



NEWSLETTER MARCH 2022

NEXT MEETING

Internet meeting. *

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

Programme: “Aspects of the cosmos” by Derek Duckitt **

Chairman: Craig Kloke

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

** Derek Duckitt is a member of the Hermanus Centre of the ASSA. Three YouTube videos of about 45 minutes will be shown to illustrate his presentation. Members of the Hermanus Centre will be invited to participate.

Virtual observing evening chat

Date: Friday 18 March 2022. Time: 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.

TABLE OF CONTENTS

Astronomy-related articles on the Internet	2
Feature of the month: Abell 3667	3
NOTICE BOARD	4
Astronomy-related images and video clips on the Internet	4
Errata	4
Observing: Two deep sky cosmic friends	5
What’s up in April 2022	6
Astronomy basics: The great galaxy in constellation Andromeda	8
Web links for the astronomy enthusiast	9
Pretoria Centre committee	9

Astronomy-related articles on the Internet

[Is There Life in the TRAPPIST-1 Star System? - "Twice as Old as Our Solar System" - The Daily Galaxy](#)

TRAPPIST-1 is a planetary system, located 39 light years away, near the ecliptic and in constellation Aquarius. The central star is a very cool red M dwarf. The system has seven planets, of which three are in the habitable zone. TRAPPIST-1 is a prime target for the JWST.

[The Search for Life Not as We Know It - The Daily Galaxy](#)

[What will happen when a black hole hits Earth? - Big Think](#)

[Astronomers Describe Their Discovery of "Alcyoneus" -The Largest Galaxy in the Universe - The Daily Galaxy](#)

Galaxy Alcyoneus spans across 16.3 million light years, making it four times the size of galaxy IC 1101, the previous record holder. For comparison, the Milky Way spans only 100 000 (= 0.1 million) light years.

[EarthSky | Andromeda and Milky Way galaxies are merging](#)

The great galaxy in constellation Andromeda is moving towards the Milky Way and will eventually collide with it. The extensive faint haloes of the two galaxies appear to have started to touch one another. Thus, in a manner of speaking, the collision between the two galaxies has already started.

[Unfolding Story of a Kilonova: A Merger So Violent it Shook the Universe - The Daily Galaxy](#)

A kilonova occurs when two neutron stars merge.

[Milky Way mergers | Max-Planck-Gesellschaft \(mpg.de\)](#)

Astronomers analysed Gaia data to create an atlas of Milky Way mergers with smaller galaxies. They found six past mergers.

[EarthSky | Breakup of an asteroid: 8th anniversary](#)

It was the 1st asteroid ever observed to break up.

[EarthSky | The Beehive Cluster: A swarm of 1,000 stars](#)

The Beehive cluster is in constellation Cancer.

[EarthSky | These 2 supermassive black holes will collide](#)

Astronomers recently spotted the tightest-knit pair of super massive black holes ever seen.

[EarthSky | Photos and video of huge asteroid 1994 PC1. It passed Earth safely January 18](#)

It is 1 km wide and passed just 1.93 million km (about 5 times the Earth-moon distance) from Earth.

Feature of the month: Abell 3667 – by Pierre Lourens

When two galaxies collide, it is an awesome event. But when two clusters of galaxies (the largest objects in the Universe) collide, it is an even more awesome event. This is what happened a billion years ago, resulting in Abell 3667, a new and larger galaxy cluster. Abell 3667 contains more than 550 individual galaxies in chaos.

The collision created two gargantuan shock waves flaring out of either side of Abell 3667, and visible only in radio wavelengths. These shock waves are still propagating through the newly formed galaxy cluster at a speed of 1 500 km/s. The size of the main shock wave spans the entire width of the galaxy cluster, which is 6.5 million light-years. For comparison, the Milky Way is only 100 000 light-years in diameter.

The unique observations of Abell 3667 were carried out using the novel MeerKAT radio telescope, located in South Africa. It is the precursor of the SKA and will eventually become part of it. Ω

[Largest shock wave in the universe is '60 times larger than the Milky Way,' new study finds | Live Science](#)

[MeerKAT picks up shock wave extending 6.5m light years | ITWeb](#)

This false colour image shows Abell 3667 (blue and white) and the two shock waves moving away from it (red).



NOTICE BOARD

Become a black hole hunter – using your PC!

[SuperWASP: Black Hole Hunters | Zooniverse - People-powered research](#)

Karoo Star Party. This will take place from 27 July to 31 July 2022. For more details, visit our website. Most of the accommodation at **Kambro Accommodation & Farm Stall** has already been booked for the event, so book now if you plan to attend!

Sky Guide Africa South 2022. See the attachment sent with this newsletter.

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.

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

Does ET intelligence exist? See a video clip of an interview with Harvard astrophysicist Avi Loeb. [“Our Galileo?” -Revisiting Harvard Astrophysicist Avi Loeb’s Conjecture that Advanced Alien Life Exists - The Daily Galaxy](#)

JWST arrives at final destination. What’s next? See a 54-minute documentary. [NASA LIVE: James Webb Space Telescope Arrives at Final Destination. What's Next? - The Daily Galaxy](#)

LIFE BEYOND: Chapter 1. Alien life, deep time, and our place in cosmic history. See also **LIFE BEYOND II** and **LIFE BEYOND III** and other related documentaries on this website.

[LIFE BEYOND: Chapter 1. Alien life, deep time, and our place in cosmic history \(4K\) - YouTube](#)

Errata

In **What’s up in March 2022?** in last month’s newsletter, the following was erroneously stated on page 6:

“.....Scorpius, the dominant **summer** constellation,.....”

It should be:

“.....Scorpius, the dominant **winter** constellation,.....”

Observing: Two deep sky cosmic friends - by Magda Streicher

The constellation Coma Berenices was also known in ancient times as Cyrene the wife of Ptolemy III in succession of Greek pharaohs of Egypt following the breakup of Alexander the Great's empire. The ancient city of Berenice, named for the queen, still exist in Libya, but it is now known as Banghazi.

But this lady constellation has two outstanding galaxies, real cosmic beauties. The two stunning galaxies, NGC 4298 and NGC 4302, are special in many ways. NGC 4298 is an open spiral with winding arms, with its face tilted almost towards us. Studies show that the two galaxies are interacting with each other with a tidal bridge from NGC 4298 towards the edge-on galaxy NGC 4302. Tracking these two galactic friends a few years ago even in excellent dark skies was not easy, but with high magnification NGC 4302 was just visible as a faint, much extended pencil-thin haze barely 2' towards the east of the even fainter oval-shaped NGC 4298 which, in contrast, appears slightly brighter towards the middle area. Both galaxies are nearly 55 million light years away from us. The Hubble picture of NGC 4302 shows an elongated dust lane with a broad nucleus in a sort of peanut shape. This galaxy is a near perfect edge-on, inclined near 90 degrees from our line of sight. A supernova was found in this lovely elongated galaxy in April 1986. The great William Herschel discovered both galaxies in April 1784, and studies show that they are part of the Vigo cluster of galaxies consisting of more than 2 000 galaxies in total.

To share time with two deep sky friends in the Universe is a rare privilege not known by many. Ω

OBJECT	TYPE	RA	DEC	MAG	SIZE
NGC 4298	Galaxy	12h 21.6 m	+14° 36.4'	12	3.2' x 1.9'
NGC 4302	Galaxy	12h 21.3 m	+14° 35.9'	12.6	5.3' x 1'



NGC 4298 (right) and NGC 4302, two interacting galaxies in Coma Berenices.

Image made by the HST.

What's up in April 2022 – by Michael Poll

The Moon and the Planets

This period sees four of the naked eye planets still in the east before sunrise. In the last week of March, three of them - Mars, Venus and Saturn - are in a tight group, and the Moon joins them on March 28th. The group rises at about 3.00 am. Jupiter is about 30° east of (below) the group so it rises at about 5.00 a.m. The Moon is near Jupiter on March 30th and 31st.

Mars: From its position west (above) Saturn on March 28th, Mars can be seen to be overtaking Saturn from about April 2nd – April 8th – they are closest together on April 5th.

When the Moon again catches up with these planets in the last week of April all four are strung out in an almost vertical line. Saturn is highest then Mars, Venus and Jupiter. Venus is moving fastest, and by the end of April will nearly have caught up with Jupiter. Mars moves more slowly than Venus but has left Saturn behind. The Moon is near Saturn on April 25th, near Mars on April 26th and near Venus and Jupiter on April 30th.

Venus and Jupiter are in conjunction when Venus over takes Jupiter. The Sky guide indicates the conjunction as April 30th, but as viewed from Pretoria on Stellarium it looks as though May 1st is the closest approach. However, they will be at their absolute closest at 23h SAST on April 30th when they are just 14' apart. This is a rare chance to see both planets in the same telescopic field.

We say that Venus is easily seen in the day time sky, but for both those that have seen it thus and those that have not, opportunities occur in March and April when the Moon is near Venus – first find the Moon and then look for Venus. In both instances they will be about 40° (two handspans) west (left) of the Sun at midday. In March the optimum date is March 28th, when they will be 6° apart, with Venus below right of the Moon. The Moon will be about 4 days from new. Binoculars may be necessary to locate them, but they will be in the same field of view in the average pair of binoculars.

In April the optimum dates are April 26th and 27th. On the 26th Venus will be some way to the east (right) of the Moon, on the 27th Venus will be just 4° below the Moon but note that the Moon's phase will be less on the 27th than on the 26th.

Before using the binoculars make sure that the Sun is hidden behind a building.

Other events

- The Moon is full on Saturday April 16th and the next day is Easter Sunday. Easter Sunday is defined as the first Sunday after the first Full Moon after the Equinox. The Equinox in this case is the Ecclesiastical Equinox which is fixed on March 21st. It is defined thus because it makes the date of Easter independent of longitude on the Earth and is thus independent of Time Zone.
- On the morning of April 18th, as viewed from Harare, starting at 5.11 am and lasting until 6.00 am, there will be an occultation of the wide double star Alpha Librae, whose Arabic name rolls off the tongue as “Zubenelgenubi”. In Pretoria the Moon rises at around 6.30 pm on April 17th, and the star will be to the east of it. The Moon can be seen approaching the star all through the night, until the time of the occultation, when, as viewed from Pretoria the star will be extremely close to the limb of the Moon. Alpha Librae is a very wide double and can be split in binoculars. As you ponder the pair you may like to reflect that on October 7th 1978, Uranus lay between them.

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Conjunctions of Venus and Jupiter

Conjunctions of Venus and Jupiter occur in series which repeat at intervals of about 3 years and 3 months. (Figure 1). In the present series, the next conjunction after April 30th is on August 12th 2025. There are several series going on at the same time, thus on March 1st 2023, in a different seriea, there will be a repeat of a conjunction that occurred on November 24th 2019.

As viewed from the Earth, the synodic period is the time taken for a planet to return to the same place in the sky *relative to the Sun*. (but in a different part of the sky, i.e. not relative to the star background). Venus's synodic period is 1.6 years (19.1 months), and that of Jupiter is 1.09 years (13.1 months).

If Venus and Jupiter are close together, the repeat in three years and three months occurs because:

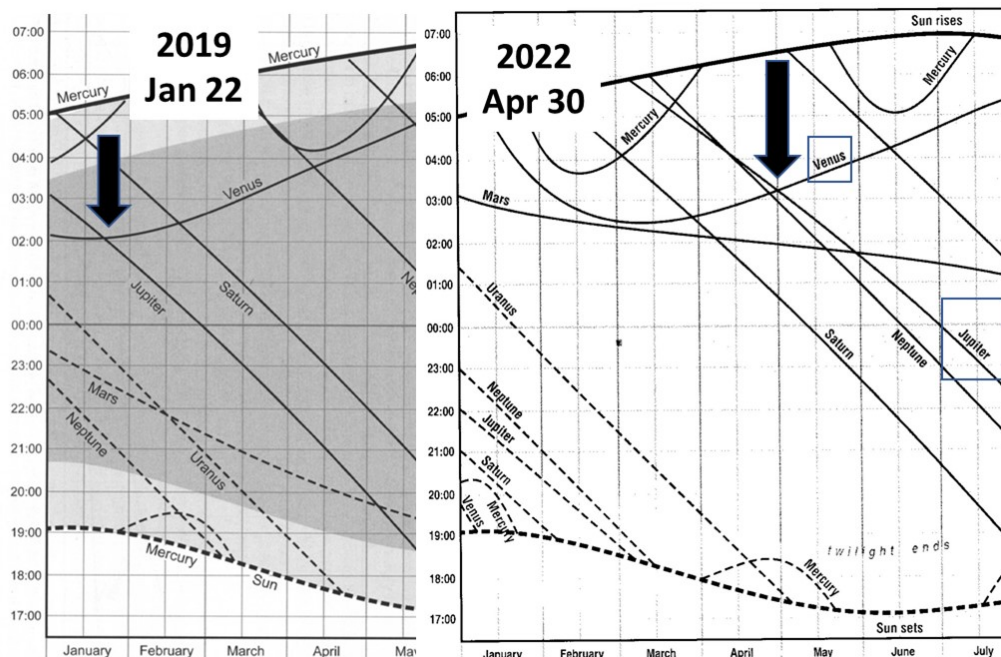
- Venus returns to same position every 3.20 years. (2x Venus synodic periods = 38,2 months)
- Jupiter returns to same position every 3.27 years. (3x Jupiter synodic periods = 39,3 months).
- **The 3.27 year cycle of Jupiter is slightly longer than that of Venus. Jupiter is about 25 days late each time, which means that successive conjunctions are further west.**
- The repeat is in a different part of the sky

A series of conjunctions starts in the morning sky, the conjunctions gradually move closer to the Sun, then they pass into the evening sky and gradually move away (westwards) from the Sun. Eventually the series ends, because Jupiter is too far west of Venus. A series of conjunctions can last about 70 years.

But also note that 5 synodic periods of Venus equal 23.985 years, and 22 synodic periods of Jupiter equal 24.024 years, so, after 24 years they are in the same relative positions to each other *and to the stars*. After 24 years the first conjunction of a new series will occur. The end of one series and the beginning of the next one is marked by a triple conjunction. (Figure 2) Ω

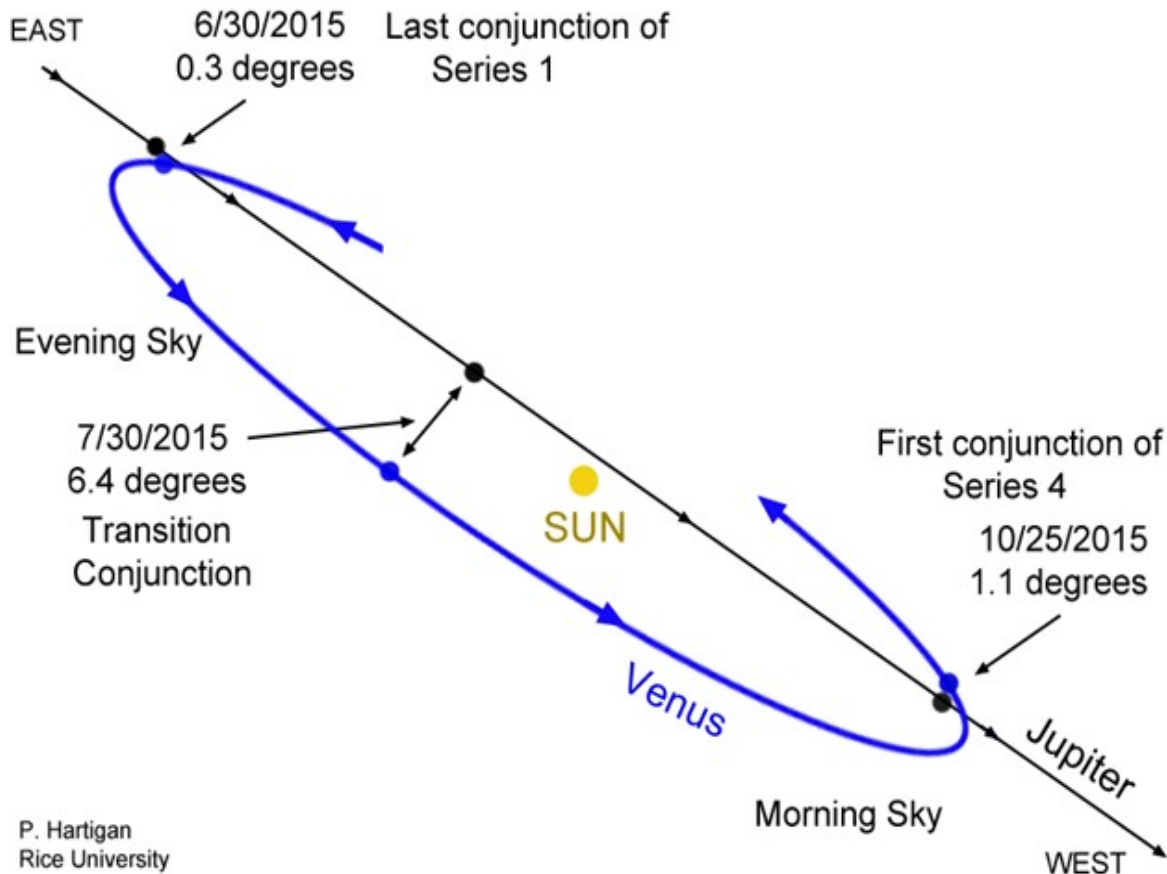
Figure 1

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Figure 2



Astronomy basics: The great galaxy in constellation Andromeda

[EarthSky | Andromeda galaxy: All you need to know](#)



Web links for the astronomy enthusiast

- ◆ **The website for all information about the ASSA and the ASSA Centres:**
<https://assa.sao.ac.za/>
- ◆ **ASSA Specialist Sections:**
 ASSA has various areas of interest. Join and participate!
<https://assa.sao.ac.za/sections/>
- ◆ **ASSA Publications to download and enjoy:**
 MNASSA: <https://www.mnassa.org.za/>
 Nightfall: <http://assa.sao.ac.za/sections/deep-sky/nightfall/>
 To receive as part of ASSA membership benefits - *Sky Guide*, the astronomical handbook for Southern Africa: <http://assa.sao.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**

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