Contribution ID: **74** Type: **Contributed talk**

Search for Intermediate mass Black Holes using optical variability

Monday, 15 May 2023 15:15 (15 minutes)

Active Galactic Nuclei (AGN) are intrinsically variable sources. The observed variability in the optical can be explained as the sum of the reprocessing of very fast variations in the far UV or X-rays, and intrinsic variability from the accretion disk. Considering only reprocessing, which most likely corresponds to the fastest varying component, we can associate the shortest timescale of variability to the light-travel time of the variable signal from the inner regions to the region of reprocessing. Therefore, we can relate fast optical variability with a smaller accretion disk surrounding a small black hole. For instance, NGC 4395 holds a 4x10^5 solar mass black hole and presents optical variability in timescales of hours. Martinez-Palomera et al. 2020 presented the Search for Intermediate mass BLack holes (SIBLING) survey, a sample of low redshift galaxies selected by fast optical variability in their nuclei. In this research, we test the reliability of SIBLING by revisiting the photometry utilizing Image Subtraction. Additionally, we do the same analysis for the Eridanus group, which is part of the Dorado-Fornax-Eridanus complex and has about 50 galaxy members. The proximity of this system makes it ideal for a detailed follow-up of IMBH candidates. The software used to process the images and construct the light curves is the state-of-art LSST Science Pipelines. For the results of this work, we present the constructed light curves and the selection of fast variable sources for Eridanus and SIBLING.

Primary author: CÁCERES-BURGOS, Paula (University of Groningen)

Presenter: CÁCERES-BURGOS, Paula (University of Groningen)

Session Classification: Parallel session

Track Classification: NOVA NW3