

Testing the AGN Radio and Neutrino correlation using the MOJAVE catalog and 10 years of IceCube Data

1 Motivation

- Observations of sources like TXS 0506+056 and PKS1502+106 in the radio regime were found to have a possible correlation in the with IceCube alerts.
- Multi-messenger analyses like Plavin et al. 2020 which study similar correlation help us understand the processes that could give rise to neutrinos in AGN but are limited to marginal statistical significance due to limited available data.

2 Analysis Method and Results

- In this work, we make use of the data provided by the MOJAVE XV catalog to search for correlations with ten years of IceCube data by using the average flux of the 437 AGN sources given in the catalog as weights for a time-integrated stacking analysis.
- No significant evidence for a neutrino signal above the background expectations was seen, so we set an upper limit on neutrino flux from these sources.
- We list our results alongside the recent work performed by Plavin et al. 2020 and Zhou et al. 2021 to help us get a better understanding of the studies performed on AGN and the differences seen in the results based on the methodology used for the study.

3 Future Work

- A time-dependent analysis making use of the same methodology described in this work but using lightcurves from MOJAVE will be discussed in a separate work soon,
- The limitations of the MOJAVE dataset imply that observations from other radio telescopes like the Owens Valley Radio Observatory or F-GAMMA program should also be used to get a better understanding of the radio neutrino correlation in AGN.