

EMISSION LINE ASSIMETRY IN ACTIVE GALAXIES: Mrk 533 AND Mrk 110

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Abstract. In this work emission line asymmetries detected in two different types of Active Galactic Nuclei (AGN) - Seyfert 1 galaxy Mrk 110 and Seyfert 2 galaxy Mrk 533 were analyzed. Since emission lines in two galaxies arise in different emitting regions, detailed spectrum analysis gave the insight into kinematical properties of the Narrow Line and the Broad Line region (NLR and BLR) of this galaxies.

We used several methods in the analysis procedure:

- (a) in order to analyse line profiles we performed profile decomposition into Gaussian components,
- (b) to study kinematical properties of the gas in the stellar disk, we used the model of "tilted-rings" (Begeman 1989),
- (c) to determine the sources of ionization of emitting region, we used the Veilleux and Osterbrock diagnostic diagram (Veilleux and Osterbrock 1987),
- (d) thermodynamical properties of the BLR were determined using the Boltzman plot method (Popović 2003).

We showed that the red-shift and asymmetry of emission lines in Mrk 110 are probable caused by the strong gravitational field of the super massive black hole in the center of this galaxy. On the other hand, detailed analysis of 3D spectrophotometric observation of Mrk 533 made possible to map the outflow velocities from the very center of this galaxy, as well as shock waves in the circum-nuclear region, and to analyse the increase of the blue asymmetry with the increase of the outflow velocity (in more details see Smirnova et al. 2007).

References

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