Progress Report

PERIODICITY DETECTION IN THE BROAD LINE AND CONTINUUM LIGHT CURVES OF ACTIVE GALACTIC NUCLEI

A. Kovačević[1], L. Č. Popović[1,2] and D. Ilić[1]

[1]*Department of Astronomy, Faculty of Mathematics, Univerity of Belgrade, Studentski trg 16, 11000 Belgrade, Serbia*
[2]*Astronomical Observatory, Volgina 7, 11060 Belgrade 38, Serbia*
E-mail: andjelka@matf.bg.ac.rs, lpopovic@aob.bg.ac.rs, dilic@matf.bg.ac.rs

A large number of objects in the Universe, most likely those with accreting processes in the background, can show a pronounced and random variation of brightness. A random nature of the brightness variability hides, and thus makes it difficult to detect possible weak periodic signals. The active galactic nuclei (AGN) are among the most powerful sources of this type, whose periodicity can point on the existence of binary black hole systems, and thus marks a possible origin of the gravitational waves. For that reason, it is needed in modern astrophysics to develop tools for detection of periodic variability in AGN' s emission. Here we will present a new method, which we developed for the purpose of finding periodicity in the broad line and continuum light curves of AGN, which can be also used in the case when periodic variability of the AGN brightness is covered by other, aperiodic, variations. We will show the most interesting results, but we will also mention some challenges we face in this area of research.