

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

Next Talk
11th December 2017
Galaxy Formation and Evolution
Dr Chris Pearson
RAL

EDITORIAL

Well it seems the poor weather continues which is annoying. It has been almost two months now since I have been out with a telescope. I hope others have had more success. Hopefully the public outreach event at the Ashmolean was a success, although I have heard nothing about this. It was a short notice event. Still no news on whether there will be a Stargazing Live event next year but then the BBC usually springs it on us at short notice. At some point we will probably hear about the annual; Oxford University Stargazing Event for which we will need volunteers.

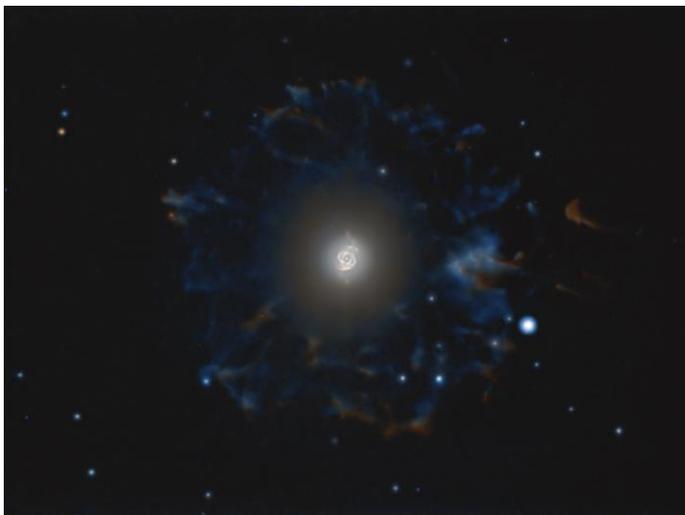
Of all the news items out of late I particularly liked the one about wobbling galaxies

<https://astronomynow.com/2017/10/26/hubble-discovers-wobbling-galaxies/>

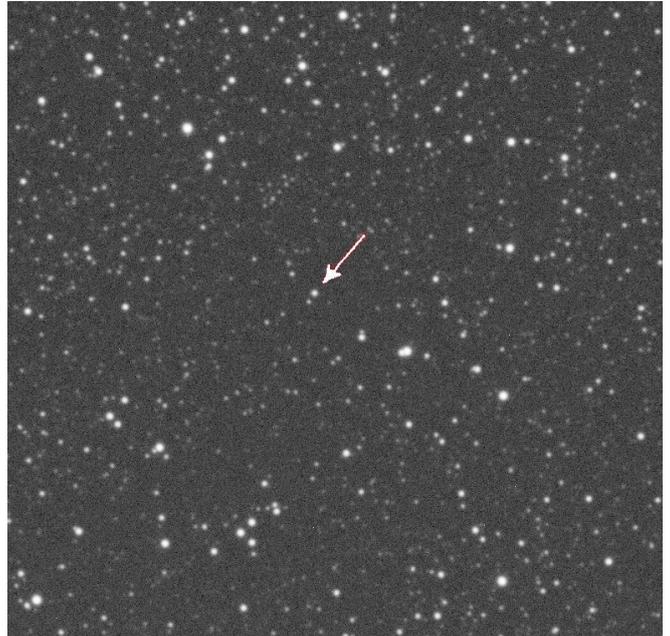
which suggests we may not know as much about dark matter as we think.

As a long-range item Bob Dryden is going to give up doing the 'Night Sky this month' from next season after 20 odd years and we are looking for somebody to take this on.

As always we have a plea for more after tea speakers. If you have anything you would like to talk about then please see Chairman Clifford.



NGC 6543 – Ian Smith. NGC 6543 is a planetary Nebula in Draco more popularly known as the Cats Eye Nebula. This image was taken with Ian's C11 in the light polluted skies of Swindon.



Nova PNV J20205397+2508145 taken by Clifford Marcus from Spain.

THE NIGHT SKY THIS MONTH

by Bob Dryden

Mercury: On view in the evening sky, Mercury reaches Greatest Eastern Elongation on 24th November when it will be shining at -0.3 magnitude and be 22° from the Sun. At sunset on the 24th the little planet will be 5° above the horizon and will set just under an hour after the Sun. This does not give you a lot of time to find it and binoculars will definitely be needed. Observing conditions remain about the same until about the 5th December, after which Mercury will be too close to the Sun to see.

On 20th November the crescent Moon, Saturn, and Mercury will form a large triangle, while the following evening they will have moved to form a straight line.

Saturn will be approximately 5° above Mercury on 24th November, and they get closer together as the days pass. However, they will also get lower down and deeper into the bright twilight making them harder to see. They are closest together on 6th and 7th December (about 1° apart) but by then they will be very low down indeed.

Venus: Getting ever closer to the Sun, Venus is visible low in the south east just before dawn as it moves through Virgo, Libra and Ophiuchus. In mid-November it rises about 90 minutes before the Sun and as its magnitude is -3.9 you can see it easily. By sunrise it is 10° above the horizon. The solar elongation starts at 14° but decreases to

8° by mid-December. By then, Venus is appearing above the horizon just 30 minutes before the Sun and reaches an altitude of just 5° by sunrise making it much harder to find.

On the morning of 13th November Venus is less than 0.5° from Jupiter, but they then move apart very rapidly. The 17th November has the crescent Moon, Venus, and Jupiter in a triangle, all roughly 3° from each other. They all rise about an hour before the Sun so should be a nice sight in the dawn twilight.

Mars: There is still not much to see on Mars in your telescope as its diameter is only 4" and it is low down in the south east just before dawn. However, if you want to see it, then as its shining at +1.8 magnitude in Virgo, it is an easy naked eye object.

Mars reaches an altitude of about 25° by sunrise throughout this session, but starts it by rising approximately 3 hours before the Sun and ends it rising 4 hours before the Sun.

On the morning of 15th November the crescent Moon is around 3° west of Mars if you need a guide to spotting the planet.

Jupiter: Jupiter starts this session in Virgo and moves in to Libra on 15th November. This means it is on view in the morning sky and remains quite low in the south east. Fortunately, it is -1.7 magnitude which means it is a very easy naked eye object despite the low altitude.

On 13th November Jupiter rises about 90 minutes before the Sun and is very close to Venus. By sunrise the planet is 10° above the horizon. By mid December Jupiter is rising approximately 3 hours before the Sun and is at an altitude of 21° by sunrise.

Saturn: Solar conjunction occurs on 21st December so you will only be able to see Saturn for a week or so in November, and even then it will be difficult.

As this session begins, Saturn is just 10° high at sunset and is above the horizon for just over an hour once the Sun has gone. Shining at +0.5 magnitude means you will probably need binoculars to find it. Telescopic views will be poor because of the low altitude.

By the end of November, the planet will be too close to the Sun and this apparition will be over.

Uranus & Neptune: Uranus is nicely placed now in the evening sky in the constellation of Pisces. Shining at +5.7 magnitude, you will need only a pair of binoculars to find it low in the east at sunset in mid-November. It culminates in the south at a decent altitude of 47° around 22.00 UT, and sets at 05.00 UT.

By mid-December the planet is already 25° high at sunset, culminates near 20.00 UT and sets by 03.00 UT.

Neptune is fainter at +7.8 magnitude and is further west in Aquarius. As this session begins, Neptune is already 18° above the south-eastern horizon at sunset and is culminating by about 19.30 UT. However, it culminates lower than Uranus, at a height of 30°.

By this session's end in mid-December, Neptune is just about to reach its highest point in the south as the Sun sets. Neptune itself sets in the south west by 23.00 UT.

Meteors: We are coming towards the end of the Taurid shower (maximum has already been and gone) and it ends on 30th November. There will still be a few Taurid meteors to be seen however as they are often slow and bright which makes them quite noticeable.

The Leonid meteor shower is active from 15th to 20th November with the maximum occurring at 19.00 UT on the 17th. The hourly rate at best is around 20 so it is not the most prolific shower but it is still worth watching. The Moon at the time of maximum is 29 days old, rising about 06.00 UT so observing conditions are very favourable.

As this session ends, the Geminid shower is just beginning. It starts on 8th December, and the maximum is a very favourable one on the 14th December.

Occultations: Regulus, a first magnitude star of +1.4 magnitude reappears from behind the waxing gibbous Moon on 8th December at 22.13 UT. When bright stars like this are occulted it is usually very easy to see the event.

This time however, things are a bit trickier because the reappearance occurs just 23 minutes after the Moon has risen which means it is only 3° above the horizon in the east. So, obviously, you will need a very clear eastern horizon to see this one.

Asteroids: 1 Ceres is brightening nicely now, going from +8.3 to +7.8 magnitude by mid-December. It starts in Cancer and moves in to Leo on 22nd November.

7 Iris is in Aries and fades from +7.1 to +8.0 magnitude during this session.

8 Flora is relatively faint but getting brighter. It shines at +9.2 magnitude in mid-November and reaches +8.7 mag, by mid-December. Flora is in Gemini.

20 Massalia is another fairly faint asteroid, going from +9.5 to +8.6 magnitude. It begins this session in Gemini, enters Orion on 27th November, before ending up in Taurus on 10th December.

Comets: There is also Comet C/2017 O1 ASASSN around at the moment which is moving through the northern regions of the Sky. At around 10th magnitude it may be visible in small telescopes.

As an advance warning a recently discovered comet C/2017 T1 Heinze may put on a binocular show towards the end of the year into January. Unfortunately this is a fairly small comet and will only be bright as it passes close to the Earth. Due to this, and the normal poor weather in the winter, we probably only have a couple of weeks on this one so it may not be much of a show.

More information on C/2017 T1 at <http://www.skyandtelescope.com/observing/c2017-t1-heinze-binocular-comet-for-the-new-year/>

LAST MONTH'S TALK

by Gwyneth Hueter

October's talk: 'BepiColombo and Mercury', by Prof David Rothery of the Open University.

BepiColombo is a joint ESA/JAXA (Japan Aerospace Exploration Agency) mission to Mercury. The craft is named after Giuseppe (Bepi) Colombo (1920-1984), an Italian scientist who first used the gravity assist ('slingshot') method of sending spacecraft across the solar system by bringing them close to other planets and using their gravity to increase speed.

Mercury is odd in that it has a very dense large core with a total size not much different from that of Earth's. This almost certainly came about when Mercury hit something massive while the solar system was still being formed. (What Prof Rothery calls 'planetary embryo collisions'.) But where was Mercury's embryo when it got bashed? He is intrigued why there is so much sulphur (2-5%) on the surface but the collision theory would also explain that away in that Mercury probably formed further out in the cooler parts of the solar system and was therefore mostly the hit and run impactor itself, and most of the lighter stuff from the two bodies was dumped into space, leaving the dense core.

Mercury's surface has a rather dark grey, flat albedo, even lower than that of the Moon. There are areas of slight stepping, indicating tectonic thrusting as the surface cooled.

The Messenger spacecraft was busy orbiting and mapping Mercury from around 2011-15. Joint UK/Italian scientists are using the data to create 15 geological maps in total. As regards BepiColombo, the UK contribution is an x-ray spectrometer (see below) which sees the fluorescence on the surface. The Sun shines x-rays onto Mercury and the resulting fluorescence and reflected x-ray photons tells us what elements there are and the abundance thereof. The more active the Sun is the more fluorescence there is so you get more information.

Unfortunately the Messenger data did not cover the south pole. The north pole had much better coverage. The elements detected were silicon, sulphur, iron, magnesium, potassium, calcium, among others.

BepiColombo consists of two craft which will not be able to separate until they arrive. MMO (Mercury Magnetospheric Orbiter) is Japan's half, MPO (Mercury Planetary Orbiter) is the ESA half. The UK and Finland have created MIXS (Mercury X-ray Imaging Spectrometer mentioned above).

Launch may go ahead next year. There will be two Venus flybys and five Mercury flybys to get it into orbit, and this is going to take 8-9 years. Once in position, MMO will fly very close in ellipses, so that its orbits will take 2 to 3 hours (400-1500km) and MPO will have a far more elliptical orbit, with its closest being 400km also.

It was amusing to hear Prof Rothery's defence of the cost of the mission in the face of nasty comments from people on public media. The mission is likely to cost a total of 3.3 billion euros. Not that much when you consider about 8 billion dollars is likely to be spent on lipstick in the next year...

FURTHER DISCUSSION

Why not take a look at our website? It's at: www.abingdonastro.org.uk.

If you are not already on our internet mailing list, then why not log on to YahooGroups. The list is called 'abingdonas'. Members use the list to alert each other about celestial events and to chat about amateur astronomy. The list is quite active, with several messages most weeks. To read through previous messages click on:

<http://groups.yahoo.com/group/abingdonas/>.

To join the abingdonas list, please go to <http://www.yahogroups.com>. You can also unsubscribe from the list here.

To post messages to the list, please send them to abingdonas@yahogroups.com. Please note that you will need to sign up with a YahooID if you do not already have one. You can do this on the above page.

Further information about the mailing list can be found on the abingdonas webpage at:

<http://groups.yahoo.com/group/abingdonas/>.

DATES FOR YOUR DIARY

27th November 8pm Beginners' Meeting in the Main Hall, talks to include: Observing Planetary Surfaces, Big Bang, M42

Observing evening: The next observing evening will be FCN 20th-22nd Nov 2017 at Frilford Heath Golf driving range. Contact Trevor Pitt or Steve Creasey for details.

Note that because of Christmas this will be the last FCN this year.

A long range heads up for the Annual AstroFest at Kensington Town Hall on 9/10th Feb 2018. See <http://europeanastrofest.com/> for more information

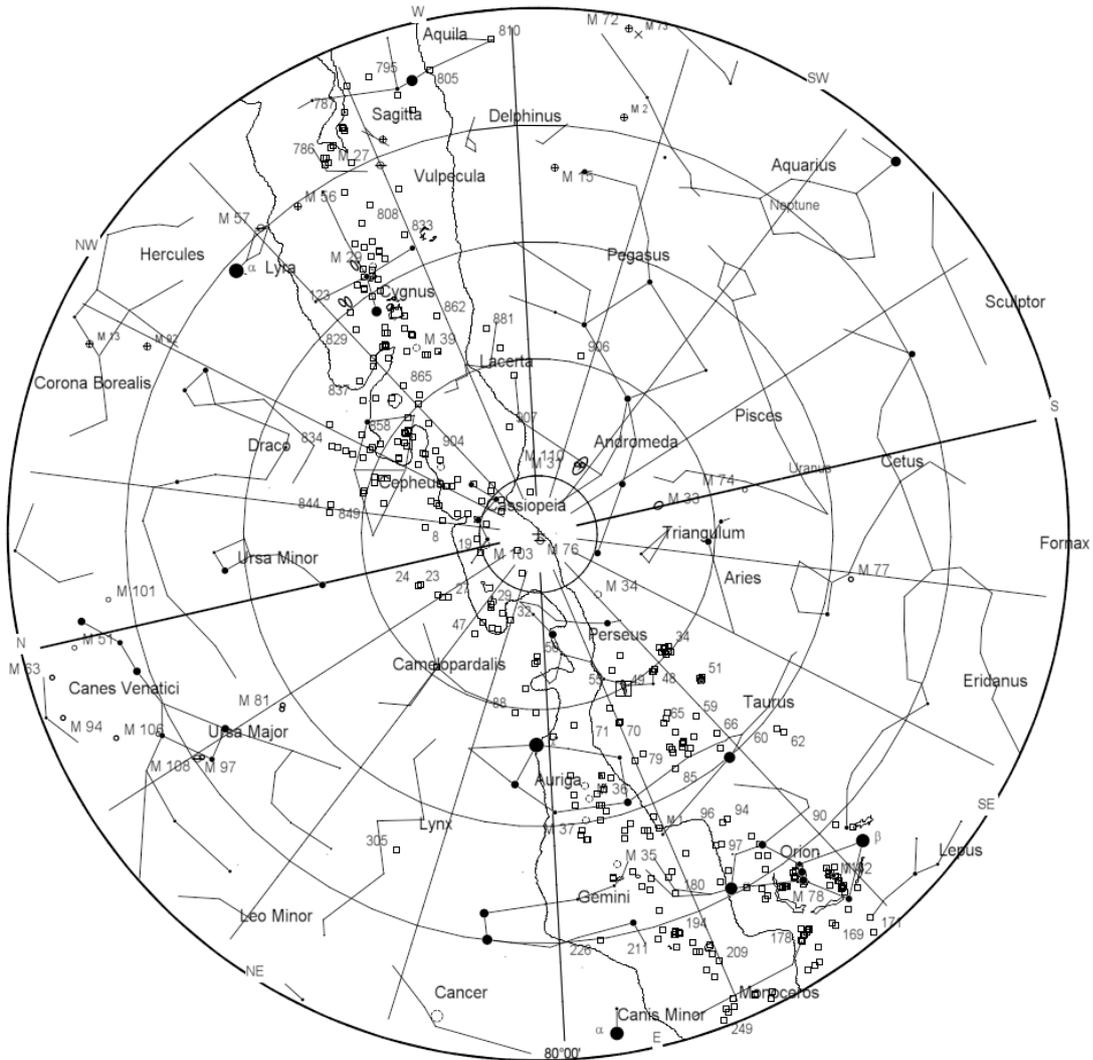
There will be a Stargazing Event at RAL on Friday 19th Jan 2018. I assume this will be a Newbury AS organised event. More information at gostargazing.co.uk

The editor of "SpaceWatch" is Owen Brazell, who would very much appreciate your stories & contributions. In particular whilst many fine images are being posted on the discussion group it would be nice to have some in the SpaceWatch. Please send any news, observations, photos, etc. to:

Mail: Owen Brazell, 15 Spinage Close, Faringdon, Oxfordshire SN7 7BW or owen@online.rednet.co.uk

STAR CHART

The night sky at 10 pm (GMT) Wednesday 15th November 2017



MOON PHASES:

2017

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