

**Proposal Abstract:**

OH absorption is the only viable way for detecting OH molecules in non-masing galaxies at cosmological distances. To date, only six OH absorbers have been found at  $z > 0.05$ , with two being associated absorbers. In our 2019 pilot survey using FAST, we tentatively detected OH absorption by stacking three of the absorbers. To validate and expand these findings, we plan to increase integration time for the three targets using FAST's enhanced capabilities. Successful detections will double the current associated OH absorber sample size and provide insights into the evolution of molecular gas fractions over the past two billion years, while non-detections will yield valuable constraints on OH fractions. This project has the potential to advance our understanding of extragalactic OH absorption systems and their implications for galaxy evolution.