Issue November 2018

Ayrshire Astronomical Society Newsletter

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Christmas Meal

Monday 3rd December at the Chestnut Hotel, 7.30pm

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26th November
7pm at
Prestwick Academy

Speaker:
David Clarke

'550 Years of Astronomy in Glasgow'

Moon phases for December 2018

President's Word

As the nights are drawing in and British Summer Time has ended, we now have a chance to carry out some serious observational astronomy. This is a great time to hone your astronomical skills whether you are a beginner or seasoned expert.

There are some very interesting things to look out for in the winter sky:

The Moon: Either love it or hate it, it serves an important purpose for all life on Earth and something to observe when conditions aren't ideal for other visual astronomy, such as thin cloud or indeed at dawn and dusk. A good pair of binoculars or a telephoto lens on a camera will provide very good views of our only natural satellite, especially when the Moon is not full and impact craters on the surface cast beautiful defining shadows.
https://pubs.er.usgs.gov/publication/sim3316

Aurora: The sun's activity creates a solar wind and brings charged particles to the Earth disturbing the magnetosphere and ionising the gases in our atmosphere.
There has been some recent auroral lighting in the past few weeks, and with any luck we may get raised levels of solar activity in the near future to allow us to see this spectacle again. You can join our messenger alert group by contacting one of the AAS committee members
https://aurorawatch.lancs.ac.uk/

Comets: These are cosmic snowballs of frozen gases, rock and dust that orbit the Sun. When frozen, they can be the size of a small town. When a comet's orbit brings it close to the Sun, it heats up and ejects dust and gases into a giant glowing head larger than most planets. There are billions of comets orbiting the Sun in the Kuiper Belt and Oort Cloud and every now and again one comes close to the Earth and is observable sometimes with just the naked eye. They usually have a tail (or two) which streams away from the sun, but this isn't always the case. Keep an eye on Astronomy News articles to ascertain which ones are viewable at any particular time.
http://cometwatch.co.uk/

Deep Sky Objects: Although there are many maps, programs and apps to help, deep space navigation can be very daunting. Once you do find an object, often it will look nothing like the deep space pictures you have viewed in books and on the internet. The eyepiece views through a moderate-sized telescope (Thanks Nick!) often show faint fuzzy blobs, but given time at the eyepiece you can work out the shape of the object and make comparisons to other objects. I have to tell you now that you are unlikely to see any colour in these objects due to the way that the human eye works. We have rods and cone cells in our eyes - the cones pretty much deal with colour and the rods deal with luminosity. Due to the low levels of light observed, you will mostly use the rods in your eyes, so black and white images are the norm. To view true colour images you would need to take a long exposure with a camera. https://www.skyandtelescope.com/observing/celestial-objects-to-watch/deep-sky/

Deep sky are my favourite objects to view due to the fact that they vary so much and if you think about it, when observing them we are looking right back in history. Even with the closer objects such as the Great Nebula in Orion, the light has taken 1344 years to reach us, so the light that we see, was emitted during the First Arab Siege of Constantinople in 674AD. Similarly the light from the barred spiral galaxy NGC 1398 in the constellation of Fornax was emitted 65 million years ago, about the time the dinosaur Tyrannosaurus Rex was becoming extinct.

NGC1398 in Fornax

T-Rex

I look forward to seeing you all at our next meeting on Monday 26th November, and for those of you joining us for our Astro Christmas Dinner on Monday 3rd December please don't forget your deposit!

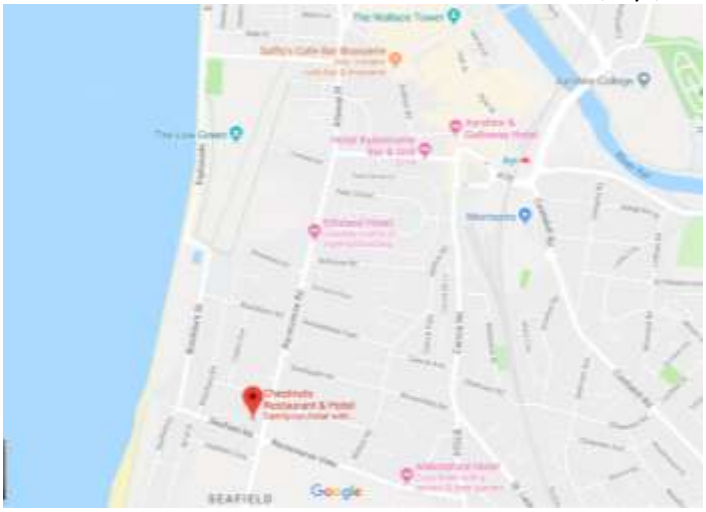
Clear Skies and Dew Free Optics
Roger Harman

News and Events

Christmas Meal 3rd December 2018

This year, the Christmas Meal is on the 3rd December 2018, at the Chestnut Hotel in Ayr, at 7.30pm. The 3-course meal cost £21 and if you want to participate, please **bring a £5 deposit to the next meeting, 26th November**.

Here is a map of where the Chestnut Hotel is. For Satnav: 52 Racecourse Road, Ayr, KA7 2UZ



19th February 2019

Professor Brian Cox Universal – World Tour 2019. He will be at the SSE Hydro in Glasgow if anyone is interested, book tickets online

16th November 2018

Did you hear the news of UFO sightings over Irish Airspace?

At least four pilots confirmed they saw the UFO flying over Ireland. One pilots asked Oceanic Control if there was any ongoing military activity. But there was not. The pilots said, 'It came up on our left hand side and rapidly veered to the north, we saw a bright light and it just disappeared at a very high speed. We were just wondering. We didn't think it was a likely collision course…. Just wondering what it could be.'

Another pilot on the Virgin flight 76 also confirmed seeing two bright lights which seemed to bank over to the right and then climb away at speed.

What on Earth could it be? A meteor? A UFO? Or a military jet? Paperwork has been filed and is being investigated.

Pilot reports of bright lights and unsure what it could be are actually not that rare. The above example made the news because somebody recorded the RT (radiotelephony) between controller and pilot and put it on Internet. There is a special form to fill in when a UFO is spotted. Controllers fill several of them in each year. If you are interested in listening to the above conversation, you can listen to the communication between ATC and pilots on youtube.

https://www.youtube.com/watch?v=6kIprgAaWbo

20th November 2018

Today is the 20th anniversary of the ISS. Here are some impressive numbers.

42600 pounds….. That is how much Zarya weighed – the first segment of the ISS launched on 20th November 1998.

230 people from 18 countries have visited the ISS since the first crew was launched

665 days is the longest somebody has spent living and working on the ISS and is set by Peggy Whitson

205 space walks have been taken for space station maintenance, construction and repair

16 times is how many times the ISS is orbiting Earth a day, travelling through 16 sunrises and sunsets.

7.6 km/s is how fast the ISS moves.

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Marc's article

Musings on Polaris (Alpha Ursae Minoris)

Shakespeare's Julius Caesar Act 3, Scene 1.

Caesar on refusing to grant a pardon to Publius Cimber:

I could be well moved, if I were as you: If I could pray to move, prayers would move me: But I am constant as the northern star, Of whose true-fix'd and resting quality There is no fellow in the firmament. The skies are painted with unnumber'd sparks, They are all fire and every one doth shine, But there's but one in all doth hold his place: So in the world; 'tis furnish'd well with men,…

And not just in literature, has Polaris played important role, throughout history it has been critical for navigation in the Northern Hemisphere, resulting in its apparent celebrity status.

The name we use today was coined during the Renaissance, coming from a shortening of the New Latin "stella polaris." Like Shakespeare, we tend to think of the Pole Star as being one of life's little constants, always pointing to the true north. Some confused by its fame, even believe it is brightest star in the sky.

In fact, it is far from being the brightest star in the sky, though it is the brightest in its area and in its constellation, Ursa Minor, or The Little Bear. It is a second magnitude star, about six times dimmer than the zero magnitude Vega. Also, it isn't quite at the celestial pole, but rests about two thirds of a degree away, slightly less than what it was in the Year 2000, when it was about three quarters of a degree away. It therefore circles the pole, albeit fairly closely. This movement over the years is due to the "Precession of the Equinoxes," which traces out a circle of 23.4 degree's radius from the ecliptic pole (orbital pole) over a period of 26,000 years. So, when the Egyptians were building the pyramids, Thuban in Draco was the pole star.

Polaris is an interesting star in its own right. It is at least a triple star system with its A and B components readily visible in a small telescope, as was discovered by William Herschel in 1779. In 1929, through spectroscopy, Polaris A was found to be a close binary with a dwarf star (Ab) orbiting the main star (Aa). Ab is about the same distance

from Aa as Uranus is from the sun, so was not resolvable until the Hubble Space Telescope split the pair in 2006. Polaris Aa is a yellow supergiant in the process of moving from a blue to a red one.

Its precise physical characteristics depend on knowing its precise distance and this has been in dispute for some time, with estimates ranging from 322-520 light years (ly), most converging around 430ly. Just this year, the European Gaia Mission was able to measure the distance to Polaris B, as Aa was too bright for it, and was able to infer that Polaris is 445.5 light years distant, which altered its physical interpretation, from 5.4 solar masses (M☉) to 6.4-6.7M☉ and its radius of 37.5 Solar Radii (R☉) to 47-50 R☉ and increased its luminosity from 1,300 to 2,500 times brighter than the Sun. Its age was also nailed down to be between 55-65 My, so it was born just after the dinosaurs disappeared from the scene down here.

Given its size, I thought it might be fun to see how it compares with the Sun in terms of density. The average density of the Sun is roughly 1.4g/cm3, or a bit denser than water, Polaris, on the other hand is 18K times less dense on average, or 0.000075g/cm3, or about 1/16 the density of air. One could easily float away on that!

Polaris is also a low amplitude Cepheid variable star, pulsating very slightly, though the amount has varied over time from 0.1 magnitudes down to 0.05. Even here it has been somewhat erratic, and may be beginning to increase. It has a slightly lengthening period of four days, which is to be expected at this point in its evolution. There is speculation that Polaris might be one full magnitude brighter (2.5x) than it was when it was observed by Ptolemy, who classed it as magnitude 3, which if true, would be tricky to explain using current models of stellar evolution.

So, the next time you are out fiddling with your polar alignment, or simply gazing at that part of the sky, it might be worth reflecting on how inconstant the constant really is.

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Alex's article

As we approach Christmas, I thought that a short topical article together with a totally unrelated and non astronomical thought provoker - to provide a talking point at the Christmas meal - might make a change ……..
At this time of year I find myself thinking about the story of "The Star of Bethlehem" which the Bible says led the three wise men to Bethlehem and the new born Jesus. Many astronomers have wondered if the story can be related to actual astronomical phenomenon, and a lot of astronomical investigation has gone into this famous story but, whilst there are plenty of theories, no single one "ticks all the boxes".
Interpreting events that are described in the Bible or other such books is no easy task. One way is to start with what we know of the Cosmos and "wind the clock back" to that time and then investigate the usual suspects! Comets are a likely candidate as they move through the sky over weeks and months and point their tail away from the nucleus. A comet was seen in the area of Capricorn around 5 BC and would have been visible from many countries surrounding Bethlehem. The comet would have been low in the sky and its tail pointing downwards, but astronomers insist that the Sun would have been in the wrong position to provide the desired spectacle. It is suggested that what was probably seen was a Nova or Supernova, but of course we will never know for sure --- it is just another of life's mysteries.

Moving on, and away from astronomy but staying with unexplained events, what about this series of "facts" or amazing coincidences linking two famous American Presidents who were both assassinated ? Abraham Lincoln (AL) and John F Kennedy (JFK) ……..

AL was elected to congress in 1846
JFK was elected to congress in 1946
AL was elected President in 1860
JFK was elected President in1960
Both were concerned with Civil Rights
Both wives lost their husbands whilst living in The White House
Both Presidents were shot on a Friday
Both Presidents were shot in the head
and now it get really weird!!!
Both Presidents were assassinated by Southerners
Both Presidents were succeeded by Southerners name Johnson!
Andrew Johnson who succeeded AL was born in 1808
Lyndon Johnson who succeeded JFK was born in 1908
John Willkes Booth who killed AL was born in 1839
Lee Harvey Oswald who killed JFK was born in 1939
Both killers names have 15 letters
no hang onto you seat !!
AL was shot in a theatre named Ford
JFK was shot in a car called "Lincoln" made by Ford
AL was shot in a Theatre, his killer ran out and hid in a warehouse.
JFK was shot from a warehouse and his killer ran out and hid in a theatre.
Both Booth and Oswald were themselves assassinated before their trials.
And finally ….
A week before AL was shot he was in a town called Monroe in Maryland
A week before JFK was shot he was with Marilyn Monroe.

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Our Solar System
Library

Open for business!

THE LIBRARY IS A RESOURCE FOR MEMBERS -PLEASE SUPPORT IT AND MAKE USE OF IT

The Library list is also available on the website under "links" and can be downloaded

The library is now full up - if you would like to obtain a list or borrow an item

– contact Alex at the next meeting or give him a call on 01563 520887.

Unfortunately Alex does not have email, however messages via library@ayrastro.com will reach him the old fashioned way after a short delay but please contact him directly if at all possible.

THE LIBRARY IS WAITING FOR YOUR CALL!! There are a lot of interesting items to borrow

Member's photos

Photo taken by Marc Charron 18th November 2018

64P seen to the left, and the bright star Mirach to the right. Just above and a bit to the right of the star is Mirach's Ghost, aka NGC 404 a galaxy 10 million light years away.

Photo by Marc Charron 8th November 2018

M31 and Comet 64P Swift-Gehrels (135mm f2.8 lens tracking with C8, 39 images at 13 sec each at ISO 12,800)

The comet is about 5 degrees away from M31.

AND FINALLY…. One big family….