Demystifying Radio Astronomy: Fundamentals And Data Exploration
Krittika Summer Projects
Week 3

Radio Telescopes

After two weeks of introduction to some basics, we will look at one of the most important aspects of radio astronomy - telescopes. Shorter wavelengths typically allow us to use the particle nature of light in the form of photon counting to study astronomical objects efficiently. In the radio band, however, we have to deploy its wave nature since radio photons are many orders of magnitude less energetic in comparison. Luckily, transmitting and receiving radio waves had been in place much before the birth of radio astronomy. Observing radio waves from the sky and making images of them is still quite the task. **Chapter 3 (3.1 and 3.3)** will focus this week on understanding the basics of radio telescopes. The other sections are a bit more advanced, and you are encouraged to go through them only if you have the time and interest. A quick look at section 3.6.4 is recommended, as it briefly describes radio frequency interference (RFI), one of the major things that affect our radio observations. The aim of learning about radio telescopes and the way they collect data goes far beyond just their instrumentation aspects. We have to take all of it into consideration when we process data and make it ready for science - hence the necessity to understand it. This chapter, although introductory, will give you a much-needed glimpse.