

Issue: February 2018



Ayrshire Astronomical Society Newsletter

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Moon Phases February/March 18

- 23rd First quarter
- 2nd Full moon
- 9th Last quarter
- 17th New Moon
- 24th First Quarter
- 31st Full Moon (Blue Moon)

Next Meeting:

26th February 2018

7pm

At the Prestwick Academy

Guest Speaker

Professor Massimiliano Vasile



Beautiful wintery scenery captured in this image taken by Dave Hancox with his Ascension 102mm triplet QHY8L main cam and 50mm guider with QHY5-11 cam, Carte Du Ciel , PHD2 EQ mod and Eazy Capture, Processing Deep Sky Stacker and PS2018. From Dalmellington Astro Deck aka his back door ☺

President's Word

Some dull administrative stuff this month I am afraid, but nevertheless important to Members and the Society. There are two items; first the forthcoming General Data Protection Regulations and secondly; requirements for working in schools outreach.

THE GDPR Regulations is an EU legislative document that comes directly into force in all Member States and will be effective in the UK as of the 25th of May 2018. It will come into force and stay that way notwithstanding BREXIT.

It brings in requirements that affect organisations that hold personal data and creates rights for people to control, who holds data on them and the purposes for which it is used. It is backed by hefty fines for non compliance. Unfortunately AAS will be affected and, amongst other things, we will need to; have a Data Protection Policy and a Privacy Policy; update the way we hold membership data; update the way we communicate with Members and change our membership application form to gain consent from each Member to collecting, holding and using personal information on that Member. For the most part it will not affect individual Members, except for a bit more form filling and perhaps some inconvenience in staying in touch with the Society's activities.

A Data Protection Policy and a Privacy Policy are currently being developed and, when completed, will need to be formally adopted by the Society either at the AGM or before. They will be posted on our web site.

The PVR scheme. The second item is in respect of schools outreach and affects the ability of Members to be involved in schools. You will all be aware of the current concerns about child abuse and for the protection of the vulnerable, as a result of these concerns, schools are now more and more requiring that anyone going into to do outreach activities and the like have been "vetted". This is normally done via the so called disclosure or PVR scheme.

From the schools point of view they are asking for STEM Ambassador status as this, by its nature, means that the Ambassador has been through the disclosure process satisfactorily. To go through the disclosure process entails paying a fee, however, if one joins the STEM Ambassador Scheme, the scheme will pay for the disclosure process (as far as I am aware). This however is not a once and for all process and disclosure only lasts for a couple of years and, once registered, you need to record some Ambassador activities. So if you wish to stay involved in schools outreach or become involved, you will need to go through the disclosure process. Please do not let this put you off this worthwhile activity.

A number of Members are already STEM Ambassadors through their employment or involvement with other societies.

As far as our public outreach activities are concerned ie our attendance at fairs or indeed schools open days, there is no such requirement but of course it would be useful to have it in place and it may come in as everyone becomes more paranoid.

Outreach is one of our main activities and we are always looking for Members to help in this very worthwhile activity, so, please do not be put off and please volunteer to help out when and where you can

News and Events

Solar outreach dates:

Saturday, 7th April 2018

Sunday, 27th May 2018

Dave and Isabelle are organising some solar outreach days at Roundhouse Café, Loch Doon. As for now we have pencilled in two dates (above), **from 12 noon until 3pm**. Food and drinks are available at the Café.

Save the dates – the more the merrier.

Solar outreach days are depending on good weather. We will keep you updated short notice if the events are going ahead.



Observing Night:

Saturday 17th February 2018 at The Roundhouse Loch Doon from 19:00 to 22:00. The Roundhouse will be open for drinks and hot snacks and everybody is welcome. Thanks to Dave Hancox

Public and Schools Outreach with KESS:

Friday 9th March 2018

Grange Academy Community Day

Monday 12th March 2018
necessary)

Willow Bank Special needs School Science day (Disclosure

Saturday 17 March 2018

Galston Primary School Community Day

Alex's Space

AAS Member Robert McCairn (Bob) sent me a cutting from a newspaper, it was unrelated to Astronomy, but it gave me an idea for an article, hope you like it.....thanks Bob, carry on cutting!

What would most excite Astronomers and Scientists if it was found on some distant planet or asteroid? ---- no! Not precious metal, or carbon or Lord Lucan, but humble water --- but how so? Let's take a closer look at water. It covers about 75% of the Earths surface, yet scientists still do not fully understand how water molecules work, although each molecule has just three atoms; two hydrogen and one oxygen (hence H₂O). It is called "the liquid of life" and rightly so. Water is essential to all living things and all vegetation making up 80% of their weight. It is the most efficient solvent known as it is able to carry in solution, oxygen, salts, minerals, carbon dioxide and many other vital substances. It can also be broken down and refined to make fuel. It is highly transparent and, as you know, it expands when it freezes (burst pipes!). This freezing causes ice to form and float, forming an insulation layer (blanket?) on top of rivers, lakes etc. and, combined with its transparency, allows light dependant organisms to survive at considerable depths.

Water can be found as a gas (steam, vapour), a solid (ice) and a liquid (water!). In fact all three phase can exist together. When it rains, the raindrops amazingly tend to be a certain size and all fall gently, not damaging even a blade of grass or the most delicate flower, the plants actually use rain as a fertiliser.

No other material is so versatile and it is no wonder that it is a very important part of space exploration.

And finally

Two Hydrogen atoms go into a bar, one starts to panic! "What's wrong mate"? His pal asks --"I've lost an electron", "are you sure"?, YES, I'm POSITIVE.

Back next month

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

How Far is a Light Year?

"Man is the measure of all things: of things which are, that they are, and of things which are not, that they are not." – Protagoras 5th C BCE.

Taking this Greek philosopher at his word, we might ask what exactly is a light year in human terms?

We know that from the definition that a light year is simply the distance light travels in one year. Just how far is that? Well, pretty far. Our physics texts tell us that in one second light will travel about 186,000 miles or 300,000 kilometres. Or to put it another way, in that time a beam of light can travel three quarters of the way from the earth to the moon. In another third of a second it would get to the moon. It takes light approximately 500 seconds to reach the earth from the sun, or about 8 minutes 20 seconds, time enough for a beam to circumnavigate the globe over 3,700 times. But let's go further, say to the edge of the solar system at 120 astronomical units (AU), one AU being the distance from the earth to the sun. It takes sunlight roughly sixty thousand seconds to get there, or about 17 hours, so still not even a light day, which is 86,400 seconds long. A light year remains a long way away.

A little maths tells us that there are about 31.6 million seconds in a year. Multiplying by the speed of light gives light year at just under 6 trillion miles or 10 trillion kilometres. In human terms, driving full time at 60 miles an hour (100km/hr), it would take over eleven million years to cover this distance. Even so, in the United States, all together the planes, trains and automobiles, along with more than a few lorries travel not much less than one light year, every year.

So, there we have it, one light year is an enormous distance away. And yet it is only the start of the journey into the cosmos. Moving out of the solar system, Proxima Centauri, the closest star to ours is about four and a quarter light years away. Sirius the brightest star in the sky is a mere nine light years away and the giant star Betelgeuse is just over 600 light years away. M13, the great globular cluster in Hercules, is about twenty-two thousand light years away and our galaxy alone is about a hundred thousand light years across. The Andromeda Galaxy which is the furthest object that can be seen with the naked eye is two and a half million light years away. Generally, the most distant objects that can be seen with amateur telescopes range from about half a billion to one billion light years in distance like the Hercules Cluster or the Corona Borealis Galaxy Cluster, respectively. The one main exception is quasar 3C 273 in the constellation Virgo which is just shy of two and a half billion light years away and is bright enough to be seen in fairly modest telescopes at magnitude 12.9. On the other hand, the professionals with their larger telescopes are capable of seeing objects out to near the edge of the visible universe at 13.8 billion light years. So, yes, space is big, very big, and depending on how we look at it a light year is something both very large and very small.

Miscellaneous

Images taken by Dave Hancox



If you would like to publish an article or photos you have taken and wish to share, please email me
isagrogg@hotmail.com

Isabelle

We have all been there.... ☺

