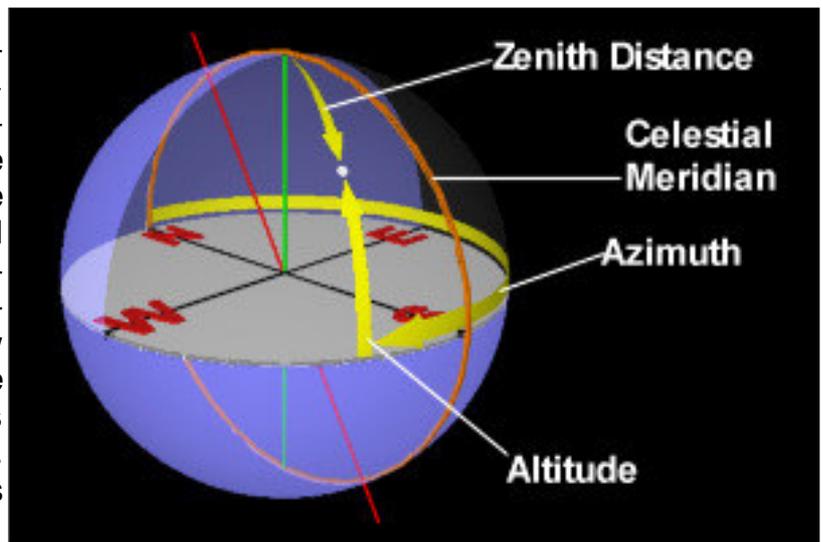
Celestial coordinate system

It is analogous to the latitude-longitude system employed for the surface of the Earth. The figure on the right explains it. Right Ascension (RA) is measured in sidereal hours, minutes and seconds: 24 sidereal hours \equiv 360°. Declination (Dec) is measured in degrees, minutes and seconds. Dec is positive when measured towards the north celestial pole and negative when measured toward the south celestial pole.



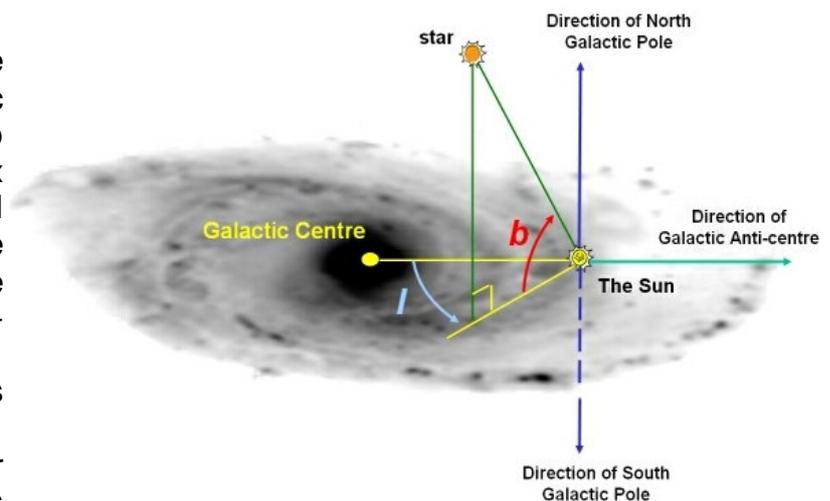
Horizon coordinate system

Its primary reference circle is the horizon. See the figure on the right. The coordinates of a point in the sky in the horizon coordinate system are the altitude and azimuth of it. Both coordinates are measured in degrees, minutes, and seconds. The altitude can range from -90 degrees to +90 degrees. If the altitude of a point is negative, it is below the horizon. The zenith distance is the complement to the altitude. This is sometimes used instead of the altitude. The horizon coordinates of a point is dependent on time and place on Earth.



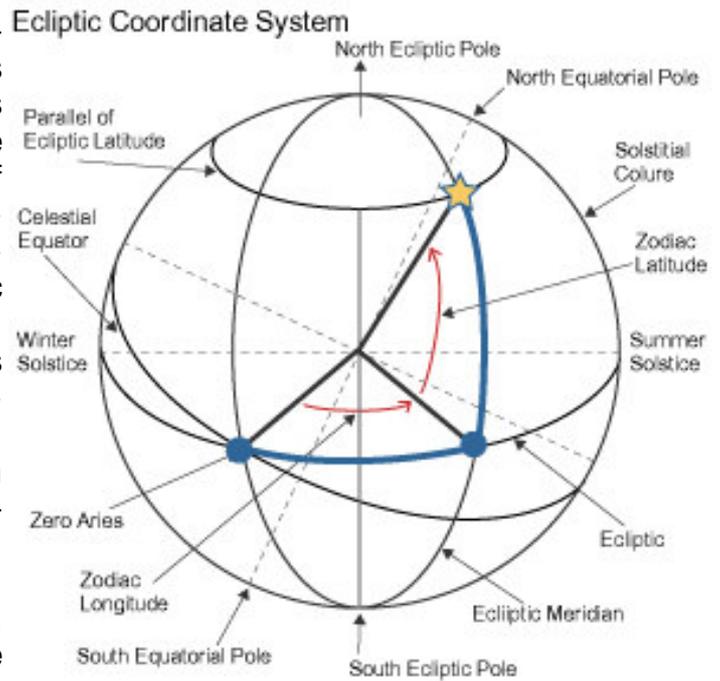
Galactic coordinate system

These take the centre of the Sun as the origin and the coordinates are galactic longitude and galactic latitude (l and b in the figure on the right). In order to fix the plane in which the longitude and from which the latitude is measured, the direction of the North Galactic Pole (NGP) is taken to be that defined by celestial coordinates RA 12h51m26.282s, Dec 27°07'42.01" (2000.0 epoch). This direction is towards Coma Berenices (Berenice's Hair), near the bright star Arcturus. The plane is then taken as perpendicular to this direction. The line from which the longitude is measured in this plane, is taken to be the line from the centre of the Sun to the Galactic Centre, the direction of which is taken to be that defined by celestial coordinates 17h45m37.224s, $-28^{\circ}56'10.23''$ (2000.0 epoch). The latter direction is towards the constellation of Sagittarius (The Archer). The longitude l is measured clockwise looking towards the NGP, analogous to the way the RA is measured in the celestial coordinate system. The latitude b is positive when measured towards the NGP and negative when measured toward the South Galactic Pole, analogous to the way the Dec is measured in the celestial coordinate system. l and b are measured in degrees, minutes and seconds.



Ecliptic coordinate system

The ecliptic coordinate system uses the ecliptic for its fundamental plane. (The ecliptic is the circle where the projection of the Earth's orbital plane cuts an imaginary sphere with the Sun as centre, and is also the apparent path of the Sun during the course of a year.) The figure explains how the ecliptic longitude (or zodiac longitude) λ and ecliptic latitude (or zodiac latitude) β of a point in the sky are measured. They are measured in a way that is analogous to the way the RA and Dec of the celestial coordinate system are measured. "Zero Aries" in the figure is the vernal equinox (of the northern hemisphere). β is positive when measured towards the north ecliptic pole and negative when measured toward the south ecliptic pole. β and λ are both measured in degrees, minutes and seconds. The ecliptic coordinate system can be particularly useful for charting solar system objects.



**Astronomical Society of Southern Africa Annual General Meeting at CBC
by Michael Poll**

Members of the Pretoria Centre of ASSA are invited to attend the Annual General Meeting of ASSA , which will be held in the Auditorium at CBC on Wednesday, August 4th 2010, at 19h00 for 19h15.

Members of a Centre of ASSA are automatically members of ASSA , and, as such, are free to attend the AGM. The only restriction is that persons who are not members of the national body are classed as non-voting members.

The business meeting will include Observing Section reports, Report of Council, Election of Officers, and the handover to the new President. The business meeting will be followed by the Presidential Address, delivered by the outgoing President. The title of the Address is "**Life on Earth..... and Elsewhere?**"

Michael Poll, a former chairman of the Pretoria Centre of the ASSA, is currently President of ASSA.

LOFAR

LOFAR started as a new and innovative effort to force a breakthrough in sensitivity for astronomical observations at radio frequencies below 250 MHz. The **LOW** Frequency **AR**ray is a multi-purpose sensor array. Its main application is astronomy at low frequencies (10-250 MHz) but also has geophysical and agricultural applications. Its heart is currently being assembled in the Northeast of the Netherlands and spreads over the whole country and over the whole of Europe.

The new LOFAR telescope has been built according to a completely new concept. No large dishes are used, but large numbers of small antennas. 7 000 antennas are spread over 44 fields in the North of the Netherlands and from Sweden to France and from the UK to the East of Germany. Glass fibers connect the antennas with a supercomputer at the University of Groningen's Computer Centre. In this way, a giant telescope is formed.

<http://www.lofar.org/>

This information was sent to me by Dr Jan Plomp, one of our members.

ASSA Symposium 2010

First announcement and invitation to submit papers

The Society will hold its 2010 Symposium on 7, 8 and 9 October 2010 at the Council for Geoscience, Pretoria Road 280, Silverton, Pretoria. The Symposium will be hosted by the Pretoria Centre of ASSA.

The symposium will be focusing on light/spectrum pollution, but will not be limited to these topics. All other aspects of astronomy will be allowed during the Symposium. We wish to invite both professional and amateur astronomers to present papers at the symposium.

The organizing committee is calling for abstracts (non-technical overviews of the papers that will eventually be presented. No mathematical or diagrammatic content required. Primary references, or a short list of related publications by the presenter, must be included. Verbal papers may be submitted in two categories:

- Short papers, for delivery in 20 minutes, with 10 minutes for discussion and questions.
- Long papers, for delivery in 40 minutes, with 20 minutes for discussion and questions.

A third available category is:

- Presentations in the form of displays. These may use one standard folding table (about 1 800 X 600 mm in size) and a poster board behind it to display any subject pertaining to astronomy.

Authors should indicate in the abstract in which category the paper is being submitted. Please make submissions in doc (MS Word) or Adobe PDF format. Only e-mailed submissions, with the file attached, will be accepted. Full contact details (including e-mail address) and the full title of the paper MUST be submitted with the abstract. The latest date for submission is 31 July 2010. Please indicate a preferred date and time to present your paper.

The Symposium committee reserves the right to accept or reject papers and to decide in which session of the Symposium it will be placed, although all efforts will be made to accommodate presenters.

Persons interested in attending the Symposium, delivering a paper or presenting a display should contact the Symposium committee at:

symposium2010@pretoria-astronomy.co.za

More details and a subscription form can also be downloaded from:

<http://www.pretoria-astronomy.co.za>

Alternatively, the phone contact is: Andrie van der Linde at: 083 632 4894

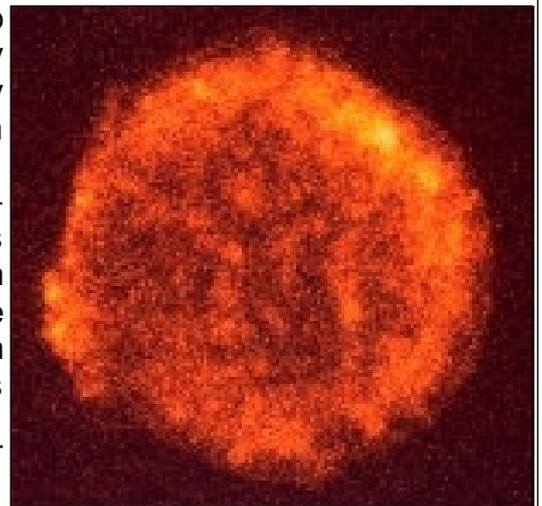
Astronomers identify supernova seen 400 years ago

More than 400 years after Danish astronomer Tycho Brahe challenged established wisdom about the heavens by analyzing a strange new light in the sky, scientists say they've finally nailed down just what he saw. The research analyzed a "light echo" from the long-ago event.

The story of what is commonly called Tycho's supernova began on November 11, 1572, when Tycho Brahe was astonished to see what he thought was a brilliant new star in the constellation Cassiopeia. The light eventually became as bright as Venus and could be seen for two weeks in broad daylight. After 16 months, it disappeared. This was during the time before telescopes were invented.

This X-ray image, captured by the German ROSAT satellite in the 1990s, shows the remnant of the supernova.

<http://dsc.discovery.com/news/2008/12/03/supernova-star.html>



Top 10's

- The top 10 most intriguing extra solar planets.
- The top 10 lunar eclipse facts.
- The top 10 star mysteries.
- The top 10 stormiest places in the Galaxy.
- The top 10 confounding cosmic questions.
- Lots of other top 10's pertaining to astronomy.

<http://www.space.com/top10/>

How many galaxies are there in the Universe?

Astronomers think that there are hundreds of billions of galaxies in the Universe. However, the exact number is not known. But astronomers should know, right? Well, not necessarily. "We don't know," says Ed Churchwell, professor of astronomy at the University of Wisconsin-Madison. "We know it's a very large number." In just one image for example, the Hubble Ultra Deep Field, there are about 10 000 galaxies visible.

The estimate of how many galaxies there are in the Universe is done by counting how many galaxies we can see in a small area of the sky. This number is then used to guess how many galaxies there are in the entire sky. But the number of known galaxies will keep growing as our telescopes get better and can look out and back farther in time.

<http://www.universetoday.com/2009/08/03/how-many-galaxies-have-we-discovered/>



Second Karoo Star Party

The ASSA Pretoria Centre wants to hold its second National Karoo Star Party during the long weekend of 6 to 9 August 2010 about 20 km north of Britstown in the Karoo, right next to the N12 at the Kambro Padstal. The reason for this locality, apart from the fabulous Karoo skies, is that it is almost exactly halfway between Gauteng and the Cape Town area, so we can all drive the same distance to the site. The first event of this type was held during April 2009 and proved to be a big success. The Karoo lived up to its reputation and provided magnificent views to those lucky enough to be present.

More information from:

- Johan Smit, cellphone: 072 806 2939, e-mail: JohanS@firsttech.co.za
- Danie Barnardo, cellphone: 084 588 6668, e-mail: daniebar@telkomsa.net

To book, please contact Wilma Strauss, the Manager of Kambro directly at 083 305 6668 or at e-mail: kambro@worldonline.co.za. You can also view their website (with a report on the star party that took place last year) at: <http://www.kambroaccom.co.za/>

Extra solar planets at full tilt

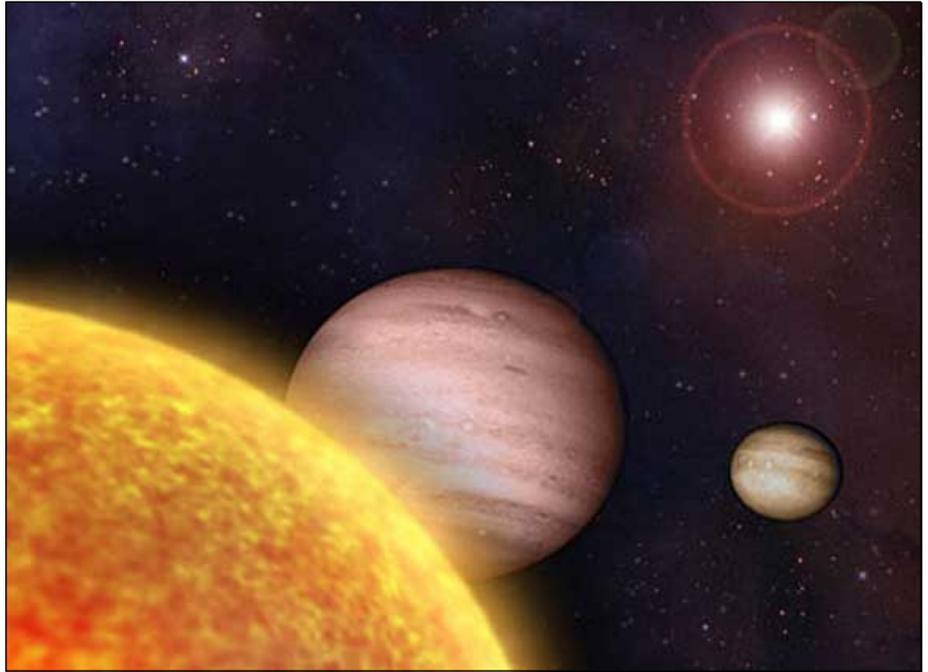
Call them the wrong-way planets. Several giant, extrasolar planets, all residing within sizzling distance of their parent stars, have orbits so tilted that the planets travel backward relative to their parent stars' rotation, a flurry of new studies reveals. The misalignments attest to rough-and-tumble histories and may suggest that life flourished on Earth because the solar system avoided the brunt of close gravitational encounters between planets.

According to the most popular formation theory, planets coalesce from a swirling disk of gas

and dust that surrounds young stars. Since the disk rotates in the same direction as the star, the planets spawned by the disk should revolve in the same direction. But in an overcrowded planetary system, where a gravitational game of billiards is all but inevitable, orbits can get scrambled. A close encounter between planetary siblings can push one body outward while flinging the other inward, elongating and tilting the inner planet's orbit.

A gravitational encounter between two neighbouring extra solar planets, shown in this artist's illustration, may hurl one of the two planets towards their parent star, tilting the planetary orbit in the process.

<http://dsc.discovery.com/news/2009/08/25/planets-zoom.html>

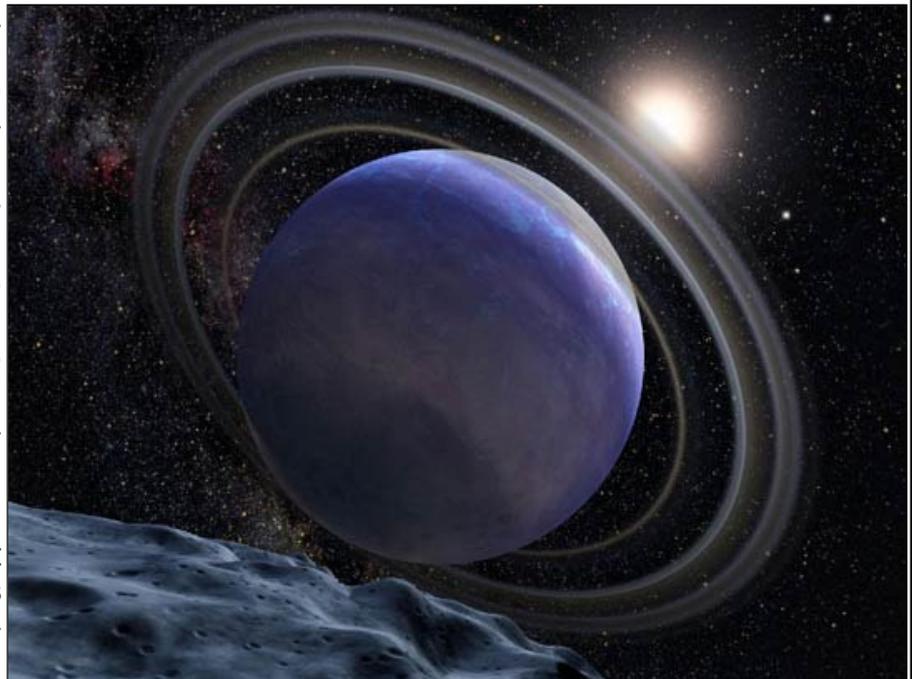


Rocky extra solar planet found

Astronomers have finally found a place outside our solar system where there's a firm place to stand -- if only it weren't so broiling hot.

As scientists search the skies for life elsewhere, they have found more than 400 planets outside our solar system. But they all have been gas balls or can't be proven to be solid. Now a team of European astronomers has confirmed the first rocky extrasolar planet.

Scientists have long figured that if life begins on a planet, it needs a solid surface to rest on, so finding one elsewhere is a big deal.



This artist's depiction shows an exoplanet with a rocky surface, seen from an imaginary moon of the planet. <http://dsc.discovery.com/news/2009/09/16/rocky-exoplanet.html>

Astronomers spot new type of 'death star'

A team of astronomers has found the 'missing link' of stellar death, revealing what our Sun might look like at the end of its life. The group of Australian and US astronomers call the new class of objects 'super planetary nebulae'.

Large stars typically end their life in a massive explosion of energy known as a supernova. Small stars end with a much smaller blast of gas and dust, known as planetary nebulae. Planetary nebulae had only been detected around stars with a mass of between 30% and 60% that of the Sun. Little was known as to what happened to an average-sized star, such as our Sun.

The newly found objects are planetary nebulae that formed from stars with intermediate masses.

<http://www.abc.net.au/science/articles/2009/08/18/2659610.htm>

Strange dwarf planet has red spot

A dwarf planet in our solar system, called Haumea, is known for its unusual shape and fast spin. Now astronomers have discovered another distinguishing feature: a dark red spot which appears to be richer in minerals and organic compounds than the surrounding icy surface. Haumea, discovered in 2004, orbits the Sun beyond Neptune in a region known as the Kuiper Belt. It is classified as a dwarf planet — a celestial body that is big enough to have been rounded by its own gravity, but has not cleared its neighbouring region of similar objects. There are four other known dwarf planets: Ceres, Pluto, Eris and Makemake. Haumea is the fourth largest one. A composite image of computer model frames shows Haumea's red spot as Haumea rotates.

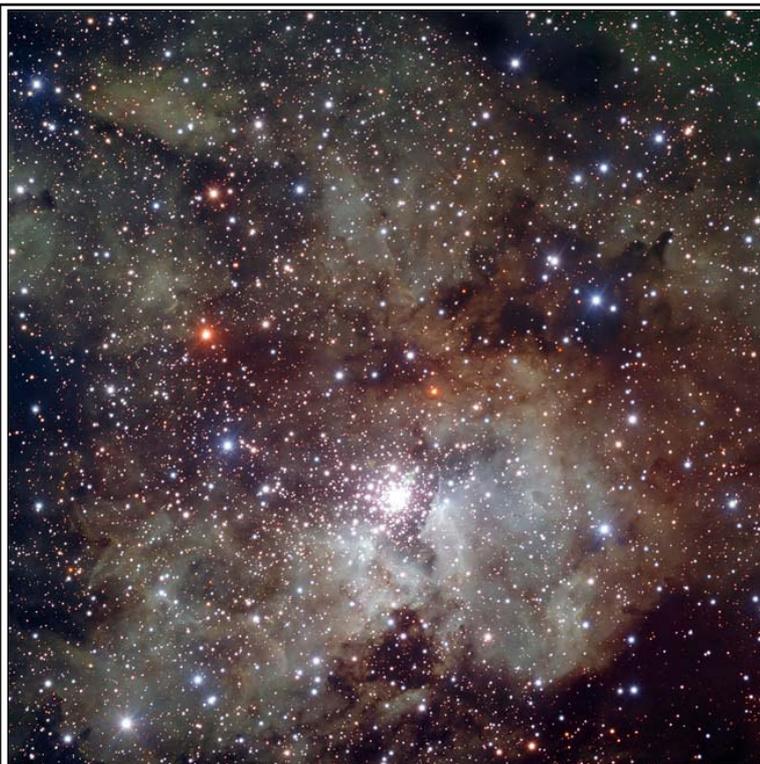


<http://www.livescience.com/space/090915-Haumea-dark-spot.html>

NGC 3603

The nebula dubbed NGC 3603 is called a starburst region because stars are coming into being in feverish bursts of activity. It lies about 22 000 light-years away from the Sun, making it the closest region of the kind known in our galaxy. This near view offers astronomers a relatively local test bed for studying intense star formation processes that are usually hard to observe in detail because of their great distance from the Sun.

This new view was captured by the European Southern Observatory's Very Large Telescope in the Atacama desert of Chile. The cosmic panorama displays the rich texture of the surrounding clouds of gas and dust in the area, with many of the hot newborn stars dotting the scene with blue light.



<http://www.space.com/scienceastronomy/baby-stars-born-nebula-100203.html>

The Helix nebula

The **Helix nebula** as seen by the Hubble Space Telescope and the Cerro Tololo Inter-American Observatory. The **Helix nebula**, also known as **The Helix** or **NGC 7293**, is a large planetary nebula. It lies in the constellation of Aquarius (Latin for The Water Bearer), about 700 light-years away. It spans about 2.5 light-years. The remnant central stellar core, known as a planetary nebula nucleus or PNN, is destined to become a white dwarf. The Helix nebula has often been referred to as the **EYE OF GOD** on the internet. http://en.wikipedia.org/wiki/Helix_Nebula



Committee of the Pretoria Centre of the ASSA

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Librarian	Danie Barnardo	084 588 6668 [Mobile]	
Curator of Instruments	Johan Smit	072 806 2939 [Mobile]	
Public Relations Officer	Fred Oosthuizen	072 373 2865 [Mobile]	
Assistant Treasurer	Percy Jacobs	082 498 4680 [Mobile]	
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Member	Johan Hartmann	083 276 1323 [Mobile]	
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Aquarius

