

Technical Page

Proposal Type: Regular
 General Category: Astronomy
 Sub-Category: Spectroscopy
 Observation Category: Extragalactic
 Total Time Requested: 33 Hours

Proposal Title: Centimeter Wave Molecular Absorbers at Moderate Redshift

ABSTRACT:

We propose to search for 16 molecular transitions in three absorption systems at moderate redshift: PKS 1413+135 ($z = 0.247$), B3 1504+377 ($z = 0.673$), and B 0218+357 ($z = 0.685$). We expect to detect absorption lines of formaldehyde (H₂CO), methanol (CH₃OH), OH, and CH, including several rungs of the rotational ladders of OH and CH. These molecules are roughly as abundant as other species already detected in the millimeter regime in the target systems. The proposed observations will provide the most precise tests to date of the claims of evolution in the fine structure constant, they will characterize the physical conditions and abundances of molecules with centimeter wave transitions in the neutral molecular interstellar medium of galaxies with lookback times of 2.9 and 6.2 Gyr, and they will pave the way for surveys for historically elusive molecular absorption systems.

| Name | Institution | E-mail | Phone | Student |
|----------------|------------------------|------------------|--------------|---------|
| Jeremy Darling | Carnegie Observatories | darling@ociw.edu | 626 304 0256 | no |

Service Observing Request

Remote Observing Request

- | | | | |
|-------------------------------------|----------------------------|-------------------------------------|-------|
| <input type="checkbox"/> | None | <input type="checkbox"/> | No |
| <input type="checkbox"/> | All of the observing run. | <input checked="" type="checkbox"/> | Maybe |
| <input checked="" type="checkbox"/> | Part of the observing run. | <input type="checkbox"/> | Yes |
| <input type="checkbox"/> | Queue Observing | | |

Instrument Setup

S-low C

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

1900-2000

2600-3000

3550-4000

4000-4450

4800-6000