



# HOW MY WORK IN ASTROPHYSICS TAUGHT ME EVERYTHING I KNOW

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## Microwave and Millimeter-Wave Systems: Propagation Studies at 5G Wireless Bands

- Instruments used: Signal generators, spectrum analyzers, Gain Horn antennas, and HyperLog® antennas.
- Effects of path loss are more severe on higher frequencies, while lower frequencies tend to undergo more interference.



# CENTER FOR ASTROPHYSICS

## Applying Clustering Algorithms to X-ray Emission from Planetary Nebulae

- Our analysis shows that some clustering algorithms can identify hot bubbles and compact point sources.
- As a bonus, some clustering algorithms can also spatially isolate source and background photons.
- Experiments and suggest future directions to apply these algorithms across similar sources with extended and compact emissions.



Summer 24

Present  
day

# My Past two summers 24-25

What have I learned from my past research experiences?

**1**

Science has  
multiple  
pathways

**2**

Computer  
programming is  
important in  
science

**3**

Soft skills are  
important, eg:  
communication,  
networking

**4**

Specialized  
knowledge skills  
can be broadly  
applicable



# Thank You!