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Abstract:

The associated HI 21-cm absorption provides an important method to study the physical conditions of AGNs and their interplay with the ISM of host galaxies. Due to the sensitivity limits, most HI absorption surveys are limited to bright sources. Previous studies show that the typical detection rate of HI absorption is ~ 30 % at $z < 1$ and predict that HI absorption can be detected in fainter sources with more sensitive observations. However, only a few HI absorption detections were reported for the faint source populations, which limits comparisons of HI absorption properties between various classes of AGN. We propose a systematic survey of HI absorption lines in 129 nearby faint radio AGNs. This is a continuation of our successful pilot program. With our proposed observations, we expect ~ 39 HI absorption detections and build the first complete sample to further compare with samples with higher continuum strength. This will help us understand (1) is the detection rate of faint radio AGNs comparable to that of bright sources in the nearby universe? (2) how do fast HI outflows and HI fuelling connect with the radio strength of AGN? (3) is there a connection between HI absorption and galaxy interactions?