VI Conference on Active Galactic Nuclei
and Gravitational Lensing
June 02-06, 2024, Zlatibor Mt., Serbia
https://doi.org/10.69646/aob24024

DETECTION OF THE SUPERMASSIVE BINARY BLACK HOLE CANDIDATES USING SPECTRAL PROPERTIES

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The merging of supermassive binary black hole (SMBBH) helps in the understanding of galaxy formation and evolution, as well as the source of low-frequency gravitational waves. Unlike kiloparsec SMBBH, sub-parsec SMBBH is difficult to observe directly. However, the activity produced by the sub-parsec SMBBH system is similar to activity observed in active galactic nuclei (AGN) and therefore, similar method of AGN search can be done to search for SMBBH. In this research, the SMBBH search is done using spectral analysis. Prior search with PCA method by Eracleous, et al. (2012) using SDSS DR7 spectra data centered around H-beta region revealed around 100 SMBBH candidates. This prior search is updated to reflect the improvement of SDSS instrument and the new SDSS DR16 catalogue. The candidates

list of SMBBH is further refined using simulation that based on model by Popović, et al. (2021). The simulation generates light curves and broad lines that can be compared with the observed profile in optical and x-ray wavelength.