

Quarks to Quasars

**CLUB ORIENTATION BY
HORIZON : THE PHYSICS AND ASTRONOMY CLUB**



CΦ

QUARKS → QUASARS





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Time for a game

Q U A R K S → Q U A S A R S

WIKI CONNECT #1



CLUE #1



CΦ

WHO ARE WE?

- Group of physics and astro enthusiasts
- Oldest club of IIT Madras
- Became a part of CFI in 2008.



WHAT DO WE DO?

- Observation and theoretical Sessions
- Popular lectures by famous physicists
- Trips
- Workshops
- Astrophotography
- Research based projects





Interaction with moon man of
India

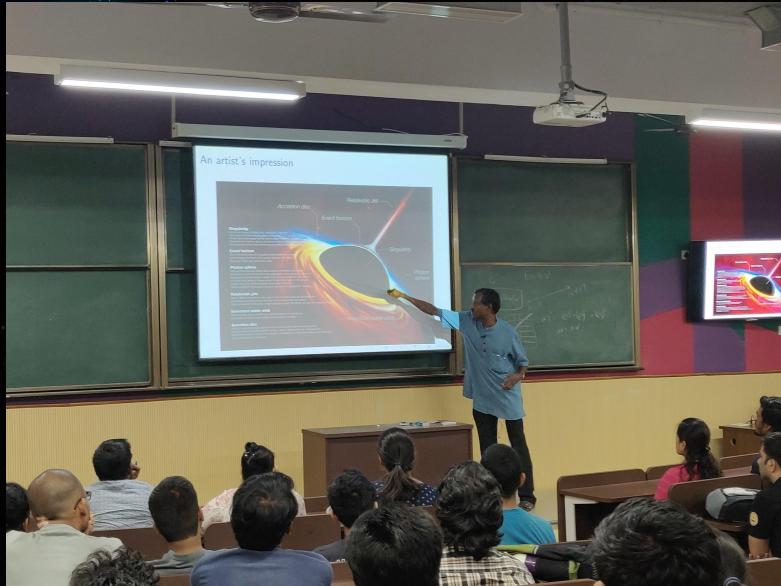


Nobel laureate Prof.
Brian Schmidt



93" telescope at Vainu Bappu
Observatory

LECTURES AND TALKS



Lecture by Prof. Suresh
Govindarajan on EHT Black Hole
Image



Lecture by Prof. Deshpande on
Pulsars

LECTURES AND TALKS



Prof. Balakrishna's lecture on Dynamical symmetries in Kepler problem



Prof. Bharat Ratra's talk on Cosmology

OBSERVATION SESSIONS

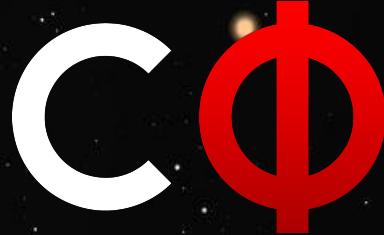


Overnight session



31/1/2018's super-blue-blood red
Moon eclipse event hosted about
1500 people!

TRIPS



Trip to VBO



Trip to Yelagiri with Dr.
Suresh Mohan



12" Dobsonian telescope



8" Newtonian reflector

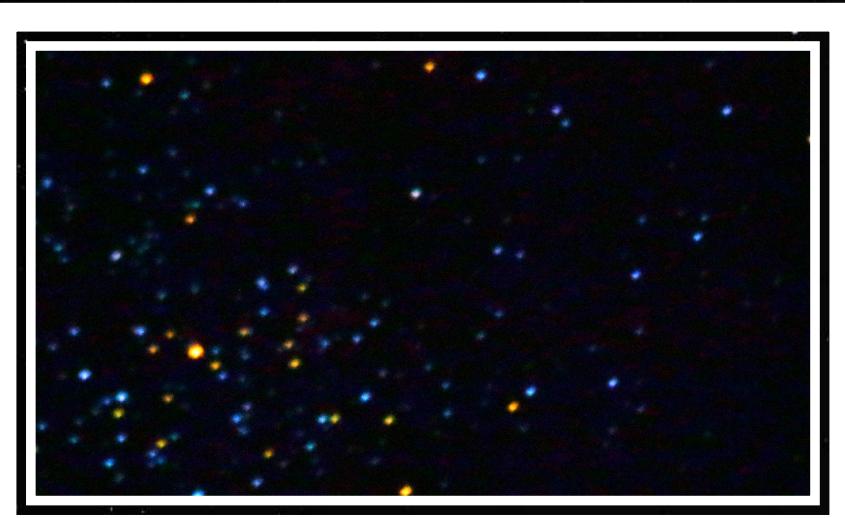


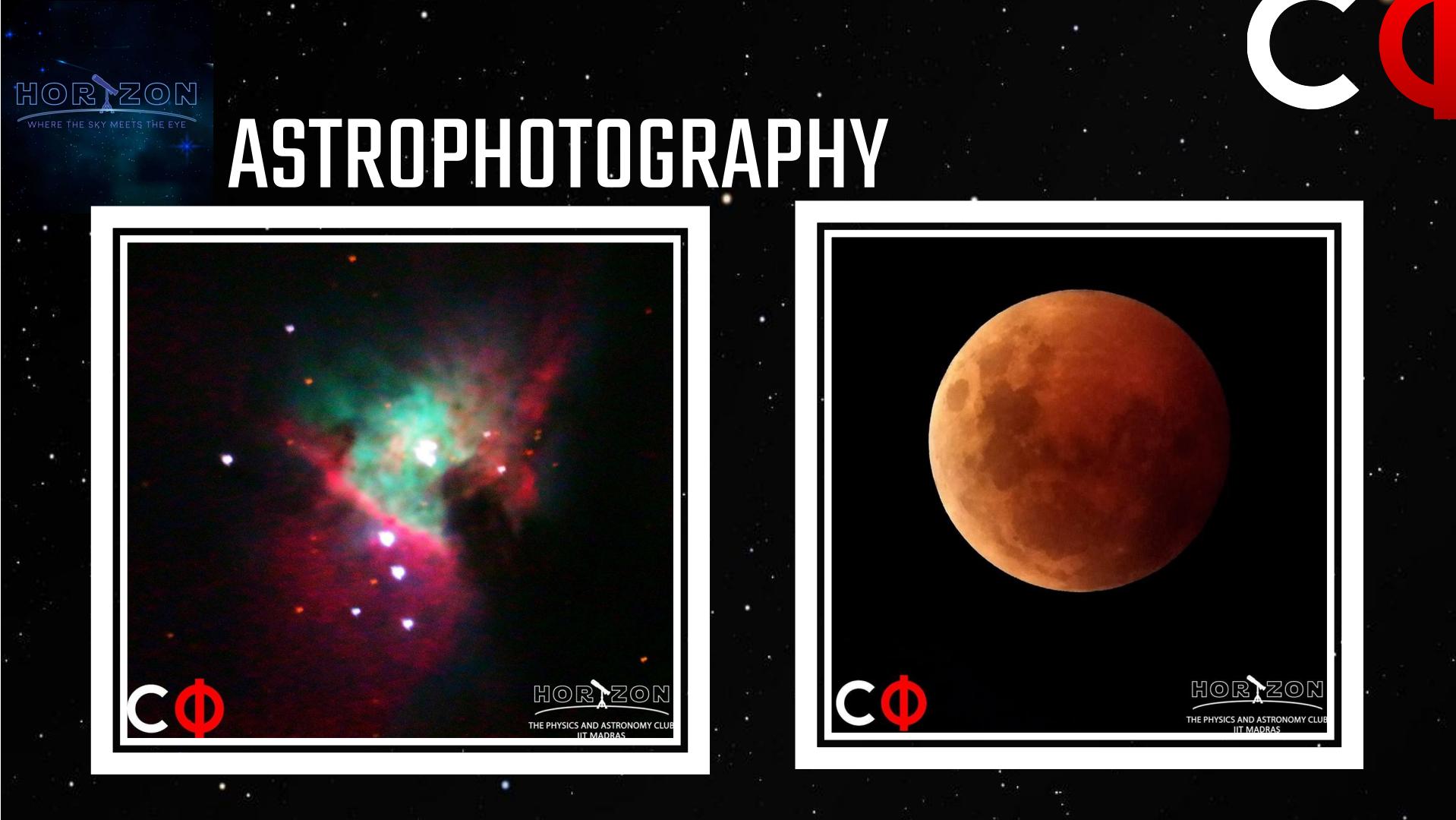
CLUE #2



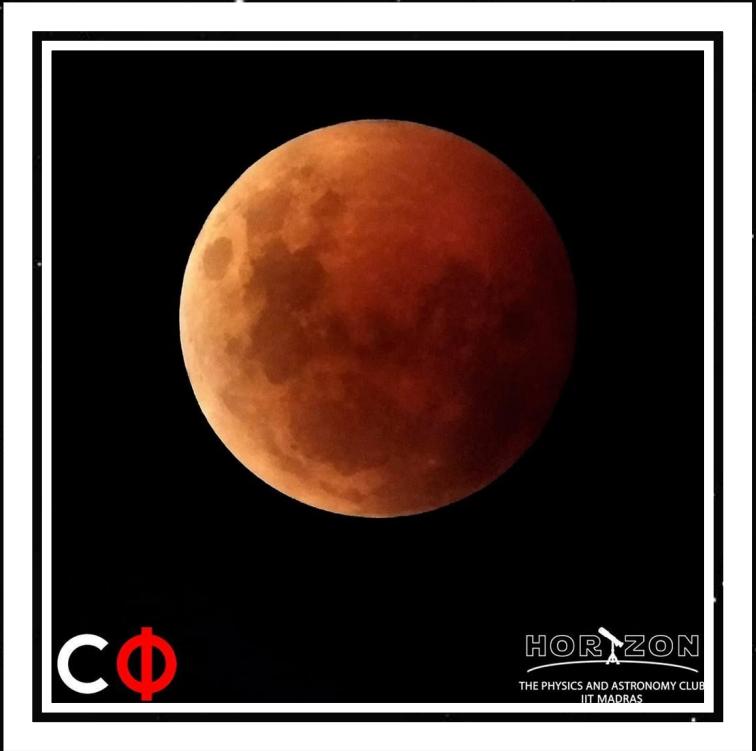
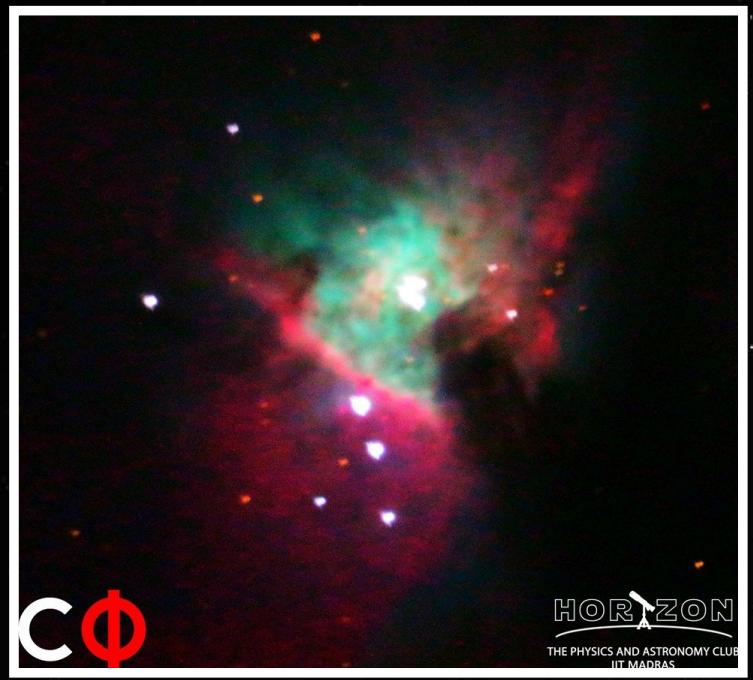
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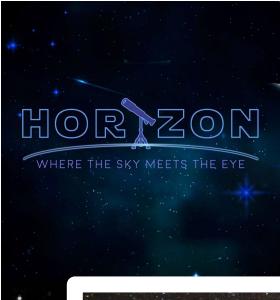
ASTROPHOTOGRAPHY





ASTROPHOTOGRAPHY





ASTROPHOTOGRAPHY



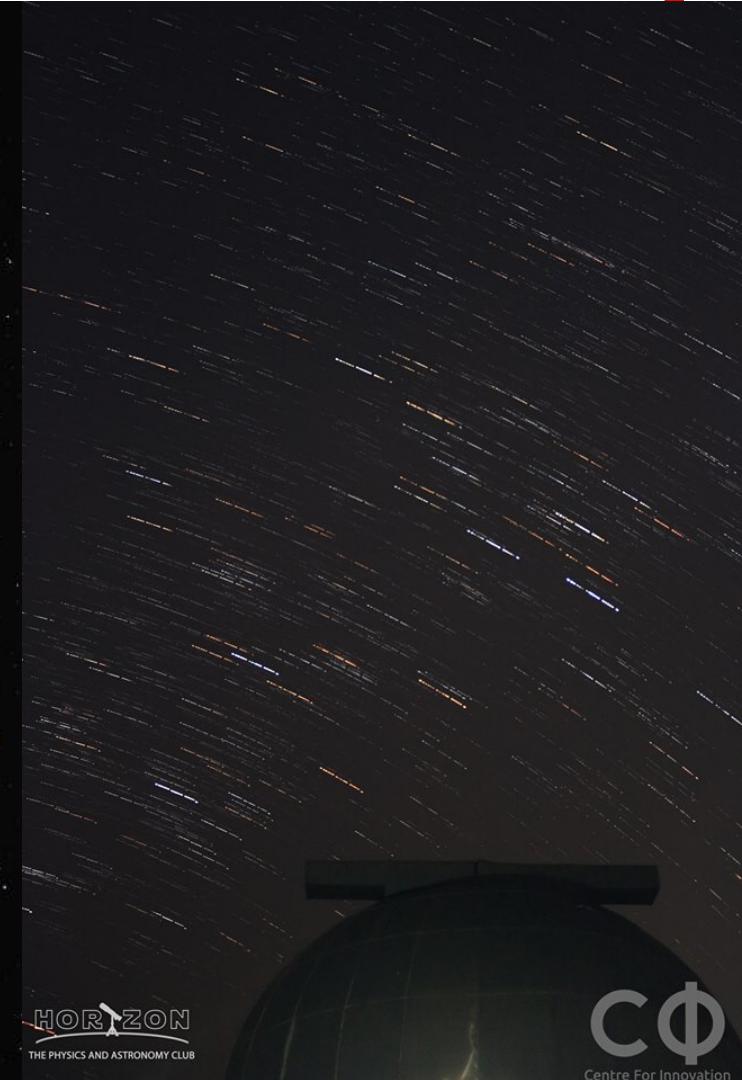


ASTROPHOTOGRAPHY



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Centre For Innovation



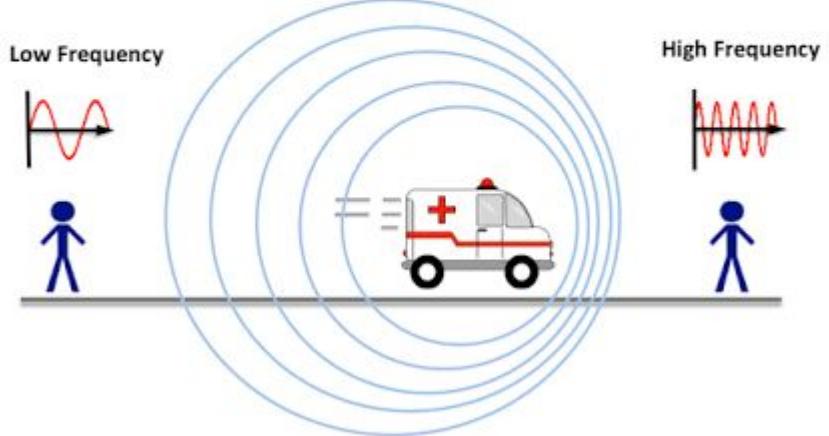
ASTROPHOTOGRAPHY



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CLUE #3

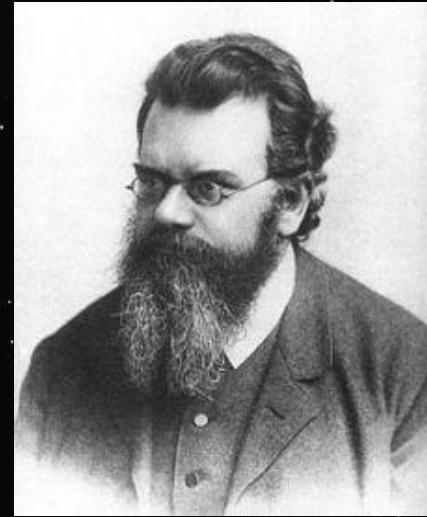
Doppler Effect



BOLTZMANN SESSIONS

A group of people who love physics get together and have informal and fun theoretical discussions. There will be basic sessions that can be understood by anyone on weekdays and advanced sessions that may have prerequisites on saturdays.

*For Physics Enthusiast People
By Physics Enthusiast People
Of Physics Enthusiast People*

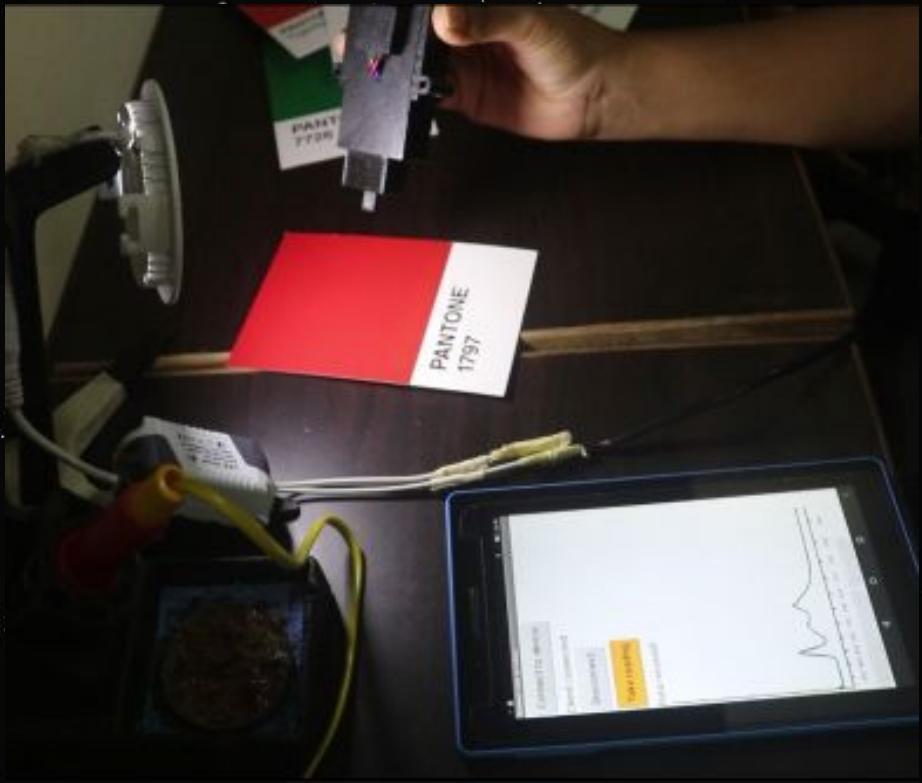


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PROJECTS

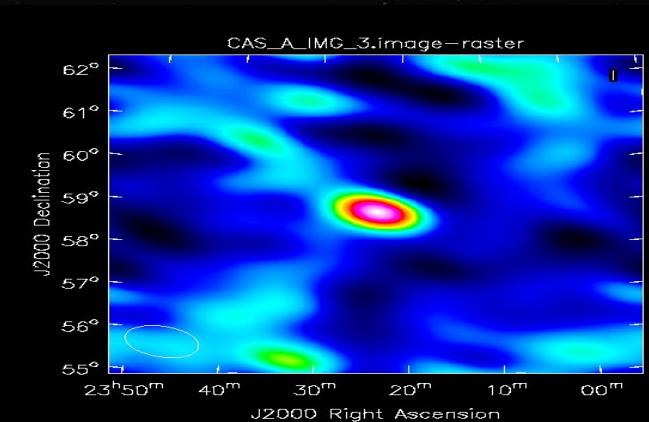
Previous Club projects

- Orbit Simulator
- Exoplanet Project
- Handheld spectrometer
- Tesla Coil
- Horn Antenna



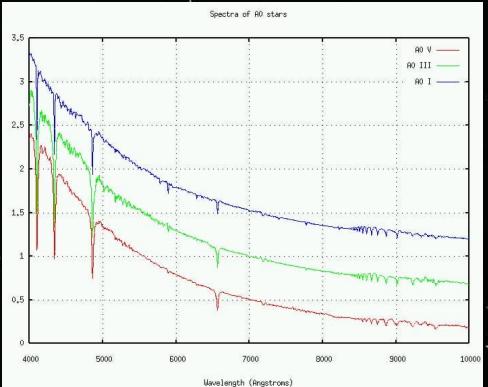
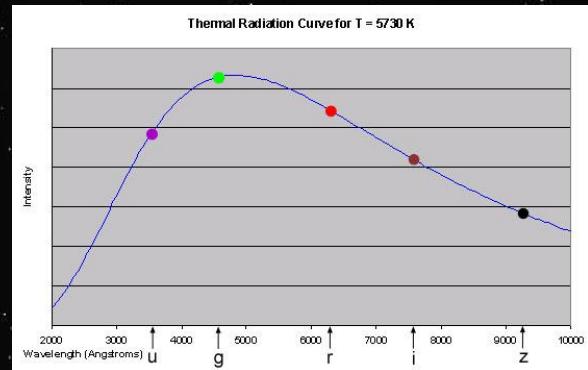
SKY WATCH ARRAY NETWORK

- We are part of SWAN, a collaborative project started by RRI
- Imaging the sky using radio waves and interferometry
- Aims to conduct high angular resolution imaging of galactic and extragalactic sources at low radio frequencies and time domain astrophysical analysis of pulsars and FRBs.

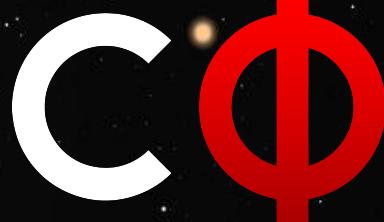


Spectroscopy

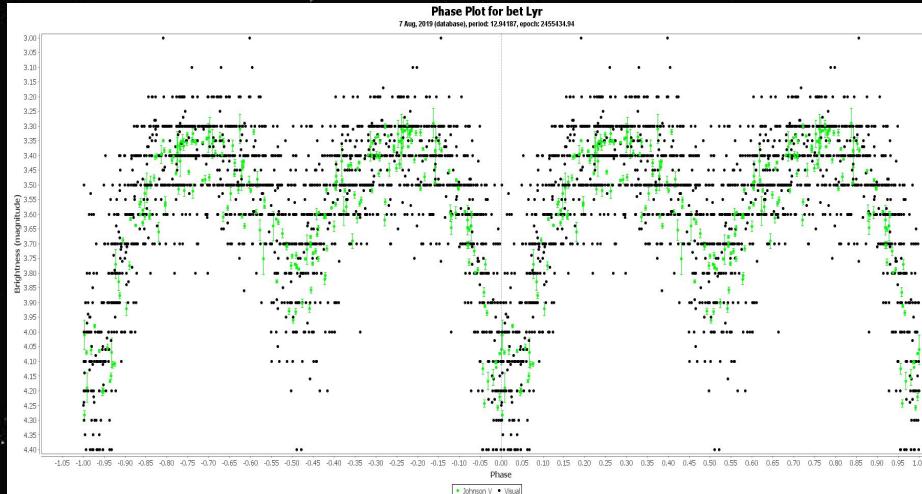
- The aim of the project is to characterize the type of stars (OBAFGKM type) by analysing the absorption spectra.
- Star analyser grating is used to record the spectrum and check for element's absorption spectra.
- We use various filters(u,b,v,g etc..) to view the incoming lights in different portions of the visible spectrum.

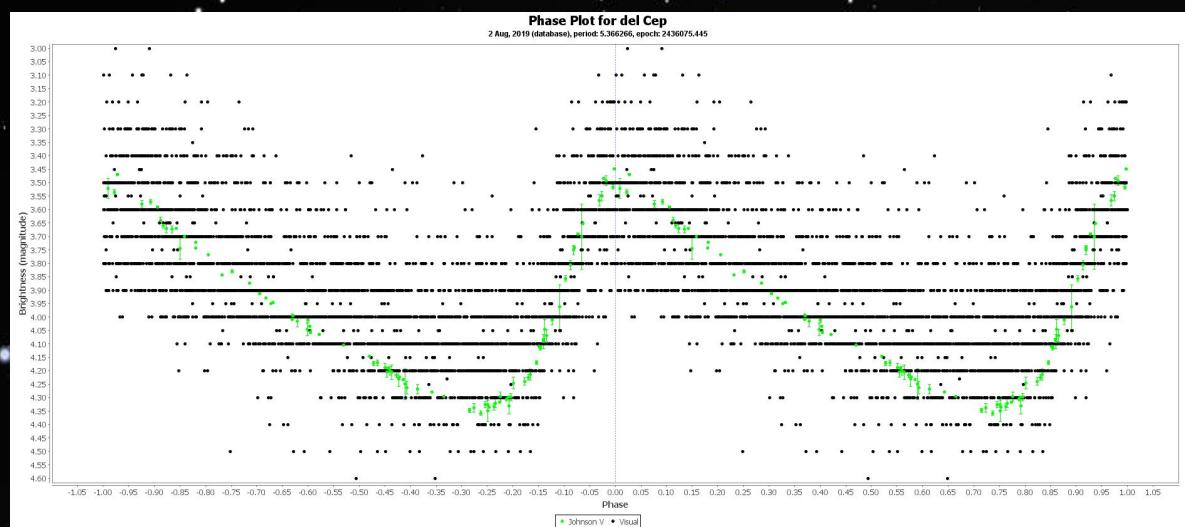
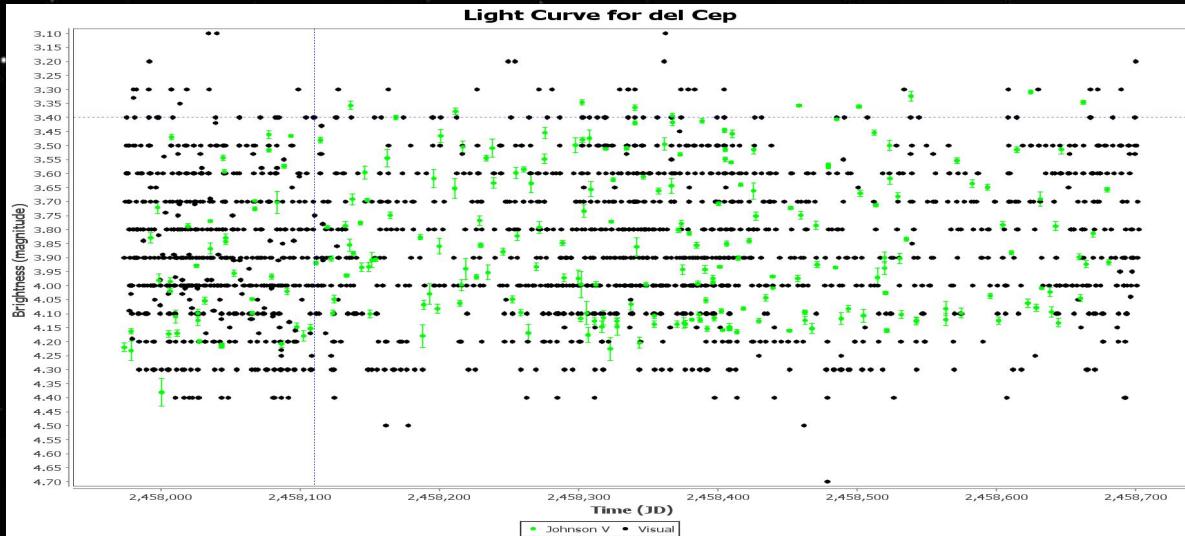


Photometry



- The project involves capturing images of variable stars using a DSLR camera attached to a telescope.
- Images are processed using SAO ImageDS9.
- Light curves of variable stars are generated and their properties are analysed.
- The obtained data is plotted using softwares TOPCAT and VStar.





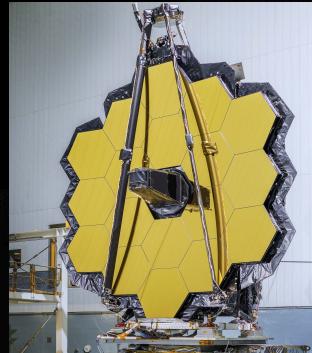
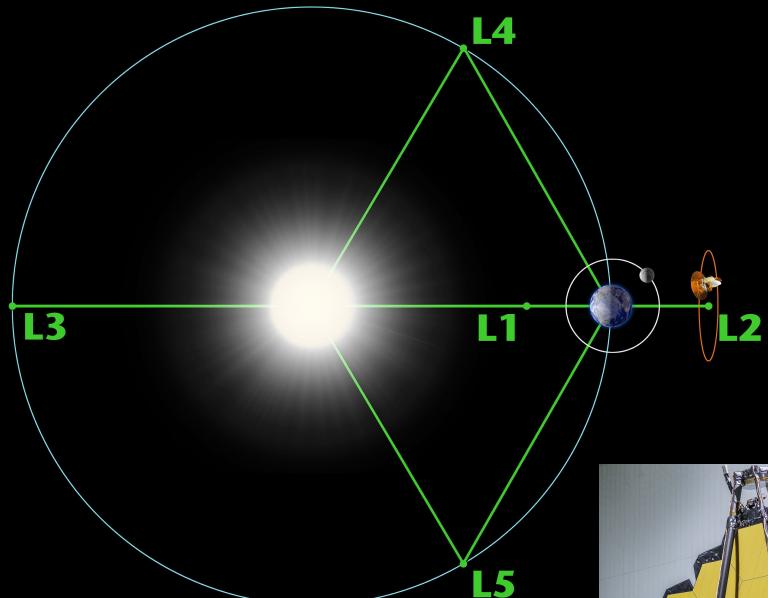


CLUE #4



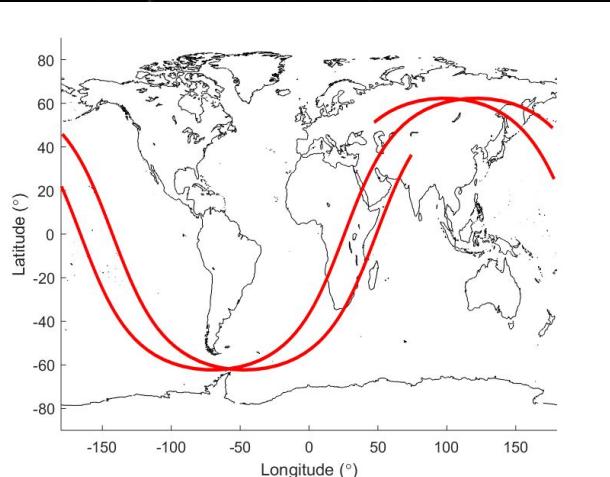
Lagrange point simulator

- Simulate low potential points in an arbitrary planetary system.
- Dynamic multibody system
- Simulate the propagation of spacecraft placed in Lagrange points.
- James Webb space telescope

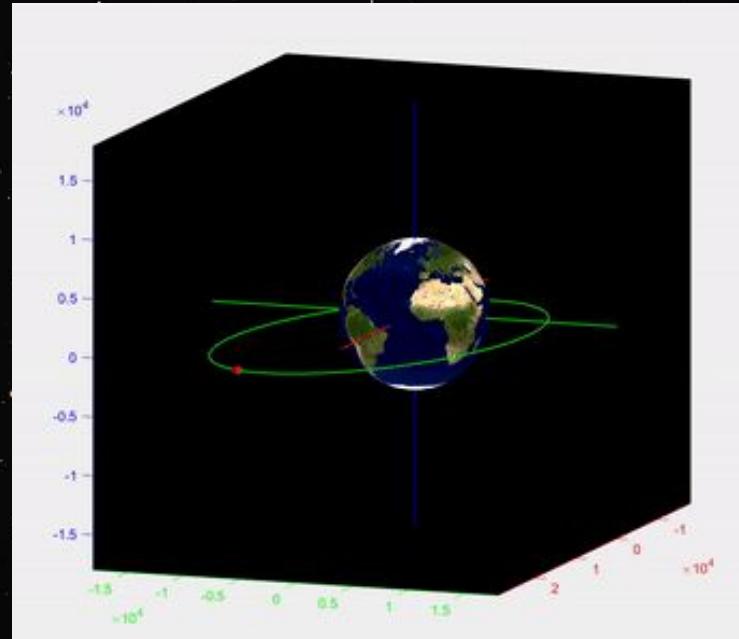


Interplanetary mission tools

- Software for predicting spacecraft trajectory
- 7 Types of orbital maneuvers



- Extending to Deep space orbits
- Ground tracking





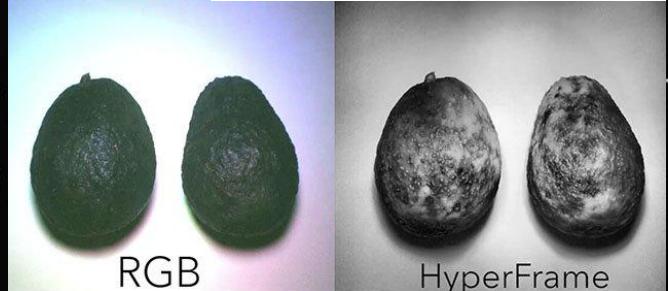
CLUE #5

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Hyperspectral imaging

- It is a type of spectral imaging technique used to differentiate materials using their spectral signature.
- All the data is modified into hyperspectral data cube.
- It can be configured upto 2500 nm while human eye can perceive only in the range 400-700 nm.
- It is used in agriculture for monitoring health and development of crops.
- The main objective is to reduce the cost of camera by using a DSLR camera and prism, while the original camera costs around 5 lakhs.





WIKI CONNECT #2

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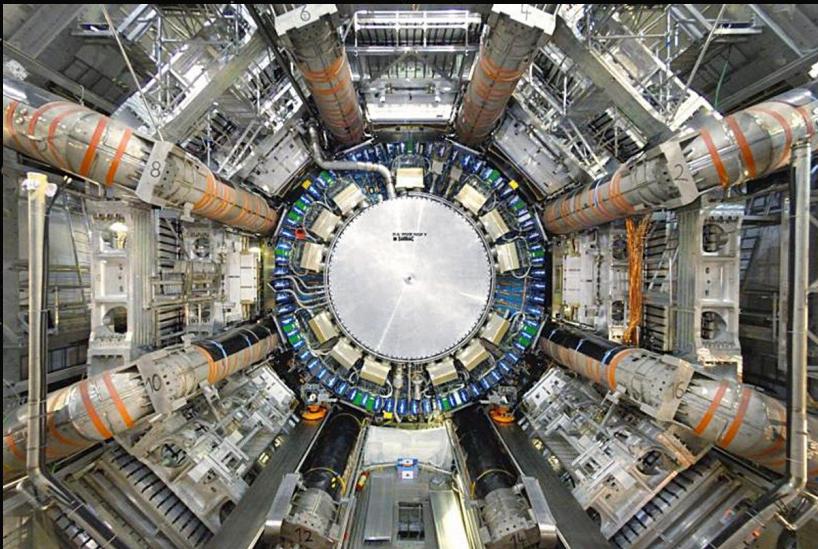
ALBERT EINSTEIN

CHRISTOPHER NOLAN

Flavour Phenomenology

C Φ

It is a project to simulate high energy collisions using our theoretical knowledge of the standard model of particle physics. Probability plots of various measurable parameters are plotted. These can be compared to experimental data like that obtained at CERN.





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Astronomy Club of IIT
Madras

Science, technology & engineering



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Followed by recaptha_19, brij_chaun96, scary_serendipity + 47 more

MEDIA AND US

CΦ

City's zero shadow moment

A special day for residents as sun reaches zenith in sky



Natural wonder: IIT-M students observing the subsolar point at 12.07 p.m. on Tuesday and, right, a photograph tweeted by Santosh Sivan. • SHALU JOSHI

STAFF REPORTER
CHENNAI

It was only natural that a manipulator of light would not pass the opportunity. So, Santosh Sivan, presented an IIT-M student, uploaded a minute before 1 p.m., it showed four men and a football on a beach. All of them had their reflection on the film of water left by the receding tide. Only the one closest to the camera had a barely visible shadow. The football looked like it had rolled off-centre from its own shadow. It was not some camera trick or special effect.

The shadows were now gone. The 12.07 p.m. zero shadow had just passed. "Zero Shadow Day in Chennai today and we are filming for CCV in Chennai," said the tweet. "CCV, or Chekka Chivitha Vaanam,

is the Silambarasan-starring, Mani Ratnam film that Sivan is now working on.

Demonstration at IIT-M

On April 24, at 12.07 p.m., Chennai experienced its zero shadow moment. Placing a one-metre pole on a white sheet, students at IIT Madras waited for the shadow to disappear and demonstrated the phenomenon.

"This is called a subsolar point," said Yashodhan Manirakkar, head of the physics and astronomy club of IIT Madras.

The sun is directly overhead at the zenith, the highest point in the sky, at a particular latitude, which implies that erect objects will cast no shadow. Today, it is special for Chennai's latitude, about 13 degrees," he explained.



The Hindu covered our event!

Live interview with ACJ news

SESSIONS THIS SEMESTER

- 4 astro observation sessions
- Astro week
- 4 talks by eminent personalities
- 6+ Boltzmann sessions
- Techsoc event



SUBSOLAR POINT OBSERVATION

HORIZON
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IIT MADRAS

EXPERIENCE THE ZERO SHADOW MOMENT WITH US AT
HIMALAYA LAWNS

18TH
AUGUST
12:13 PM





ASTRO WEEK

19TH - 23RD AUGUST

19/08 - A GUIDE TO SEARCHING ALIEN WORLDS

20/08 - OBSERVATION 1

21/08 - COSMOS : THE DARK WORLD

22/08 - OBSERVATION 2

23/08 - GRAVITATIONAL WAVES :
A NEW WINDOW TO COSMOS

23/08 - OBSERVATION 3

CONTACT US:



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THIS YEAR'S CLUB T-SHIRT

CΦ





STAY TUNED FOR MORE!

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