

Technical Page

Proposal Type: Regular
 General Category: Astronomy
 Sub-Category: Spectroscopy
 Observation Category: Extragalactic
 Total Time Requested: 10 Hours
 Minimum Useful Time:

Proposal Title: A search for 6 GHz OH lines at $z \sim 0.25$

ABSTRACT:

We propose to use the Arecibo 6-band receiver to obtain high resolution spectra of the redshifted OH J=5/2 excited-state transitions, from the $z \sim 0.25$ source PKS1413+135, to attempt to confirm a tentative detection with the WSRT. The conjugate behaviour of the OH 18cm lines in this source suggests that the satellite J=5/2 lines should also be detectable in absorption and emission. A detection of the J=5/2 lines will allow us to measure any evolution in the fine structure constant α and the electron-proton mass ratio $\mu \equiv m_e/m_p$ from $z \sim 0.25$ to the present epoch. This would be the first detection of excited state OH at cosmological distances. We request a total time of 10 hours, including overheads and calibration, which would allow us to confirm the WSRT feature at 10σ significance.

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Remote Observing Request

- Observer will travel to AO
- Remote Observing
- In Absentia (instructions to operator)

Instrument Setup

C

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

4820 - 4855