



# The flux ratio of the [OIII] $\lambda\lambda 5007, 4959$ Å lines in AGN

~ analysis of the sample with red asymmetry and without  
asymmetry of [OIII] line profiles ~

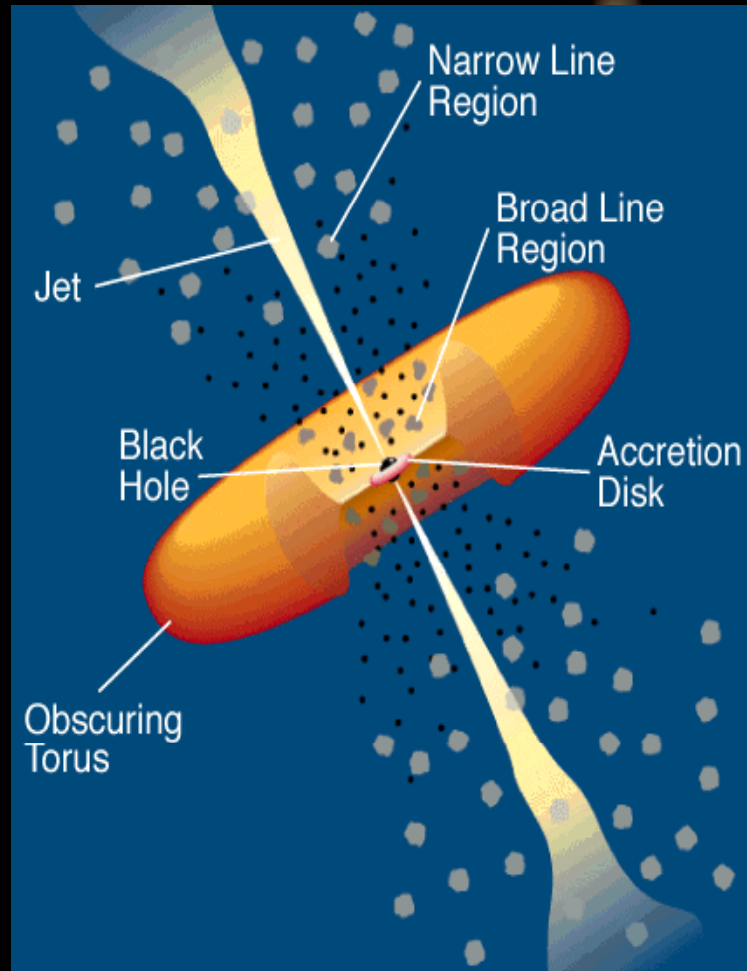
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# Active galaxies

★ 5 ~ 10 % of all galaxies in the Universe



## Composite parts:

- ★ Supermassive black hole
- ★ Accretion disk
- ★ Torus of dust and matter
- ★ Narrow Line Region
- ★ Broad Line Region
- ★ Jets

## The [OIII] $\lambda\lambda 5007, 4959$ Å lines

- Very prominent in the spectra of AGN Narrow Line Region (NLR)
- Forbidden doublets
- Flux ratio of these lines could be used for testing linearity of detectors and for obtaining the electron temperature and electron density of the NLRs
- Storey and Zeippen et al. (2000) obtained theoretical value of the flux ratio of [OIII] lines of 2.98 taking into account relativistic corrections in the magnetic dipole operator calculations
- Dimitrijevic et al. (2007) measured the value of the flux ratio using the AGN sample mostly with the blue asymmetry in [OIII] line profiles obtaining the result of  $2.993 \pm 0.014$



## The aim of this work:

- \* measuring the flux ratio of [OIII] lines for special AGN sample which contains only the spectra with red asymmetry and the spectra without asymmetry in [OIII] line profiles
- \* comparison of the given result with the theoretical and experimental values

## What were we doing?

- \* selected data from the DR6 (Data Release 6) of the SDSS data base and observations described in the paper of Paola Marziani et al. (2003)
- \* divided main sample into the two subsamples
- \* subtracted the continuum emission and contaminating H $\beta$  and FeII spectral lines
- \* compared line profiles scaling the profile of the  $\lambda$  4959 line to the  $\lambda$  5007 line profile

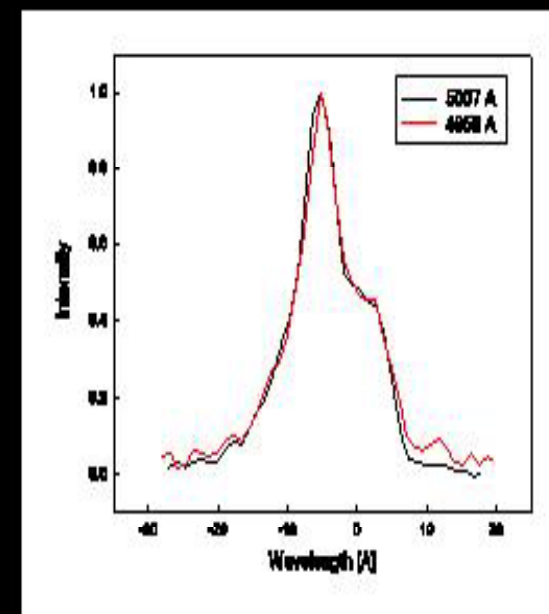
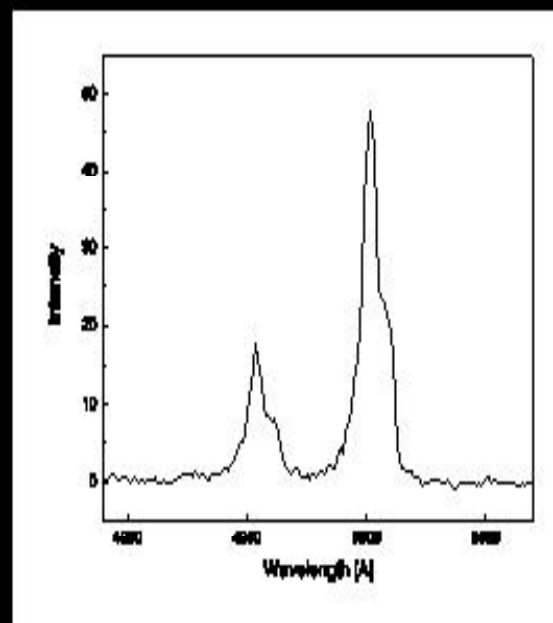
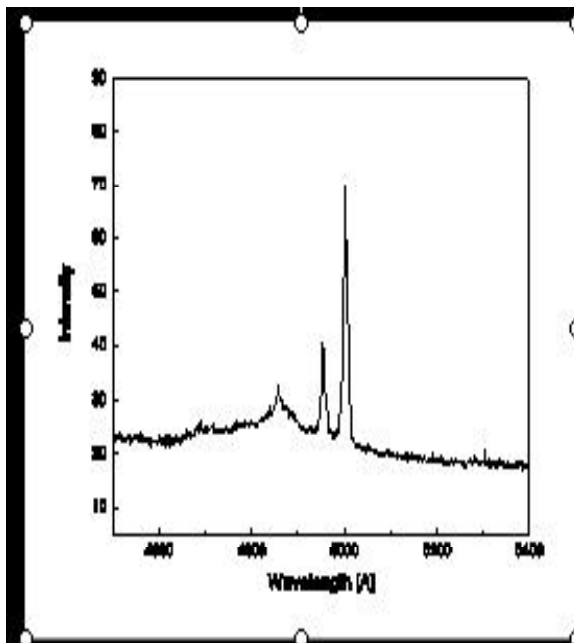


Figure 2. Example of spectrum ( SDSS J074125.22+33198000.00 ) with a red asymmetry of [O III] lines. Left - hand panel: observed spectrum, middle panel: [O III] lines without continuum and contaminating emission and right hand panel: the profile of  $\lambda 4959$  line scaled to the profile of  $\lambda 5007$  lines.

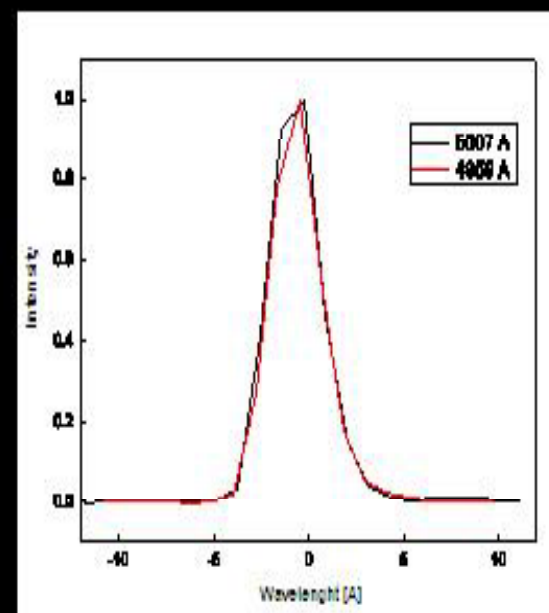
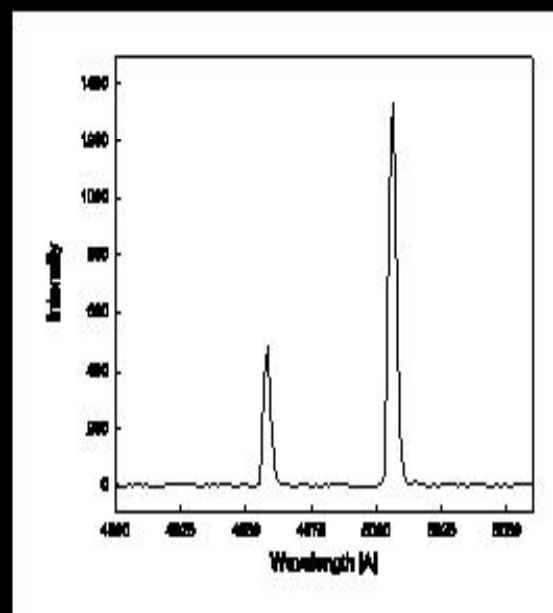
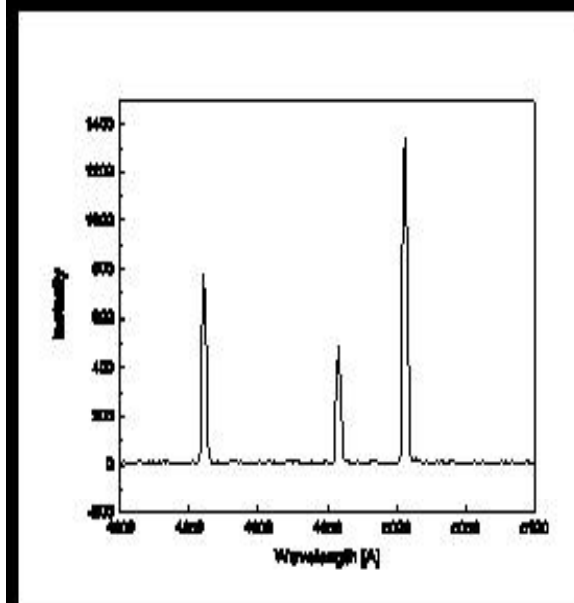


Figure 3. Example of spectrum ( SDSS J140341.49+54324000.00 ) without asymmetry of [O III] lines.

# Results

	The name of AGN	The flux ratio of [OIII]	The average value of the subsample	The average value of the total sample
AGN with no asymmetry in [OIII] line profiles	SDSS J080155.39+50300000.00	2.924	<b>2.885±0.173</b>	<b>2.943±0.149</b>
	SDSS J140341.49+54324000.00	2.928		
	SDSS J094510.23+35210000.00	2.963		
	SDSS J095007.90+1272000.00	2.725		
AGN with red asymmetry in [OIII] line profiles	SDSS J143452.46+48288000.00	3.317	<b>2.981±0.268</b>	
	SDSS J074125.22+33198000.00	2.584		
	PKS2300-68	3.184		
	PG 1545+210	2.921		
	PG 1416-129	2.953		
	SDSS J083225.34+37222000.00	2.926		







Thanks for your attention