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A POSSIBLE CORRELATION BETWEEN THE BLR AND STAR FORMATION RATE IN AGNS

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The aim of this work was to find a correlation between the size of the BLR and the star formation rate. This research is based on the studies elaborated by Kaspi et al. (2000, ApJ, 533,631; 2005, ApJ, 629, 61), Maiolino et al. (2008, A&A, 468,979), Kennicutt (1998, ARAA, 36, 189) and Diamond-Stanic et al.(2012, ApJ, 746, 168). Kaspi et al. (2005, ApJ, 629, 61) using measures of mapping reverberation derived the size of the BLR and correlated this with the emission at 5100Å, $\lambda L_\lambda(2-10keV)$ and other emissions. On the other hand Maiolino et al. (2008, A&A, 468, 979) and Diamond-Stanic et al. (2012, ApJ, 746, 168), derived star formation rates (SFR) using observations in ($7.7\mu m$) and ($11.3\mu m$).

For this study, we estimated the size of the BLR based on observations on hard X-rays, continuous emissions and recombination lines on the hydrogen atom of a sample of Active Nuclei. Besides, we determined the star formation rate based on observations of the emissions of PAHs for the same sample above and the adjustment equation was derived for the expected correlation. Using 17 Seyfert Galaxies with emission in PAH ($11.3\mu m$) obtained from IRS SL module (Spitzer Space Telescope Database) and 5100Å from the Nasa-IPAC Extragalactic Database (NED), we made a plot of $R_{(BLR)}$ versus the star formation rate (SFR). In the estimation of $R_{BLR)}$ size, we used the $R_{BLR} \propto L^{\alpha}$ and for the SFR we use $SFR \propto L_{PAH}$.

We found that the nuclear star formation rate (SFR) traced by the $11.3\mu m$ aromatic feature follows a relationship with the R_{BLR} of the form $SFR \propto (R_{BLR})^{0.7}$.

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STUDY OF THE GLOBAL ENVIRONMENT OF SMALL GALAXY GROUPS

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The present work presents a study of the global density environment of small galaxy groups. To this end we use a catalog of small galaxy systems constructed from the 10th Data Release of the Sloan Digital Sky Survey. To characterize the global environment of small galaxy groups we use different estimators, including the number of significant neighbors within a fixed aperture, the distance to the nearest neighbor and the number density profile of these systems. In order to perform a comparative study, we select different categories of systems considering galaxy pairs, triplets of galaxies and groups with at least four member galaxies. We found differences between the global environment of pairs compared to triplet of galaxies and groups. Galaxy pairs inhabit environments of lower global density than triplets and groups which are located in higher global density regions. This result is in agreement with different studies in the literature which propose that triplets of galaxies and compact groups have similarities in their fundamental properties and are different from galaxy pairs. Our findings suggest that the global density environment of small galaxy groups plays a fundamental role in the characterization of the main properties of these systems and their member galaxies.

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