

## TIME DELAYS EVOLUTION AND PERIODICITIES OF THE CONTINUUM AND EMISSION LINES OF 4 TYPE 1 AGN

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We investigate a specific aspects of variability of the continua and emission lines of type 1 Active Galactic Nuclei (AGN) Arp102b, 3C 390.3, NGC 5548, and E1821+643: periodicity and time delay evolution. The periodogram techniques are very powerful for short and medium periodicities, while in the case of very long light curves possible false alarms can arise. If the noises of two light curves are not correlated (which is possible to assume for AGN), then cross correlation of these light curves would not be contaminated with information from noises. If the same periodicity is presented in both signals it would be clearly seen in their cross correlation function.

Our idea is to get candidate periods from periodogram techniques and then validate periods by means of cross correlation of the light curves. If the signal of same period is presented in both curves it must be revealed in the periodic appearance of cross correlation function. The result of detected periodicity in the continuum and H $\beta$  line of NGC 5548 by means of cross correlation, confirming that it is not a consequence of red noise process. Rather, it originates from the orbital motion of two phenomena (of any kind). Moreover, we constructed time delay curve of this object, using segmentation of the continuum and H $\beta$  emission line. By application of cross correlation, we detected the same period in the time delay curve as in the case of its light curves. Such time delay evolution of NGC 5548 suggests possible changes of dimension of its BRL. As for other objects, it was not possible to get time delay curves due to characteristics of their data sets. The results of our periodicity analysis of the data of 4 type 1 AGN give a new information about the origin of detected periodic signals that they are not a consequence of red noise process, rather these periodicities arise due to real periodic phenomena in these objects.