

PID:PT2022_0181

Abstract:

This project serves as a complement to a pilot search of high- z extragalactic HI absorption lines we carried out with FAST in 2021. Since the existence of HI absorption is determined by HI column density of the absorber, as well as intrinsic properties of the background continuum source (mainly AGNs), which are largely distance-independent, extragalactic HI absorbers can be used to probe the high- z neutral hydrogen content. Our sample AGNs include 58 sources distributed in the $z \sim 0.25-0.35$, Dec $\sim 0-50$ deg range with a 1.4 GHz continuum flux level of 50-500 mJy not observed by FAST yet. Although largely free of RFI originated from navigation satellites, the corresponding frequency range is ignored by previous searches. Thus, results from this project can be used to fill the redshift gap lies within known HI absorber samples, providing a more complete view on HI distribution and kinematics. Considering the detection rate of HI absorbers by previous works and possible candidates hinted by the PT2021_0139 data, this project will make 3 \sim 20 new discoveries of extragalactic HI absorption systems, all distributed in a redshift range less explored previously.