Variability of emission lines of large sample type 1 AGN from the SDSS-RM project

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The intrinsic Baldwin effect in broad Balmer lines of six long-term monitored AGNs

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Intrinsic Baldwin effect – anti-correlation between the EW of the emission line and the underlying continuum of individual variable AGNs (Pogge & Peterson 1992).
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two Seyfert 1

two AGNs with double-peaked broad line profiles

one high-luminosity quasar with highly red asymmetric broad line profiles

one narrow line Seyfert 1
The intrinsic Beff is present in broad Balmer lines of six Type 1 AGNs studied in this paper.

The shift and the change in the slope of the intrinsic Beff is observed in all the considered AGNs.

Taking into account that the AGNs in the studied sample have different line shapes that indicate different BLR geometries, the intrinsic Beff is probably not caused by the geometry of the BLR. However, this should be tested on larger samples of different AGNs.
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Shen et al. 2016

- We select $\sim 100$ objects from the campaign
- $48$ epochs per object spanned $\sim 3$ yrs
Internal calibration of spectra

▶ Correcting for night to night differences in observing conditions
Internal calibration of spectra

- Correcting for night to night differences in observing conditions
- Narrow [OIII]λ5007 line which is supposed to stay constant
- We adopt the Fausnaugh (2016) method. Check the python package called mapspec (MCMC Algorithm for Parameters of Spectra).

\[ f_{\text{O[III]}} = \frac{\text{FWHM}}{\text{FWHM}_{\text{mean}}} = 0.016 \]

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Host galaxy decomposition

- Remove host galaxy contamination of spectra
- We are applying the Spectral Principal Component Analysis method (see Connolly et al. 1995; Yip et al. 2004; Vanden Berk et al. 2006)
Fitting

scale_spec-7338-57135-0553_pca.txt
Kovačević+(2010) and Shapovalova+(2012)
MCMC