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The Multiwavelength Luminosity-luminosity correlation of AGNs can shed light on the relation between the AGN jet and accretion disk emisions

AGN jets are detected via their radio and/or gamma-ray emissions while the accretion disks by their X-ray to IR radiation. The relation between these two mechanism can be investigated using broad band spectra of bright sources or through population studies, in particular the luminosity-luminosity (L-L) correlation at different wavelength for large samples of AGNs. In general, there is a large dispersion in the strength of emission, and the luminosities calculated based on an assumed cosmological model show strong correlations. However, most of these correlations are not intrinsic to the source. A large part is due to the same dependence on redshift (or luminosity distances) that enter in calculating the luminosities from observed fluxes. A second factor is due to similar, but not identical, luminosity evolution of at different wavelengths. Thus, the determination of intrinsic L-L correlations is not straightforward. It is affected by the observational selection effects and other factors that truncate the data, sometimes in a complex manner. I will describe some non-parametric methods that allow us to correct the correlations for these effects and determine the true intrinsic correlation, which can shed light on the true relation between jet and accretion disk emissions. I will show results on L-L correlation between several pairs of wave bands.

The observed L-L correlations often show a non linear relation: [log(L_i)=nLog (L_j)+ C, with n not equal to 1]. Recently Risaliti and Lusso have claimed that this fact can be used to determine the redshift dependence of the luminosity distance, thus cosmological model parameters. This has given rise to a large number of publication. I will describe the problem with this procedure.

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