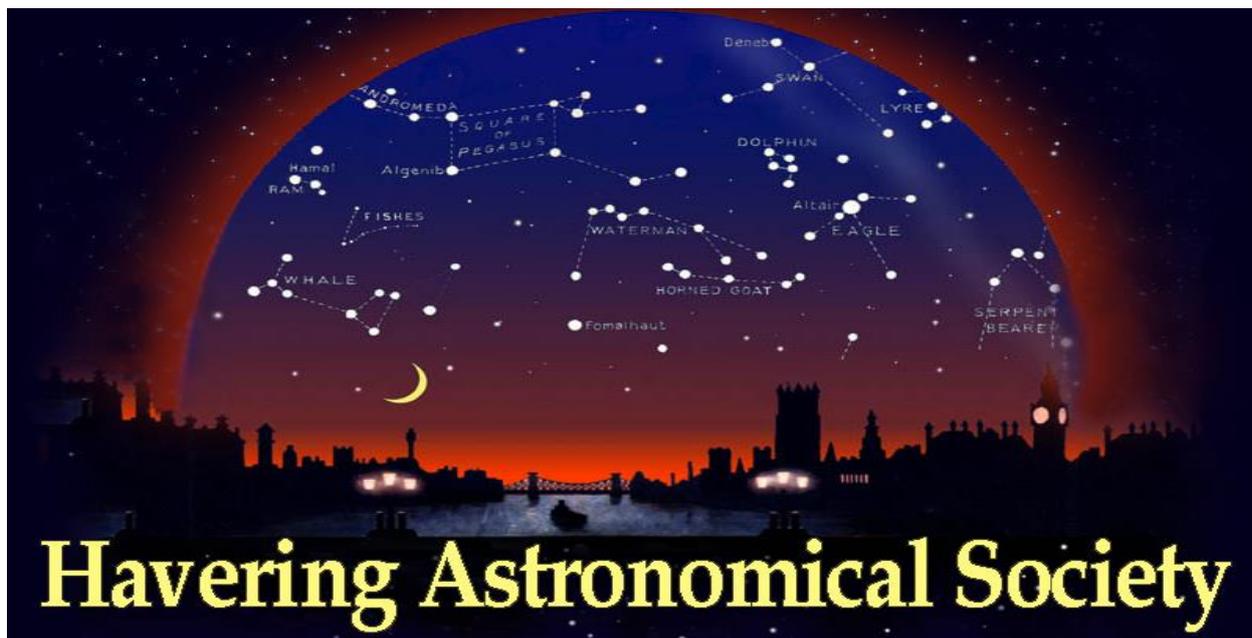


**WELCOME TO OUR MEMBERS AND GUESTS.
PLEASE SIGN IN AND WE HOPE YOU ENJOY THE EVENING**

NOVEMBER 2019



www.havastro.co.uk

This Month

This evening we welcome Dr *Paul Whiting* who will be giving a talk on *Gravity Waves*.

Last Month

We enjoyed the talk by *Paul Money* who was his usual amusing and entertaining self and showed us some more of his amazing images of space.

Members News

Terry and *Christine* are still on their travels through Italy. *Kerry* has been to see the Northern Lights and a big thank you goes to *Chris* for loaning her a camera to take as she had hers stolen.

Programme for The Year

Please take one along with the Newsletter, situated by the Register. There are also some copies of the Society Directory available as well. We would like to thank *John Bowling* for taking the time to produce it for us.

Havering Fun Palace, Queens Theatre,

Saturday 1st October, 2pm-5pm

The Society took part in this event and it was a most enjoyable afternoon. *Kerry* brought along some papier maché models of the Planets and hung them around the Theatre foyer. Children then had to find them, write them all down and when completed they received some sweets as a reward. We also had a Moonscape with blu tack balls of different sizes to simulate meteors forming craters. There were worksheets to complete and a black hole by *Barbara*. *Liz* was busy with her Solar scope with both children and their parents queuing up to see images of the Sun. And *Frances* brought a life size model of an astronaut. A big thank you to all of those members who attended and assisted.

University of Cambridge Institute of Astronomy Public Open Evenings

The Institute is open every Wednesday evening 7 - 9pm during the Winter season. An astronomer from the Institute will present a half-hour public talk, followed by an opportunity to look through historic telescopes. Entrance is free, and there is no need to book *unless you are a group of over 15 people*. See www.ast.cam.ac.uk/public/public_observing

Next Meeting ~ November 16th

Next month we hope to be having our own *Nik Szymanek* visit and show us some more of his astrophotography. However, he has recently moved from the area and this is yet to be confirmed.

NIGHT SKY

Saturn, Venus and Antares: can be seen on October 27th to form a nearly vertical straight line low in the south-southwest after sunset. With a low horizon in this direction you should, if clear, be able to view a near vertical line up of Saturn, Venus and Antares. **Please note: The Sun will only have just set so take care when using binoculars or a telescope.**

Venus: can best be seen on October 31st at 17:30 GMT low in **Ophiuchus** in the Southwest. Venus is in a curious place: although its separating from the Sun well, its altitude at sunset is low making it hard to find. However, its brilliant mag. -3.9 brightness compensates for its poor position.

Mars: can best be seen on October 31st at 18:00 GMT low in **Sagittarius** just west of South. Now well past opposition, its position in the sky is very low down and will lie close to the constellation's eastern border. This position combined with the lengthening October nights means it will be higher during darkness at the end of the month.

The Taurid meteor shower: can best be seen on November 11th. The radiant of the shower is at around midnight and it appears 52° above the south-eastern horizon. All of the meteors will appear to be travelling directly outward from this point. To see the most meteors, the best place to look is not directly at the radiant itself, but at any dark patch of sky which is around 30–40° away from it.

Perigee-Syzygy Full Moon: can be seen on November 14th. This is the largest full Moon of the year due to it being at its closest point to Earth in its orbit (**perigee**) and where, at the same time, the Sun, Earth and the Moon are in a straight line (**syzygy**).



*Thank you to
everyone who
helps with
refreshments.*

Observing at South Weald

No observing took place this month as it was too cloudy on both of the designated evenings. There will be no observing scheduled for November as the dates, 5th and 6th, coincide with Guy Fawkes weekend. Observing will hopefully resume in December.

Young Astronomers

We were able to see the Moon for a while before the clouds came over.

John the talked about the Rosetta Mission and Black Holes. We will not be meeting in November as **Frances** has family visiting from the USA. Our next meeting will be on December 1st at **Terry** and **Christine's** home.

Spaceflight News

Private Space Stations May Take Flight in 2020

2020 may be the year a private space station gets off the ground. Two companies, *Bigelow Aerospace* and *Axiom Space*, plan to launch habitat modules to orbit in 2020, with the aim of making some money off Earth. If all goes according to plan, such habitats will eventually form the backbone of commercial facilities that replace the International Space Station (*ISS*), which is currently funded through 2024. Down the road, such private space stations could host a variety of inhabitants, from space tourists to scientists to astronauts from *NASA* and other space agencies. These tenants would simply rent the facilities rather than pay all the operating costs, as *NASA* and its partners must do now with the *ISS*. Las Vegas-based *Bigelow Aerospace* builds modules that launch in a compressed configuration and then inflate upon reaching their destination. These expandables feature much greater internal volume per unit launch mass than do traditional rigid modules, such as those that make up the *ISS*. The company's expandable habitats also offer greater protection against micrometeoroid strikes and space radiation than do aluminium-walled structures. *Bigelow Aerospace* has already tested three experimental modules in orbit. It launched the free-flying *Genesis 1* and *Genesis 2* habitats in 2006 and 2007, respectively, and the Bigelow Expandable Activity Module (*BEAM*) was attached to the *ISS* this past April and inflated six weeks later. *Axiom Space* plans to use a more traditional rigid-habitat module, one that's about 43 feet long by 16.5 feet wide and weighs 50,000 lbs. The company aims to launch this module in October 2020, perhaps aboard *SpaceX's* Falcon Heavy rocket. Both *Bigelow Aerospace* and *Axiom Space* are focused on Earth orbit at the moment but these companies' expandable habitats offer great promise for the exploration of deep space and they believe that it is really practical to deploy these structures as a stand-alone base on the lunar surface or the moons of Mars.

