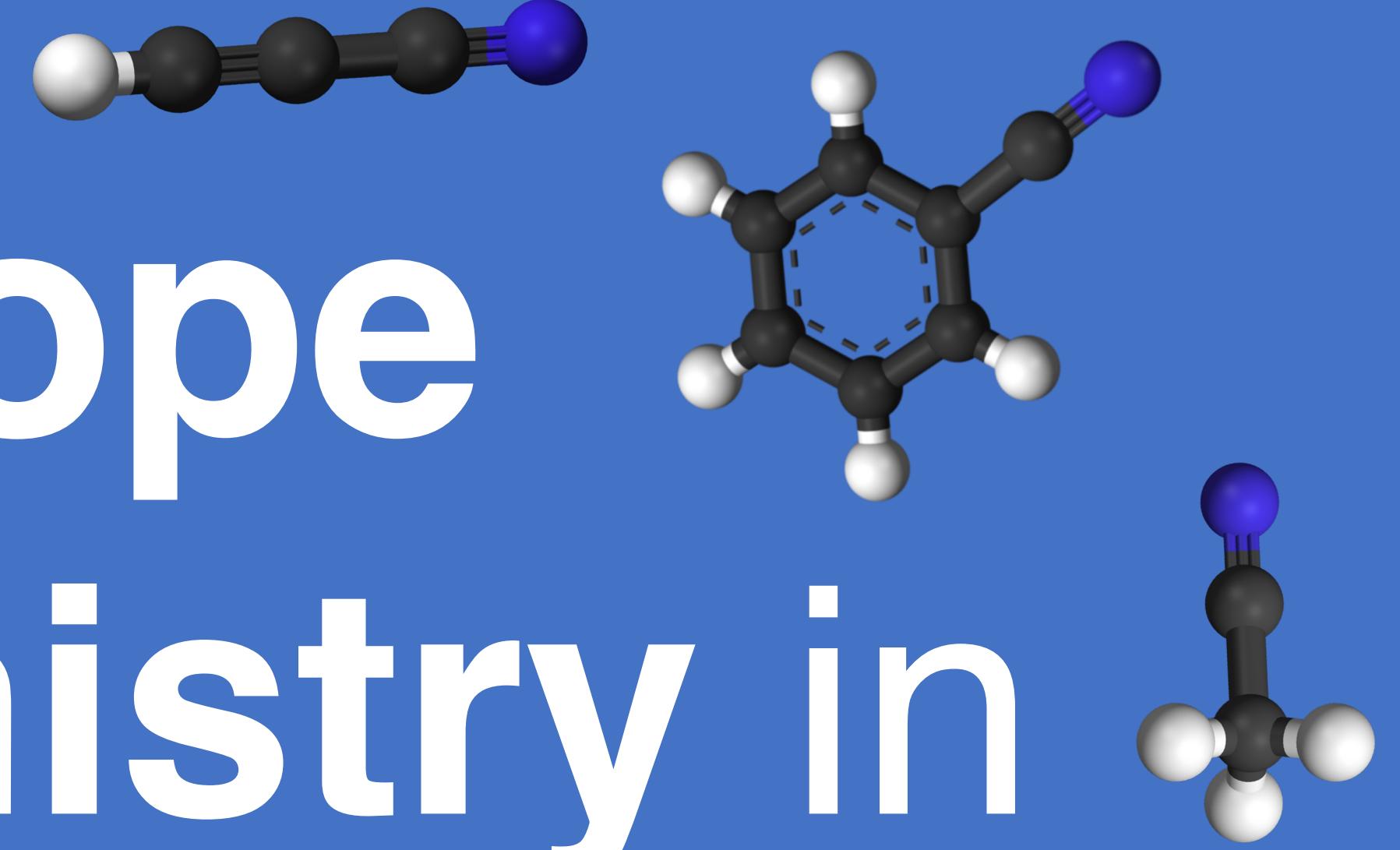


# The Green Bank Telescope reveals a complex chemistry in low temperature environments.

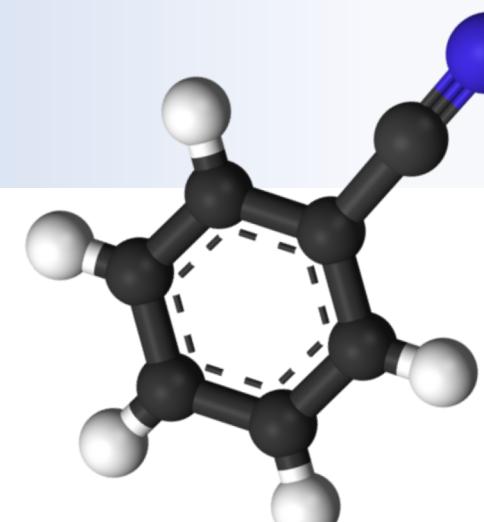


## Mining the Archive - A Dedicated Search for New Molecules in TMC-1 from Archival Data

Maddy Sita<sup>1,2</sup>, Anthony Remijan<sup>1,2</sup>, Jim Braatz<sup>1,2</sup>

<sup>1</sup>University of Virginia, VA; <sup>2</sup>National Radio Astronomy Observatory

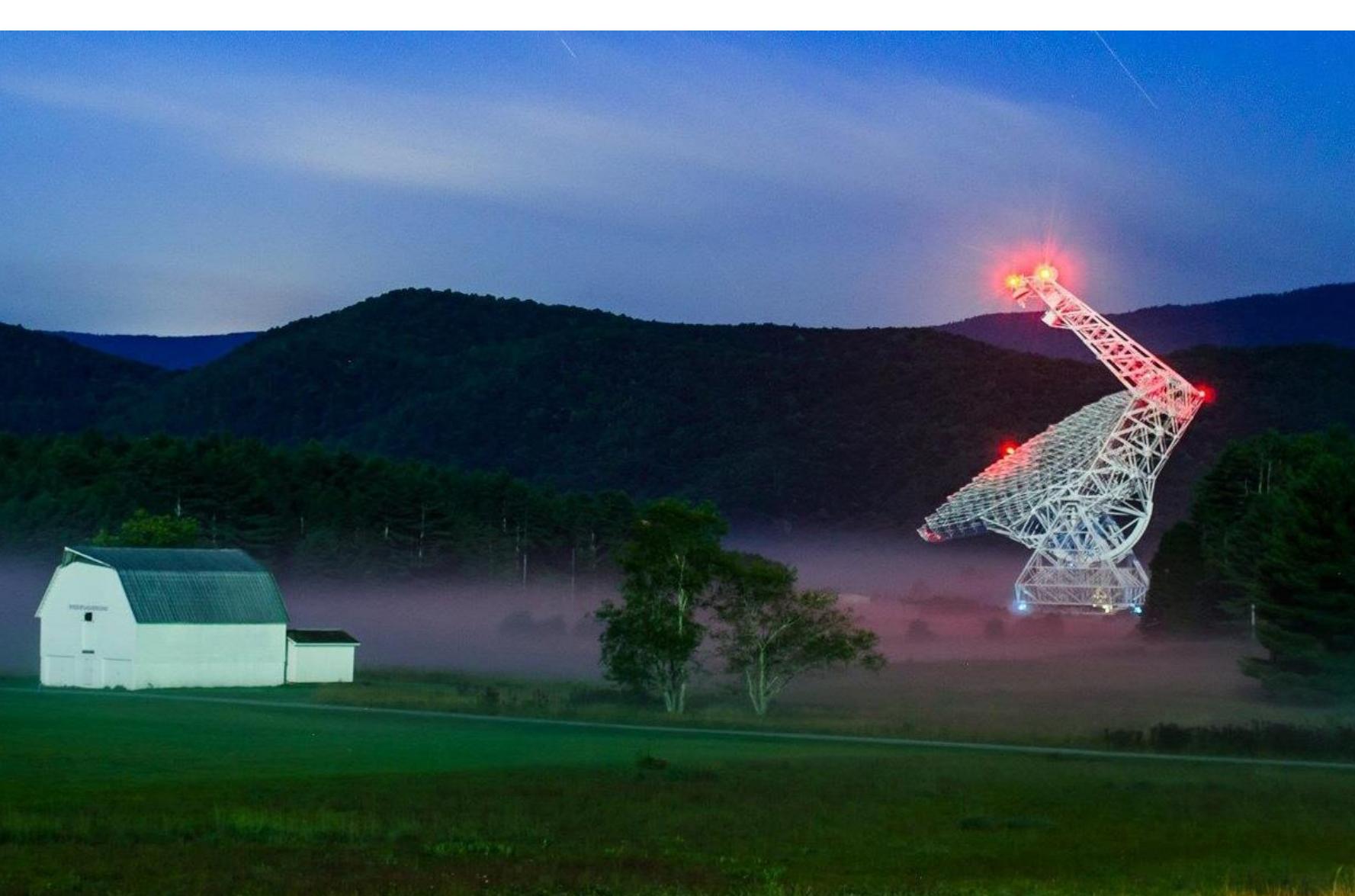
### ABSTRACT



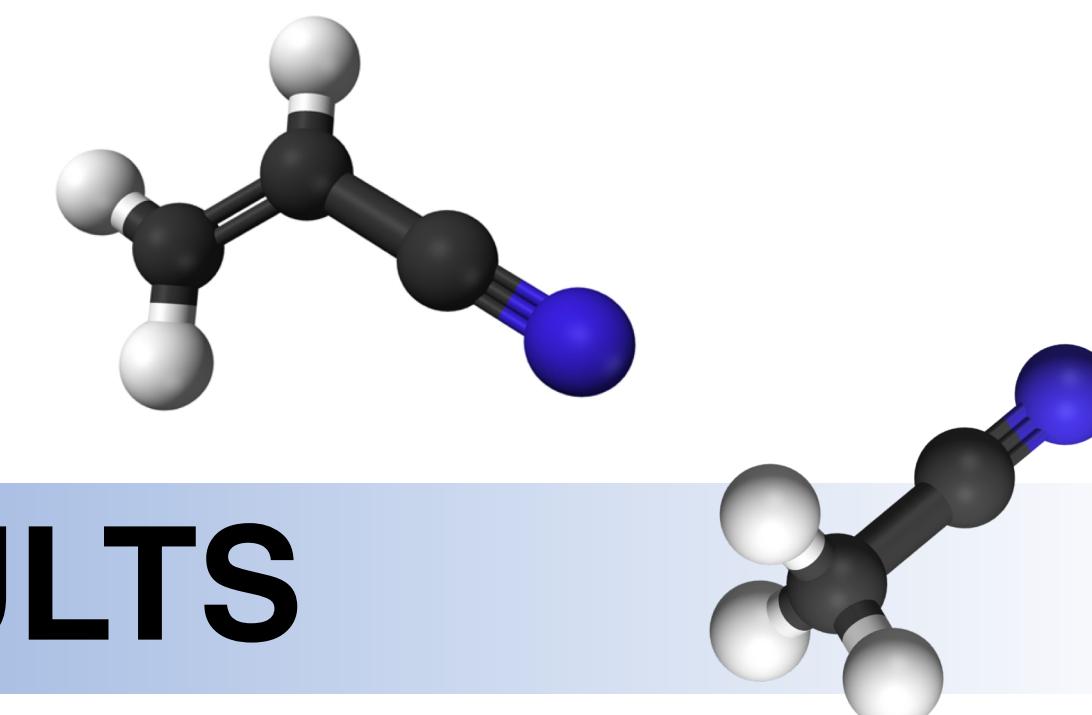
- Cyclic molecules are being discovered in TMC-1
- The search for more complex molecules continues with improved techniques
- 100-m Green Bank Telescope and its archive are the key to these discoveries

### METHOD

- Search GBT archive for target, TMC-1
- Retrieve file from archive and run sdfsits
- Develop processing routine specific to PI methodology, see example under results



### RESULTS



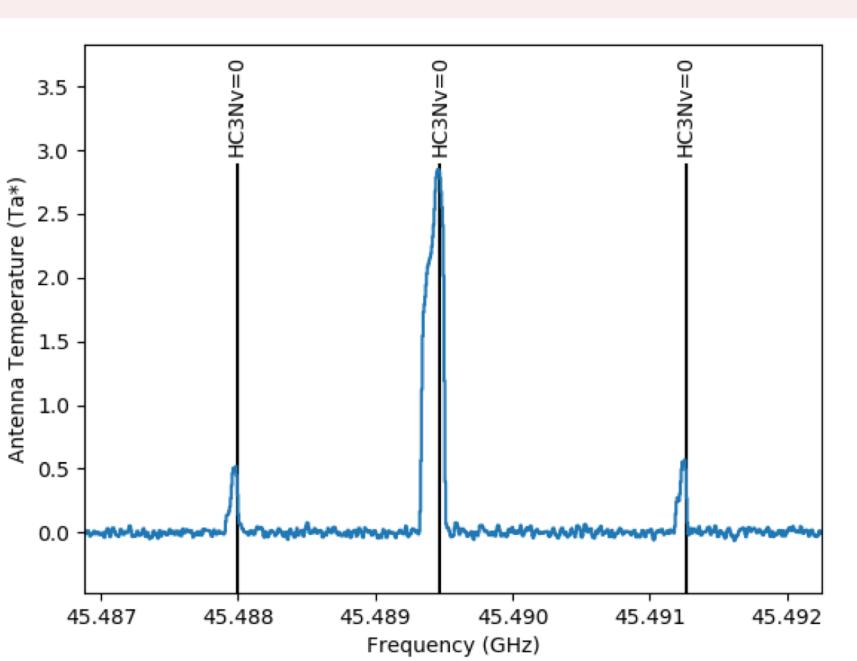
- PI: Langston  
Project Code: 01A\_005  
Combined track and position switch observation modes
- Separated scans based on rest frequency
  - Isolated single reference scan and subtracted from surrounding signal scans
  - Averaged completed spectra
  - Completed hanning smoothing and subtracted a baseline

### DISCUSSION

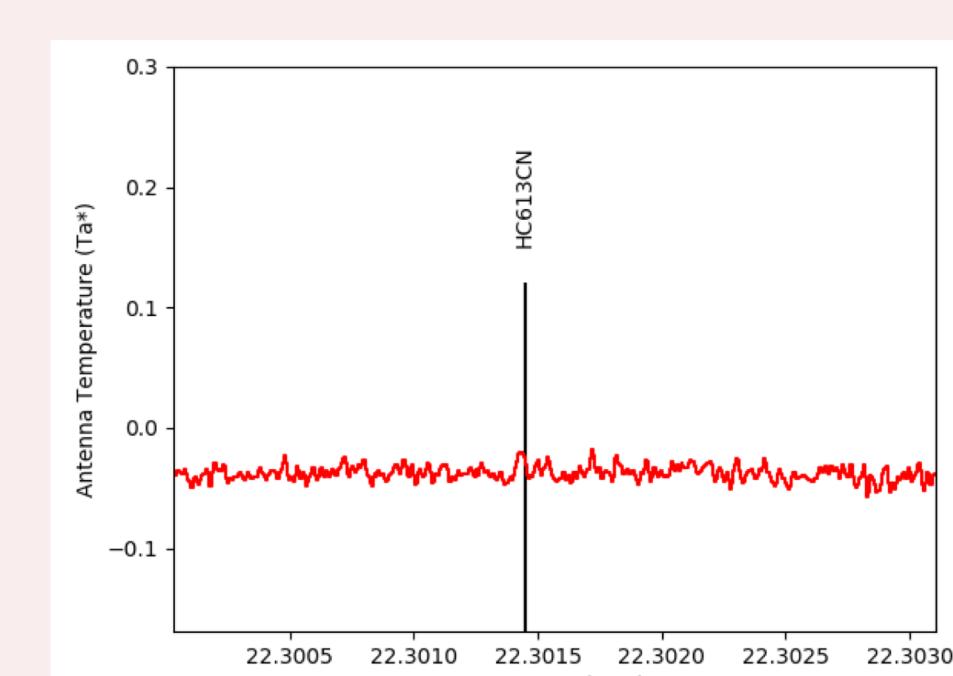
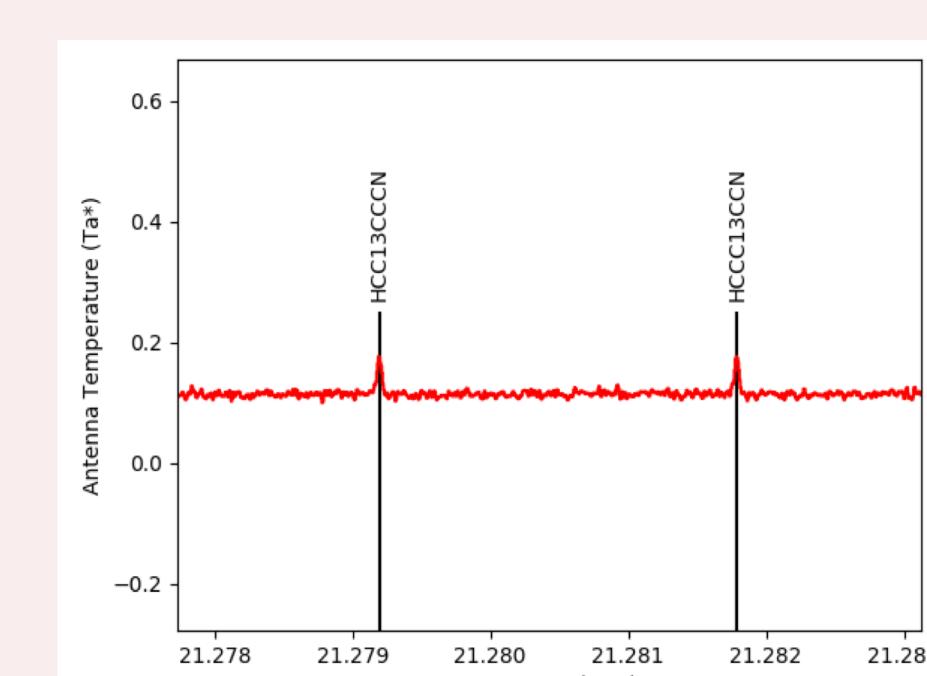
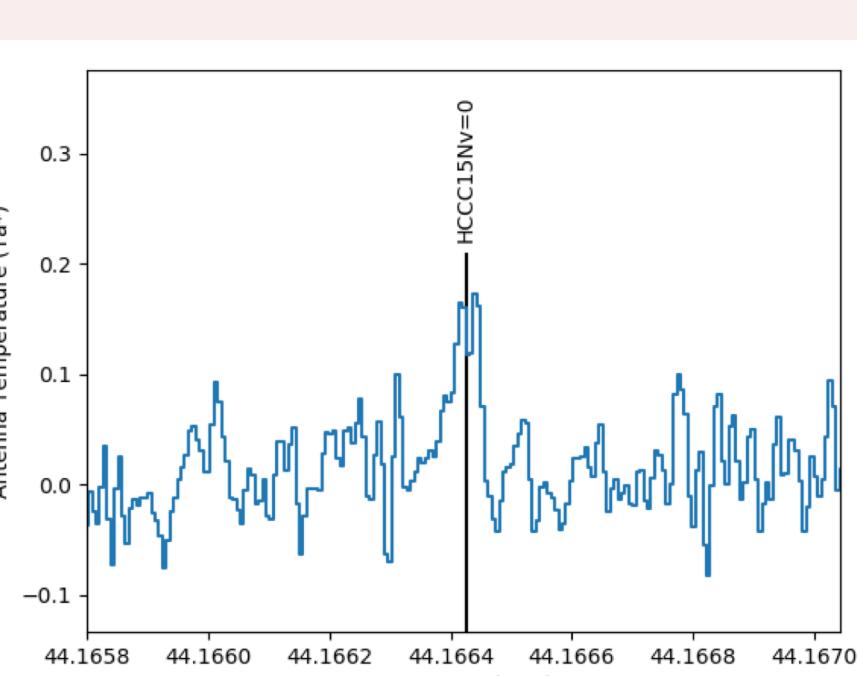
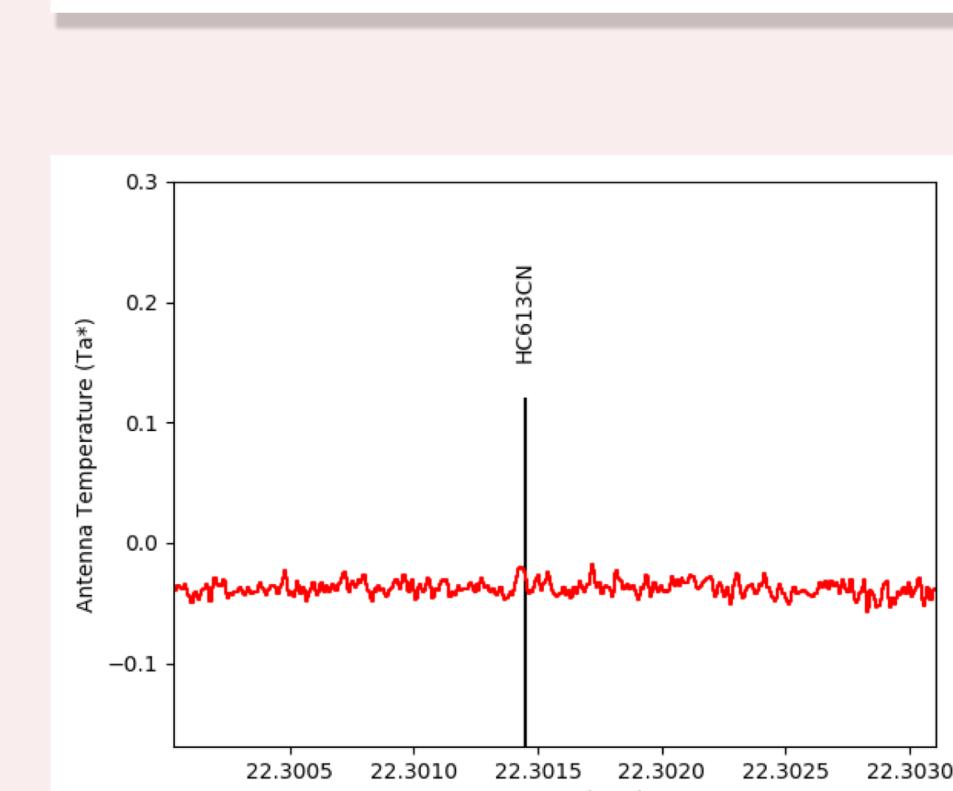
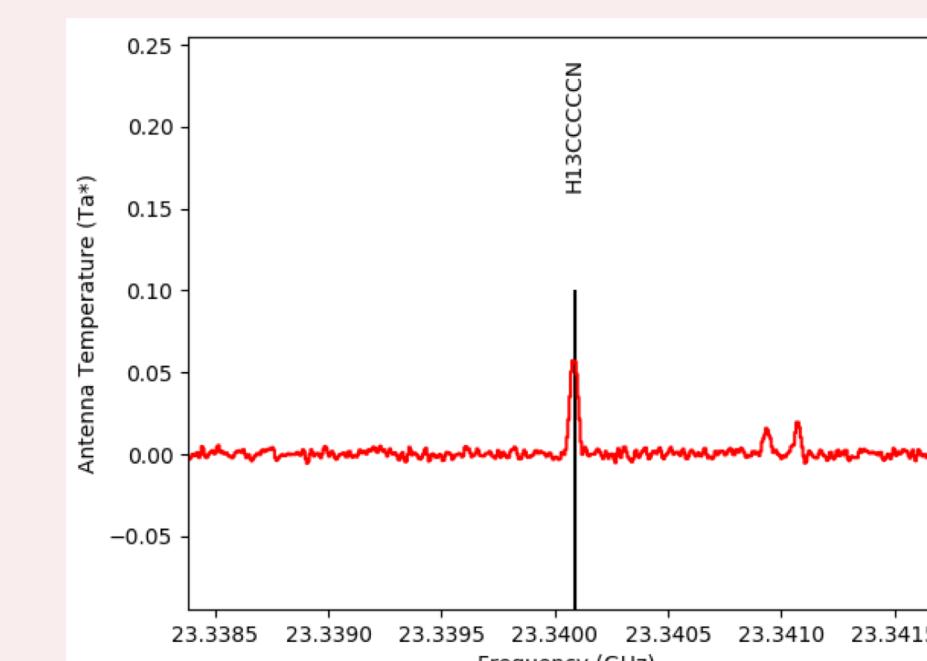
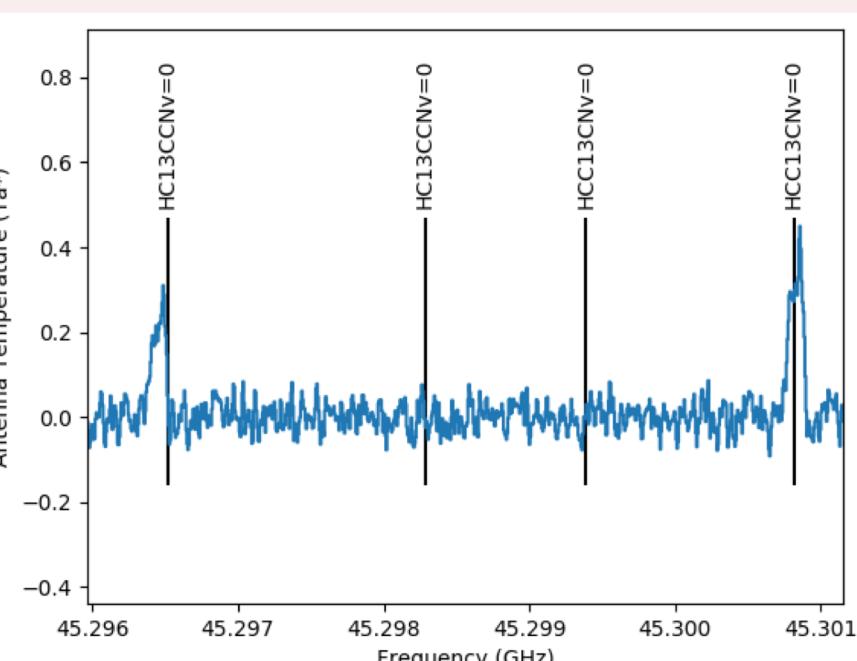
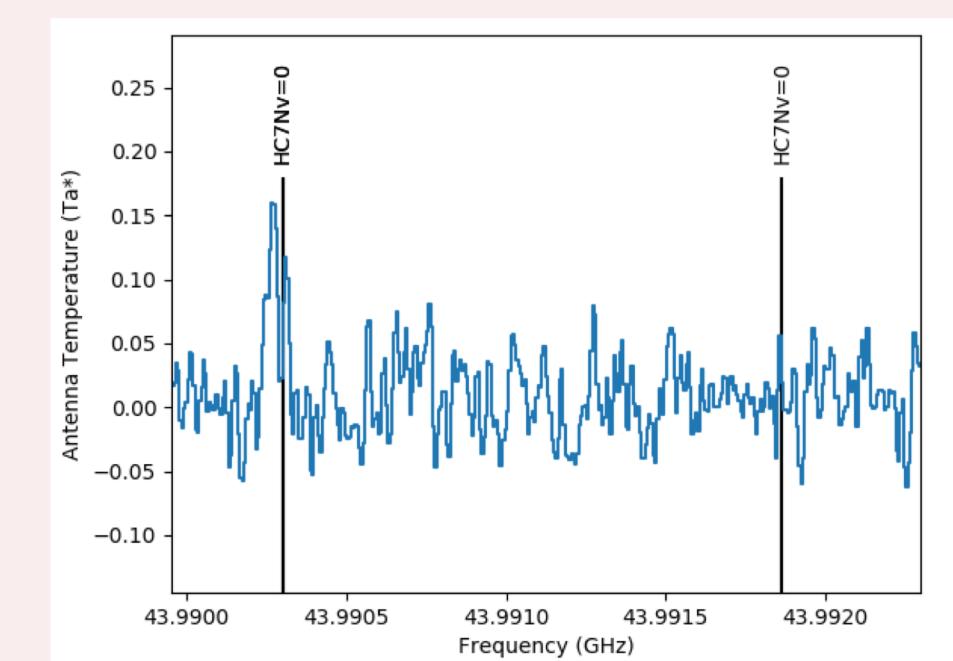
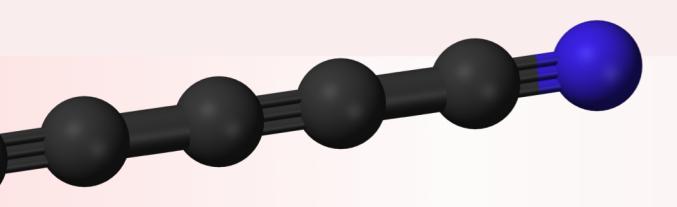
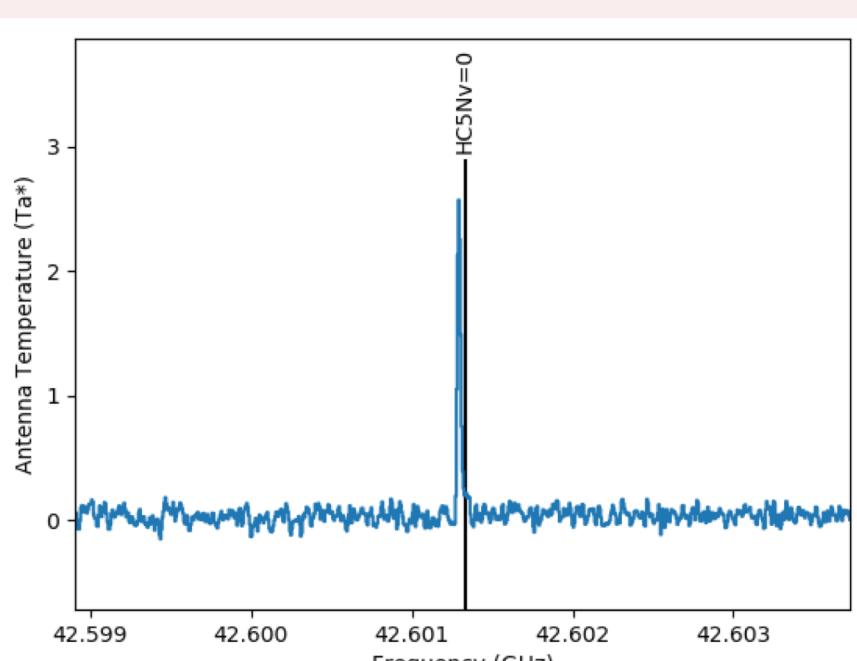
- The GBT archive is a tool that can provide a wealth of information
- The archives can be used to help guide additional observations for future molecular searches and surveys

### EXAMPLE SPECTRA

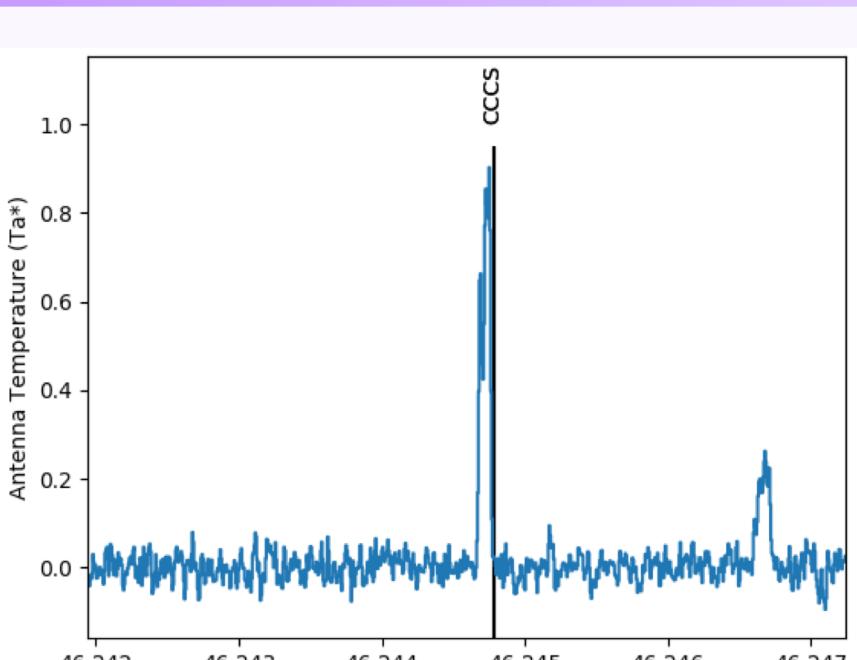
PI: Langston  
Project Code: 01A\_100



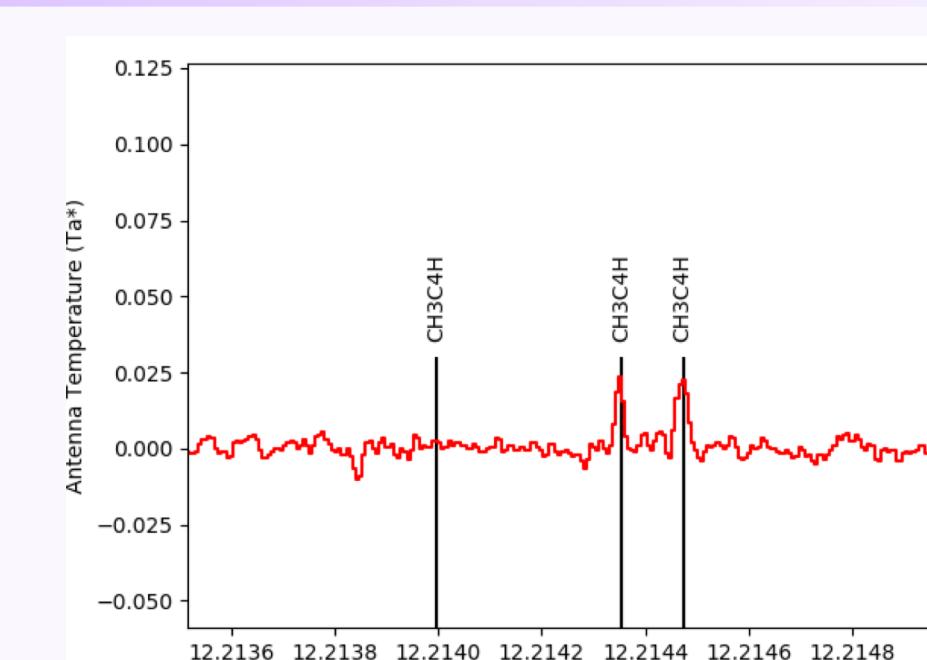
PI: Remijan  
Project Code: 05C\_020, 09B\_010, 11B\_087



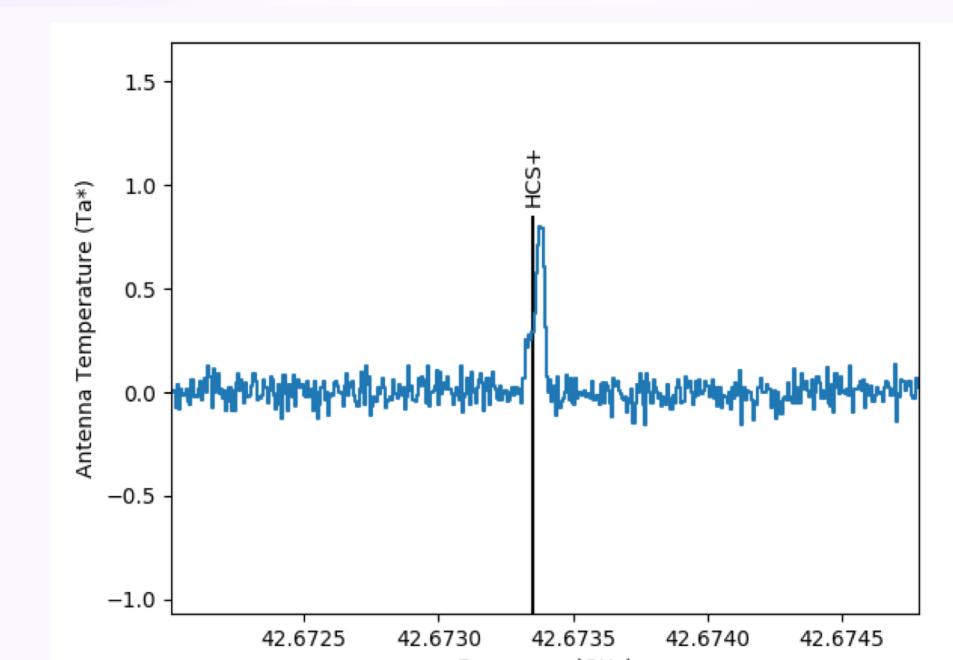
### ADDITIONAL SPECTRA EXAMPLES



3-Thioxo-1,2-Propadielylidene



Methyl diacetylene



Thioformylium



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