

SPECTRAL LINE INVESTIGATION OF ACTIVE GALACTIC NUCLEI AT BELGRADE ASTRONOMICAL OBSERVATORY

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The spectral line investigation, theoretically and experimentally, helps us to understand physical properties of plasmas in celestial bodies. Practically, we can diagnose the emitting plasma from outside of the Solar system only by using spectral lines and continuum. Consequently, the spectral line investigation is very important for numerous astrophysical problems.

Among the most interesting objects in Cosmos are the Active Galactic Nuclei (AGNs). Their radiation comes from a compact very luminous center of a galaxy, and in their spectra very broad emission lines are observed. These lines come from a very extensive emitting line region, where plasma has very various parameters; the electron density from 10^2cm^{-3} to 10^{12}cm^{-3} and electron temperature from several hundreds to tens thousand kelvins. The investigation of line shapes as well as of variability of line and continuum flux helps us to model these objects.

We have been investigating the spectral line shapes of Seyfert galaxies and quasars since 1994 (Popović *et al.* 1994ab, Popović *et al.* 1995ab, Popović 1996, Popović and Mediavilla 1997, Popović *et al.* 1998abc). In the beginning, the research was mainly theoretical. Afterwards it has been extended to use Crimean Astrophysical Observatory observational data base (see Popović 1996). Also, the spectra from other observational data bases have been used (see e.g. Popović *et al.* 1995b). Now, we are trying to model the very complex lines of several typical Seyfert 1 galaxies and quasars (see Popović *et al.* 1998a) as well as to model double peaked lines of some of these objects (see Popović *et al.* 1998c).

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