

# COSMOCODE

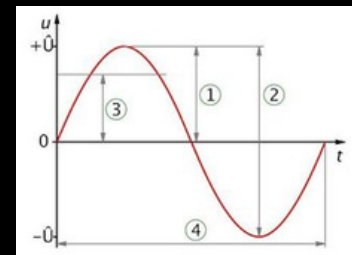
SEMESTER PROJECT 2023



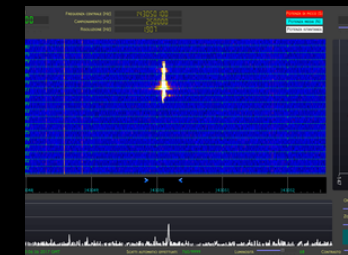
MENTORS: SHRILAKSHMI | SURYANSH GAUR | ARPIT ANAND

## Objective

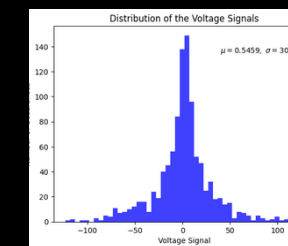
Radio signal processing



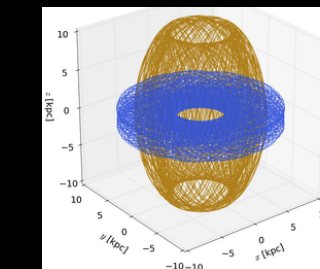
Signal



RTL-SDR

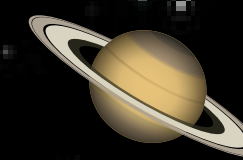


SWAN data



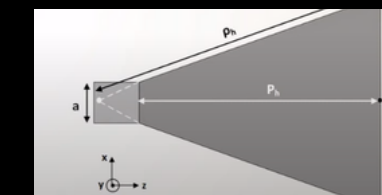
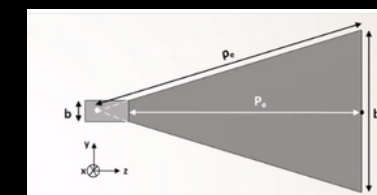
Computational Astronomy

## SSA lab visit pics and Horn Antenna testing pics



## HORN ANTENNA

used to transmit and receive RF microwave signal

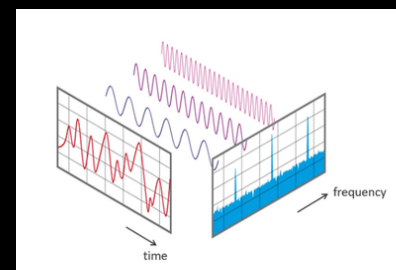
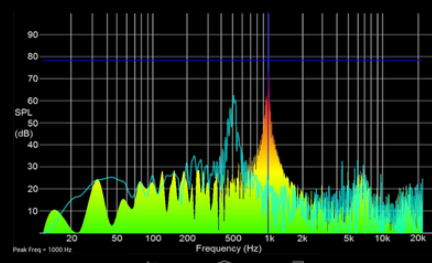


## Signal Processing

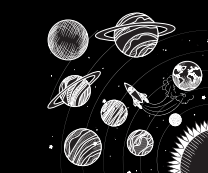
Fourier transform

Deals with continuous time signals and converts them from time domain to frequency domain. Provides information about the amplitude and phase of each frequency and components

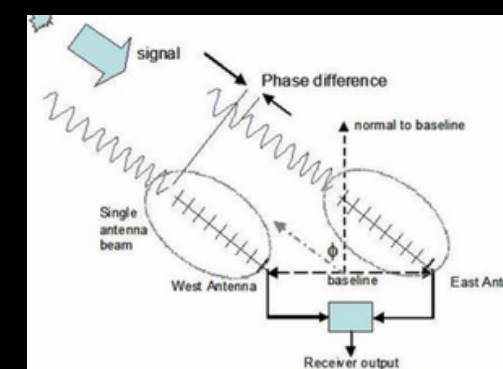
$$F(\omega) = \int [f(t) * e^{(-i\omega t)}] dt$$



## Interferometry



Interferometry makes use of the principle of superposition to combine waves in a way that will cause the result of their combination to have some meaningful property that is diagnostic of the original state of the waves.



## Lab Visits



## SWAN and Horn Antenna signals matplotlib graphs

