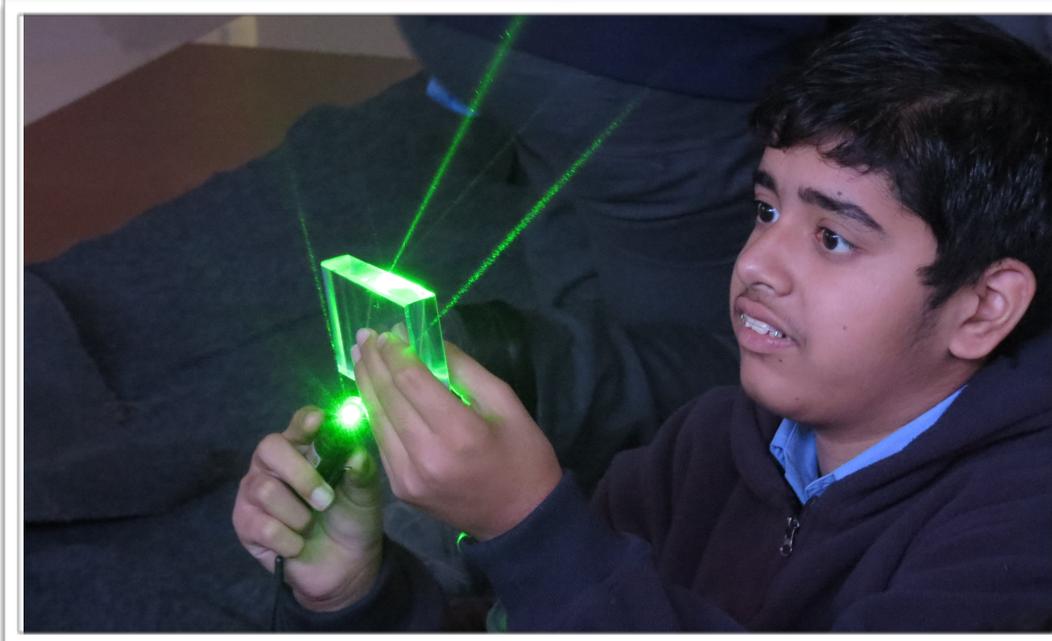




# The Astrophile Newsletter

One Fond of Starlore: An Amateur Astronomer

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## Understanding Lights better

A school workshop on optical system to have students better understanding about the light and optical devices

Astrophile recently conducted a workshop on Optical system where students worked together in groups and learnt about the type of lenses and mirrors, their properties, behaviour of light as it passes through the lenses or reflects from the mirror. They also learnt about the practical application of these instruments and their use in our day to day life. They also learnt how to focus objects using lights. The students who are between the age group of 6-8th grade were also demonstrated how the light behaves at "Critical Angle" for different material. They learnt about how Total Internal Reflection is helpful and how often we get to see this in our day to day life. They learnt about how the same principle is used for communication on earth using radio signals and also fibre optic cables. The students during the course of session used laser lights and torch lights to reiterate the principles of optics themselves.

## Moon phases and dates

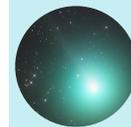
Important phases and dates for Moon to plan your observation

07/12/18	New Moon	12:50
15/12/18	First Quarter	17:19
22/12/18	Half Moon	23:18
29/12/18	Third Quarter	15:04



### Mars

The red planet is still shining bright in the night sky. Setting just after midnight, the red planet has a lot of great features to reveal to the observers.



### Comet 46P - Wirtanen

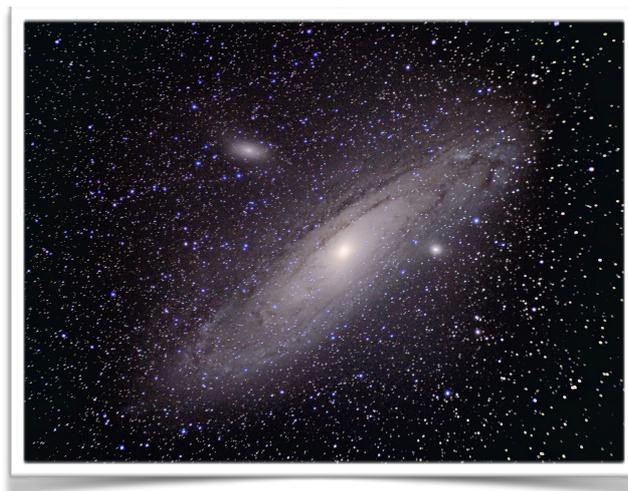
is expected to be appear very bright during the month of December with brightest being near December 12. The comet is visible in the southern sky and rising quickly northwards moving from the constellation of Eridanus towards Cetus. With new moon on 7th December, the dark skies over the week after that will be optimum for observation. The comet is currently visible through binoculars and small telescopes. It is expected to be visible to naked eye very soon and can be observed from a dark site.

Other Solar system planets like **Mercury, Venus, Jupiter Uranus and Neptune** will also be visible in the month of December but due to its distance and position, wont be visible with amateur telescopes.

## Chandrayaan launches HySIS

### ISRO launched Hyperspectral Imaging Satellite

Indian Space research Organisation (ISRO) launched Hyperspectral Imaging Satellite onboard PSLV C43 launch vehicle from Sriharikota on November 29, 2018. The satellite will provide services to India for a range of applications in agriculture, forestry and in the assessment of geography such as coastal zones and inland waterways. The data will also be accessible to India's defence forces. HySIS carries two payloads, the first in the Visible Near Infrared (VNIR) spectral range of 0.4 to 0.95 micrometers with 60 contiguous spectral bands and the second in the Shortwave Infrared Range (SWIR) spectral range of 0.85 to 2.4 micrometres with a 10 nanometre bandwidth and 256 contiguous spectral bands. The satellite will have a spatial resolution of 30 meters and a swath of 30 km from its 630 km sun-synchronous orbit. Space Applications Centre and Semi-Conductor Laboratory were responsible for the development and fabrication of 'Frame Transfer CCD' for the VNIR imaging payload while ISRO Satellite Centre supplied the modified IMS-2 bus and carried out the final assembly, integration and testing. ISRO also launched 30 other satellites from 8 different countries along with HySIS.



## “Astrophotography By Youngs” Photo Exhibition

An astrophotography exhibition will be soon organised by Astrophile India to promote astronomy education and usage of photography skills in the field of astronomy by young school students. The exhibition will follow an astrophotography competition where the students from across India will be able to submit their entries and the hand picked photos will be put on exhibition. A guide to how to take pictures, guides and rules for participation and details of exhibition will be available on our website and will be emailed to the schools soon.

## ROVER RETURN TO THE RED PLANET

Mars has just received its newest robotic resident. NASA's Interior Exploration using Seismic Investigations, Geodesy and Heat Transport (InSight) lander successfully touched down on the Red Planet after an almost seven-month, 485-million-kilometer journey from Earth.

InSight's two-year mission will be to study the deep interior of Mars to learn how all celestial bodies with rocky surfaces, including Earth and the Moon, formed. InSight was launched from Vandenberg Air Force Base in California on May 5. The lander touched down Monday, Nov. 26, near Mars' equator on the western side of a flat, smooth expanse of lava called Elysium Planitia, with a signal affirming a completed landing sequence at 11:52 a.m. PST (01:22 a.m. IST, Nov 27). Within two or three months, the arm will deploy the mission's main science instruments, the Seismic Experiment for Interior Structure (SEIS) and Heat Flow and Physical Properties Package (HP3) instruments. InSight will operate on the surface for one Martian year, plus 40 Martian days, or sols, until Nov. 24, 2020.

InSight is part of NASA's Discovery Program, managed by the agency's Marshall Space Flight Center in Huntsville, Alabama. Lockheed Martin Space in Denver built the InSight spacecraft, including its cruise stage and lander, and supports spacecraft operations for the mission. France's Centre National d'Études Spatiales (CNES) and the German Aerospace Center (DLR), are supporting the InSight mission. CNES, and the Institut de Physique du Globe de Paris (IPGP), provided the SEIS instrument, with significant contributions from the Max Planck Institute for Solar System Research (MPS) in Germany, the Swiss Institute of Technology (ETH) in Switzerland, Imperial College and Oxford University in the United Kingdom, and JPL. DLR provided the HP3 instrument, with significant contributions from the Space Research Center (CBK) of the Polish Academy of Sciences and Astronika in Poland. Spain's Centro de Astrobiología (CAB) supplied the wind sensors.

