The PRETORIA CENTRE

of the

Astronomical Society of Southern Africa

www.pretoria-astronomy.co.za

NEWSLETTER FEBRUARY 2022

NEXT MEETING

Internet meeting. *

Date and time: Wednesday 23 February 2022 at 19h00.

Programme: Presentation about Vera Rubin - by Bosman Olivier. **

Chairman: Danie Barnardo.

* You will receive an e-mail invite from Johan Smit around 18:30 to join the meeting. Please join as quickly as possible.

** The presentation will be about Vera Rubin, astronomer extraordinaire. She "discovered" the presence of Dark Matter in the Milky Way.
We will be viewing an interview with Jaqueline and Simon Mitton, two British astronomy authors and who wrote a biography of Vera Rubin.

Virtual observing evening chat Friday 18 February 2022

Like last month, this will start at 18h30. Johan Smit will open the meeting at around 18h15 and anyone who wishes to join the chat is welcome to join in the fun. Be seated in front of your computer at 18h15 with a glass of wine/beer/coffee.

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Astronomy-related articles on the Internet

EarthSky | A new mystery object within our Milky Way galaxy
Astronomers have discovered a new mysterious object that emits bright radio waves three times an hour for about a minute in duration. But what on Earth (or rather, in heaven) is it?

A Second Interstellar Visitor Has Arrived in Our Solar System. This Time, Astronomers Think They Know Where It Came From | Space
Comet 2I/Borisov is now racing through our solar system. It is of interstellar origin.

New Insights Into the Physics of Supermassive Black Holes - The Daily Galaxy

EarthSky | Which spiral arm of the Milky Way holds our sun?
The Sun is located in a relatively minor spiral arm, the Orion-Cygnus Arm.

Earth has a second known 'Trojan asteroid' that shares its orbit | Science News
A recently found space rock is moving along with Earth around the Sun. This "Trojan asteroid" is only the second one discovered that belongs to Earth.

EarthSky | Procyon: The Little Dog Star
Procyon (aka the Little Dog Star), Sirius and Betelgeuse form what is called the "Winter Triangle" in the northern hemisphere.

EarthSky | Photos and video of huge asteroid 1994 PC1. It passed Earth safely January 18 It is 1 km in diameter and its closest approach was more than 5X the Earth-moon distance.

EarthSky | Mighty Saturn auroras driven by high-altitude winds

EarthSky | 1st wandering black hole found in Milky Way
Astronomers have found a solitary, wandering black hole. This is the first one to be identified in our galaxy. Because they're solitary – not pulling mass from a companion – they're very hard to detect. It was detected by gravitational microlensing.

NOTICE BOARD

Karoo Star Party. See the last paragraph on page 6 of this newsletter and/or visit our website.

Exoplanets. As of 1 January 2022, there are 4905 confirmed exoplanets in 3629 planetary systems, with 808 systems having more than one planet. These numbers are increasing all the time, and are already outdated as you read this.

Sutherland Planetarium. It is located in the centre of Sutherland en route to SAAO outside the town. It is the latest and only privately owned Digital Planetarium in South Africa. The 30-seat planetarium is open 7 days a week.
Sutherland Planetarium

UFO's. 2022 could be a turning point in the study of UFOs | Space

'Something's coming': is America finally ready to take UFOs seriously? | UFOs | The Guardian

Short 19-minute SF film.
Sci-Fi Short Film "Orbit Ever After" | DUST Exclusive - YouTube

Old newsletters: All old newsletters from January 2004 onward are on our website. They contain a record of our Centre's activities as well as astronomical information.

Data base: Members are reminded that a data base of the books in our library is to be found on our website.

Feature of the month: Dying star's last days observed for first time

For the first time, astronomers have made observations of the last moments of a massive red supergiant star before it exploded as a supernova. They observed the star during its final 130 days. It was like watching a slowly ticking time bomb.

EarthSky | Dying star's explosive end seen by astronomers

Astronomy basics: Helioseismology

Extremely low frequency sound waves are generated by activity in the Sun. These propagate through the Sun and make it vibrate, like a gong that has been struck. By studying these vibrations, astronomers have learned a great deal about the interior of the Sun, just as geologists have learned a great deal about the interior of the Earth by studying seismic waves travelling through it. See a video clip on this topic at:

PostedVideos(mp4s) - OneDrive (sharepoint.com)

Astronomy-related images, video clips and documentaries on the Internet

EarthSky | New video: The 1843 Great Eruption of Eta Carinae

Radio Signals Reveal Deep Mysteries Of Saturn And Jupiter – YouTube

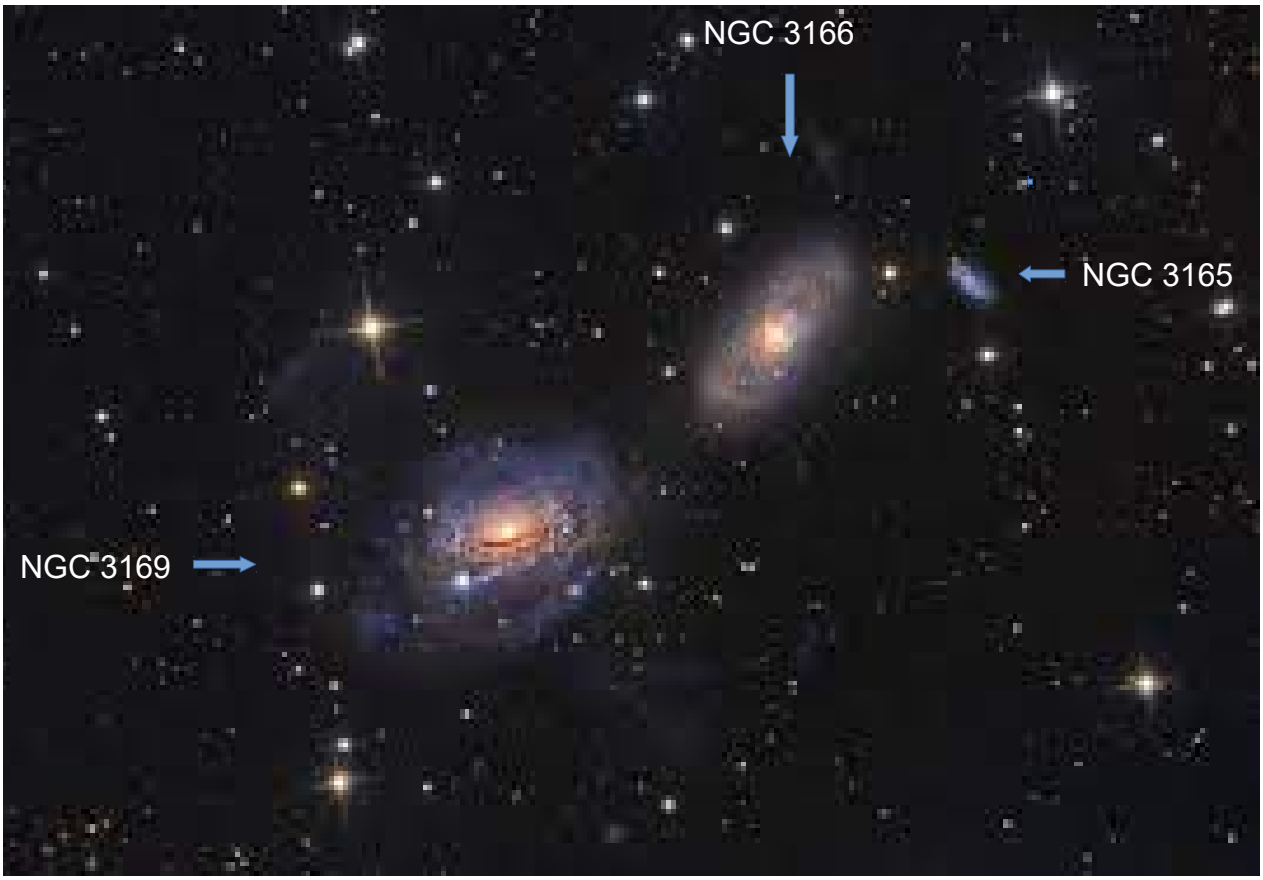
Observing: Gazing back - by Magda Streicher

One of the oldest instruments to scan the skies in ancient times was the faithful Sextant. The constellation Sextans, named for it, has no shortage of galaxies, but there is a pair that really catches the eye. NGC 3169 and NGC 3166 look back at us as a close spiral pair located some 70 million light-years from Earth in the constellation Sextans.

The larger NGC 3169 is disrupted mainly as a result of intense gravity from its neighbour, and amazingly, both could fit into our Milky Way. On an exceptionally dark night I observed the pair with high magnification and found NGC 3169 to be slightly brighter and larger than NGC 3166 with a definite hazy edge. However, NGC 3166, the western member, boasts a relatively bright nucleus, with the very tiny galaxy NGC 3165 hanging for dear life on the far western edge of this amazing pair.

Turn your eyes to the starry night skies and feast them on these and many other wonders of the mighty Universe. **Ω**

OBJECT	TYPE	RA	DEC	MAG	SIZE
NGC 3169	Galaxy pairs	10 h 14.2 m	+03° 27.8’	10.2	4.2’ x 2.8’



NGC 3169 and NGC 3166, two interacting galaxies in constellation Sextans. Also visible at top right is little bluish NGC 3165.

Magda Streicher’s e-mail address: magdalena@mweb.co.za

What's up in March 2022? - by Danie Barnardo

This is the first month of Fall and the weather forecast still predicts cloudy weather and higher than normal rainfall for this month and up to April 2022. Weather25.com predicts 15 to 22 days of rain in Pretoria during March 2022. This means we can expect to still experience challenging viewing conditions during this month. Use the time wisely to research on what to expect in the prime viewing time during the coming winter months and to plan your viewing time accordingly.

The Moon phases for March 2022

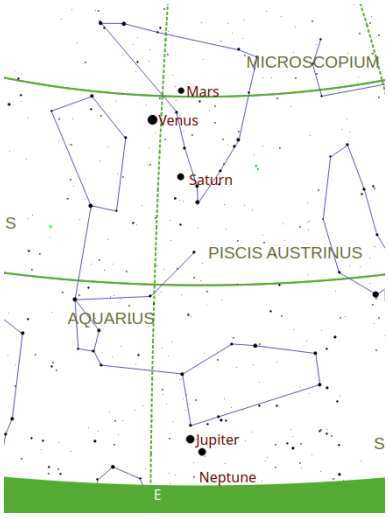
New Moon Wednesday 2 March
First quarter Thursday 10 March
Full Moon Friday 18 March
Last Quarter Friday 21 March

The Moon always provides good viewing opportunities (cloudy conditions permitting!), even in light-polluted city environments. A good source of what to view on the Moon is the **Lunar 100 Finder List**, which is a list of lunar highlights similar to the ASSA 100 list. A good source of information is available from:
https://backyardstargazers.com/guide-to-the-lunar-100-including-free-downloads/
which includes a few useful pdf downloads to assist you.

Another rewarding, but challenging lunar viewing opportunity is to look out for the Clair-Obscur ("claire" is French for light and "obscur" is French for shadow) effects on the Moon as the terminator (the "line" separating the light and dark part of the Moon) moves across the surface of the Moon during the lunar cycle each month. During the passage of the terminator over areas of high relief on the Moon, interesting interplays of light and shadow can be observed. This interplay creates interesting patterns, similar to asterisms in the night sky. These effects make for good, but challenging viewing opportunities and you do not need expensive equipment. A 4 to 6 inch telescope on a sturdy mount is sufficient and a 6 inch Newtonian on a Dobsonian mount is more than adequate. Relatively less complicated photography opportunities with a 300 to 600mm telephoto lens and a DSLR on a suitable sturdy tripod are also possible. A good source of information on these interesting phenomena is on page 19 of the 2022 Sky Guide, and on the following website:
https://www.skyatnightmagazine.com/advice/skills/clair-obscur-effects-on-moon/
A good source describing lunar photography can be found on:
https://www.lightstalking.com/how-to-photograph-the-moon/

The Planets

All of the 5 naked eye planets are visible at the same time in the sky at dawn during 19 to 23 March, one of only three times during 2022. The other two opportunities are during 29 June to 4 July and from 9 to 31 December.



Right: The 5 naked-eye planets at about 05:35 on 22 March in the east (Mercury just below Jupiter)

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On 21 March from about 03:00 in the morning sky, the three planets Mars, Saturn and Venus form a good-looking trio, close together in the east.

Mercury Mag -0.77 low on the horizon in the east before sunrise – 1st week of month.

Venus Mag -4.27 in the east at dawn – whole month – rising just after 03:00.

Mars Mag 1.13 in the east at dawn – whole month – rising just after 03:00.

Jupiter Mag -1.88 low on the horizon in the east before sunrise – 1st week of month.

Saturn Mag 0.06 in the east at dawn – whole month – rising just after 04:00.

Uranus Mag 5.84 – visible from after midnight in the evening sky.

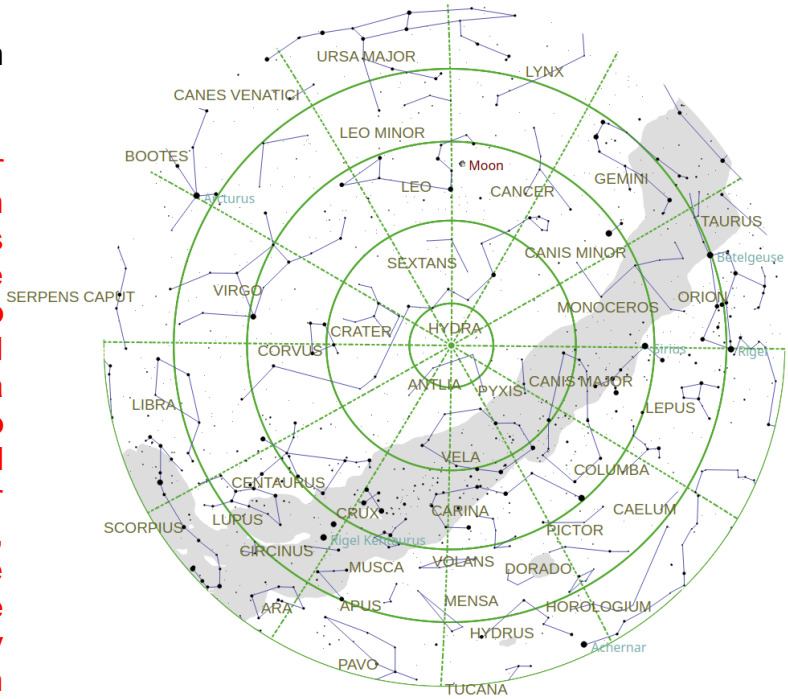
Neptune Mag 7.96 – visible low in the east just before sunrise at the end of the month.

Constellations

The dominant summer constellation Orion is setting earlier and earlier during the night and at the end of the month it sets just before midnight. At the same time Scorpius, the dominant summer constellation, rises earlier and earlier and is already just above the eastern horizon by 22:00 after the middle of the month. This is starting to be your last chance to view the delights in Orion before Scorpius takes over the night sky. On the 15th of March (see sky map below), you get the chance to see Orion very low in the west and Scorpius very low in the east at about 22:00.

Other prominent constellations during March include Canis Major, Vela, Puppis and Carina, while Orion and Taurus are still prominent before about 21:00.

Right: Sky map on 15 March at about 22:00



In the meantime our annual exodus to Kambro in the Central Karoo is approaching. This year it is the 30th anniversary of the **Kambro Accommodation & Farm Stall** and Wilma is planning a celebration. Our annual **Karoo National Star Party** started here in April 2009 and this year will be the 13th celebration, from 27 to 31 July 2022. We hear that most of the accommodation is already booked for the event, which means you will have to move fast if you still want to attend!

Kambro Accommodation and Farm Stall, 21 km north of Britstown

Editor's note: The very successful annual Karoo National Star Party is the brain child of Danie Barnardo himself. **Ω**

Web links for the astronomy enthusiast

- **The website for all information about the ASSA and the ASSA Centres:**
  https://assa.saao.ac.za/
- **ASSA Specialist Sections:**
  ASSA has various areas of interest. Join and participate!
  https://assa.saao.ac.za/sections/
- **ASSA Publications to download and enjoy:**
  MNASSA: https://www.mnassa.org.za/
  Nightfall: http://assa.saao.ac.za/sections/deep-sky/nightfall/
  To receive as part of ASSA membership benefits - *Sky Guide,* the astronomical handbook for Southern Africa: http://assa.saao.ac.za/about/publications/sky-guide/
- **Mail Groups to join:**
  For general ASSA related information: https://groups.io/g/ASSA-announce
  For posting general items and discussion: https://groups.io/g/ASSA-discussion
- **Social Media to join and share:**
  Facebook: https://www.facebook.com/Astrosocsa/?_rdc=1&_rdr
  Youtube: https://www.youtube.com/channel/UCJ4b1fhmPvYTOsy15YP-_JA
  Twitter: https://twitter.com/AstroSocSA
- **More web links can be found on page 118 of "2022 Sky Guide Africa South". Ω**

Pretoria Centre committee

Chairman	Bosman Olivier	082 883 1869	bosman.olivier@gmail.com
Vice Chairman	Johan Smit	072 806 2939	johanchsmit@gmail.com
Secretary	Michael Poll	074 473 4785	pollmnj@icon.co.za
Newsletter Editor	Pierre Lourens	072 207 1403	pierre.lourens@vodamail.co.za
Librarian and Webmaster	Danie Barnardo	084 588 6668	daniebar@webmail.co.za
Public Relations Officer	Bosman Olivier	082 883 1869	bosman.olivier@gmail.com
Observing Coordinator	Louis Kloke	083 393 3594	dawn@mweb.co.za
	(with Craig Kloke)	083 404 2059	info@craigsmodels.co.za
Treasurer and Membership Secretary	Michelle Ferreira	073 173 0168	michellem.ferreira@standardbank.co.za
Curator of Instruments	Louis Kloke	083 393 3594	dawn@mweb.co.za
	(with Johan Smit)	072 806 2939	johanchsmit@gmail.com