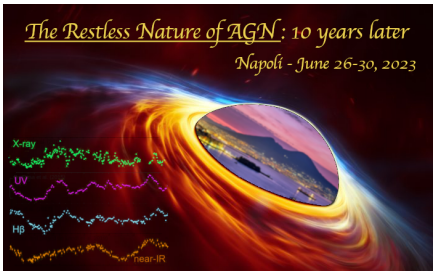

Contribution ID : **133** Type : **Contributed talk**

Revisiting the dust torus size - luminosity relationship in AGN based on the mid-infrared reverberation mapping data

lunedì 26 giugno 2023 15:00 (15)

We measured the dust torus size of 86 quasars with bolometric AGN luminosity in the range 10^43.4 to 10^46.4 erg/s by determining the lag between the optical continuum emission obtained from ground-based optical surveys, i.e., CRTS, ASAS-SN, PTF and ZTF, and the mid-infrared continuum observed with the W1 and W2 bands from the Wide-field Infrared Survey Explorer (WISE) survey. By combining the new measurements with our re-analyzed measurements of the sample in the literature, we constrain the torus size - AGN luminosity relation over a large dynamic range of luminosities (i.e., 10^43.4 to 10^47.6 erg/s) with a slope of 0.31 and 0.32, depending on mid-infrared band W1 and W2-band, respectively. We corrected the accretion disk contamination in the observed MIR light flux, obtaining a slightly changed slope of 0.37 and 0.31 for W1 and W2-band lags, respectively. While the new slope is shallower than the value of 0.5 expected from thermal equilibrium model, it is in good agreement with that obtained from the interferometric observations available in the literature. We also found wavelength dependent lags (from K to W1, W2), suggesting a stratified structure of the dust torus, such that emissions in different infrared wavelengths come from the different regions of the torus.

Primary author(s) : Dr. MANDAL, Amit Kumar (Seoul National University, Seoul)

Co-author(s) : Prof. WOO, Jong-Hak (Seoul National University, Seoul); Dr. WANG, Shu (Seoul National University, Seoul); Dr. RAKSHIT, Suvendu (Aryabhatta Research Institute of Observational Sciences, Nainital, India); Mr. CHO, Hojin (Seoul National University, Seoul); Dr. SON, Donghoon (Seoul National University, Seoul); Prof. STALIN, C. S. (Indian Institute of Astrophysics, Bengaluru, India)

Presenter(s) : Dr. MANDAL, Amit Kumar (Seoul National University, Seoul)

Session Classification : X-ray/UV/optical/IR correlated variability