Issue: May 2018

Ayrshire Astronomical Society Newsletter

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Moon Phases May /June 18

29th May Full Moon
6th June Last Quarter
13th June New Moon
20th June First Quarter
28th June Full Moon

Next Meeting:

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21st May

7pm

At the Prestwick Academy

AGM meeting

For members only

President's Word

As we reach the end of our 2017-18 meeting session, we arrive at the AGM with a number of changes in prospect, each of which, hopefully will enliven the Society and move things into an even better and more exciting phase. A number of our long standing committee members are standing down and making way for new faces, we have some proposed changes to the constitution and we have of course the General Data Protection Regulations coming into force just after the AGM.

To move through the AGM as quickly as possible and get into the main evening entertainment, the structure will be as follows:

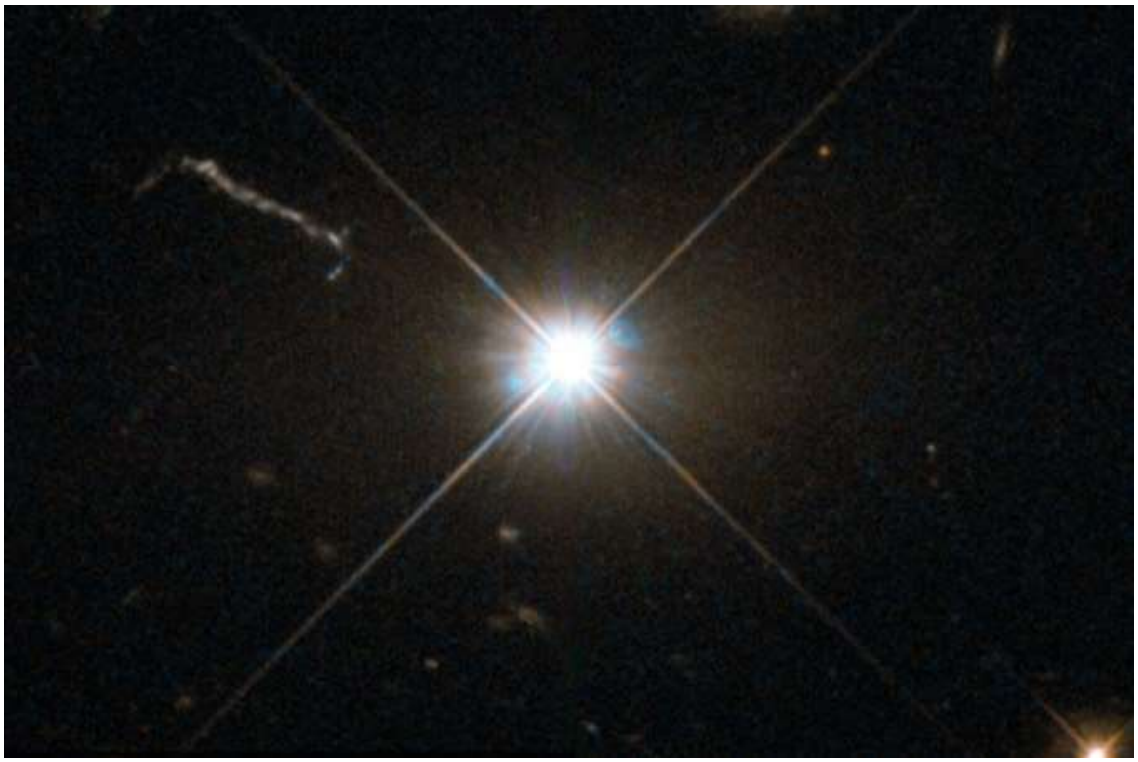
1. Reports from the President and the Treasurer
2. Proposed changes to the constitution, these are essentially
   - 2.1. Abolition of the position of equipment officer
   - 2.2. Abolition of the position of Librarian
   - 2.3. Creation of the post of Media and Communications Officer
   - 2.4. Power for the Committee to create and fill such non executive non elected posts as are considered necessary for the efficient running of the Society e.g. Librarian, Outreach Coordinator, Equipment curator, Aurora sub group, Solar subgroup
   - 2.5. Power for the Committee to award and remove Honorary Membership for the occupants of selected academic or non academic positions e.g. A professorial seat or astronomy related position.
   - 2.6. Adoption of documentation to comply with the General Data Protection Regulations
3. Resignation of existing Officers and Committee
4. Election of new Officers and Committee

   Buffet and Entertainment

The changes to the Committee structure will retain the current total number of Committee Members by transferring abolished "Officer" posts to Ordinary Member posts.

Copies of the proposed changes to the Constitution and the GDPR will be emailed out to all Members separately to the May 2018 Newsletter. Please read them before the meeting.

News and Events



Australian astronomers have fond what may be the fastest-growing black hole in the known universe, an ancient 20-billion-solar mass beast sucking in the mass of the Sun every two days and emitting a mind-boggling torrent of radiation.

This black hole is growing so rapidly that it's shining thousands of times more brightly than an entire galaxy, due to all of the gases it sucks in daily that cause lots of friction and heat.

If we had this monster sitting at the centre of our Milky Way galaxy, it would appear 10 times brighter than a full Moon. It would appear as an incredibly bright pin-point star that would almost wash out all of the stars in the sky.

The black hole, or quasar, somehow formed in the early ages of the universe and had grown to its 20-billion-solar-mass size by the time astronomers found it at a distance of some 12 billion light years. The supermassive black hole radiates ultraviolet and X-ray energy as gas and dust are sucked in and heated to enormous temperatures, enough to wreak havoc in its host galaxy.

Again, if this monster was at the centre of the Milky Way it would likely make life on Earth impossible with the huge amounts of x-rays emanating from it.

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Outreach Events Dates

We are looking for volunteers to participate at various events.

27th July Dumfries House

These are fun days out where you interact with people of all ages. We have a range of telescopes set up, books and all sorts of accessories on display. Speak to one of the committee members if you are interested. Everybody is welcome!

Solar Days
Keep your eyes peeled for more solar event days in June/July and August at the seafront. I have now two solar telescopes to use! The Lunt 152 and a Coronado Solarmax 60. Will be great fun!!

Marc's Space

Red, White, and Blue, But Why Are There No Green Stars?

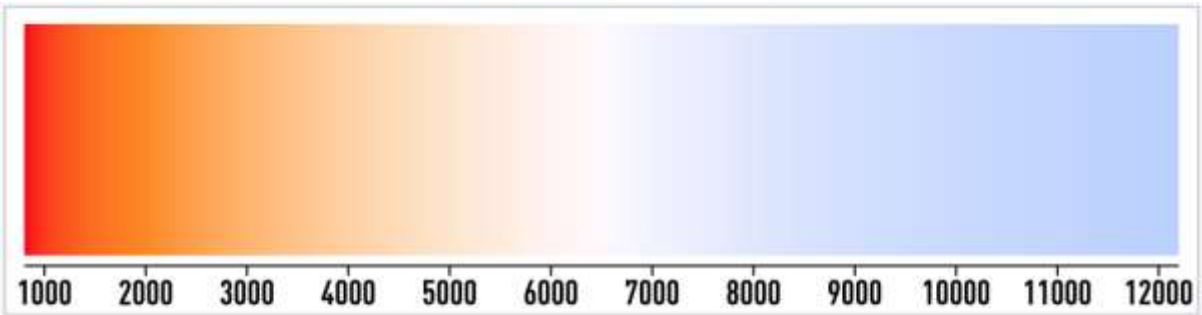
The fault, dear Brutus, is not in our stars,
But in ourselves,...

- William Shakespeare, Julius Caesar, Act 1, Scene II

When looking at the sky it is obvious that the stars have different colours. Most look white or bit bluish, at least to this observer, however, there are a few that standout by looking a yellow or orange. When we image the sky the colours of the stars become even more apparent, as in this photo I took of Orion back in February. In it, Betelgeuse at the top left looks distinctly yellowish, whereas Rigel down at the lower right looks whitish/blue.

It turns out that star colours are directly related to their surface temperatures, which is in turn related to the concept of black body radiation. This radiation is emitted from all objects having a temperature above absolute zero and is the process by which bodies cool by radiating energy away. In stars this cooling is balanced by heat produced by nuclear fusion going on in their cores, thus keeping the surface temperatures relatively constant, though this can change over time.

Here are the colours and corresponding temperatures of the stars we typically see in the sky (Wikipedia):



Color of a black body from 800 K to 12200 K. This range of colors approximates the range of colors of stars of different temperatures, as seen or photographed in the night sky.

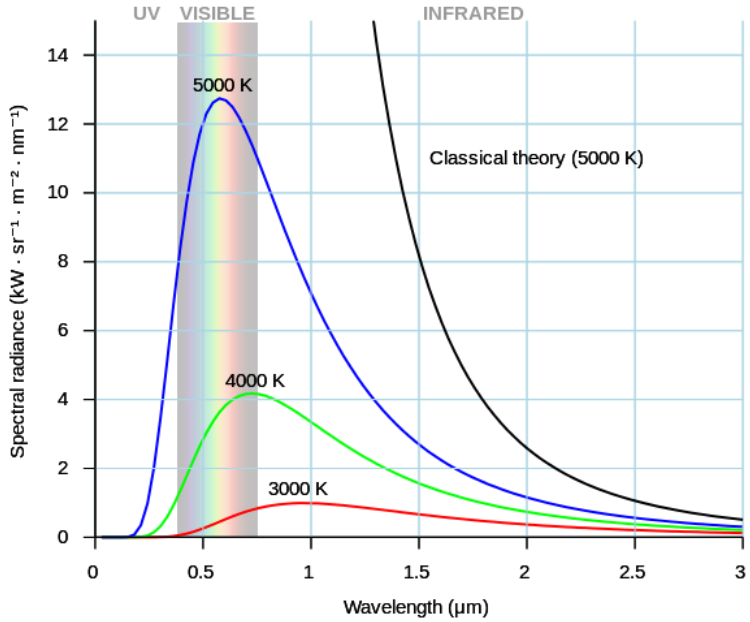
Also from Wikipedia, here are the typical classifications of stars based on their colour and temperature:

Surface temperature ranges for different stellar classes[146]

Class	Temperature	Sample star
O	33,000 K or more	Zeta Ophiuchi
B	10,500–30,000 K	Rigel
A	7,500–10,000 K	Altair
F	6,000–7,200 K	Procyon A
G	5,500–6,000 K	Sun
K	4,000–5,250 K	Epsilon Indi
M	2,600–3,850 K	Proxima Centauri

Notice that green is absent, why?

The answer is a bit complicated. First, it is observed that black body radiation is emitted over a range of wavelengths, with the peaks indicating the temperature of the source.



(Wikipedia)

As can be seen from the graph, the peaks move toward the shorter more energetic wavelengths the hotter an object becomes, and then flatten and move towards the longer wavelengths the cooler it gets. For us, what is important is that the light under each curve is a mixture of colours and wavelengths.

Interestingly, the light from the sun peaks in the blue/green part of the spectrum, yet it looks white when our eyes combine all the colours together. This is despite the sun being classified as a yellow dwarf star. So, the question is, why doesn't the sun look at all greenish, if peaks in that region?

To answer this, and paraphrasing William Shakespeare, the fault is less with the stars than with our eyes. For those of us who are not colour blind, we have three types of cone cells in our eyes for detecting colour, one each for red, green and blue light. Our brain then combines the input from these cells to create our perception of colour. The problem with the colour green is that we only perceive it when there is little or no red or blue light present. Stars, including the sun, on the other hand, put out far too much light in either red or blue parts of the spectrum for this to happen. Which is why there may be Emerald Isles and Emerald Cities, but, sadly, no emerald stars.

Sources:

Wikipedia, Bad Astronomy, William Shakespeare.

AAS 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

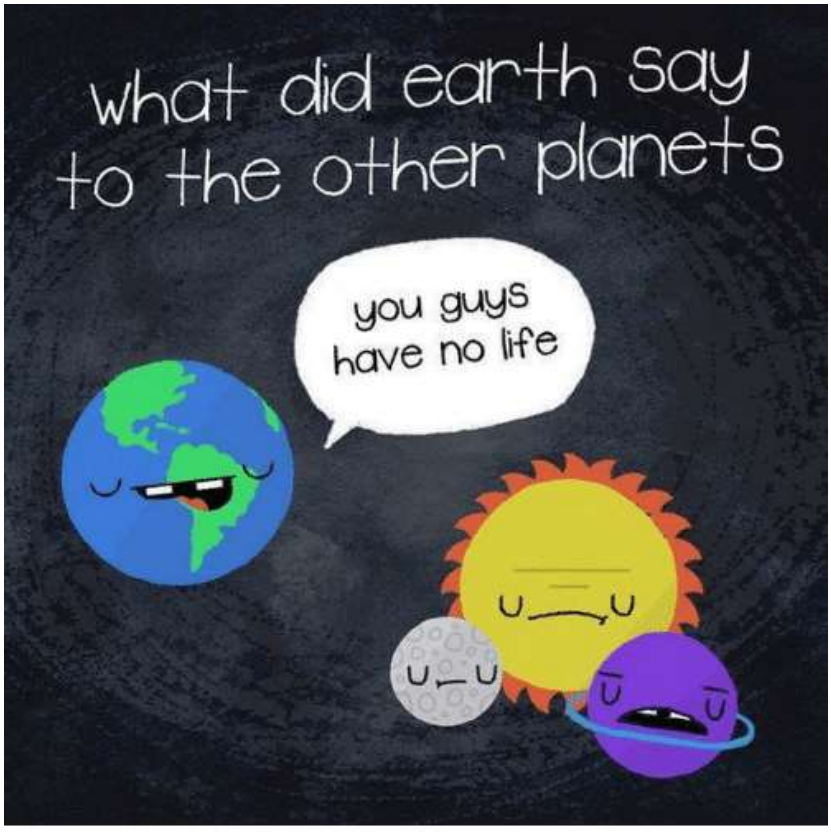
The library is now full up - if you would like to obtain a list or borrow an item

– 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

And finally….



Earth got Jokes