

Is the jet variability reflected in the BLR emission from FSRQ's?

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Abstract

We present an spectroscopic study of a sample of bright gamma-ray blazars. Our dataset includes spectra of a sample of about 10 targets, all of them Flat-Spectrum Radio Quasars (FSRQs). The spectra were obtained nearly periodically during the period from 2008 to 2018. We have used a fitting code (PyQSOFit) specifically developed to model the optical spectra of quasars. This code permits to build a spectrum model using different components, such as power-law continuum, host galaxy, FeII emission and line emission. Error parameter estimation is obtained running Monte-Carlo iterations. In particular, we searched for variations in the luminosity of the emission lines, which could be related to variations in the continuum flux. Most variability studies disregard the possible connection between the relativistic jet flares and the changes in the emission from the Broad Line Region. However, evidences for such events have been found in few individual FSRQs, ours is an attempt to extend the search in a larger sample and covering a more expanded time period. Preliminary results of the line measurements and its temporal variability are discussed. Our concluding remarks are the following: *i*– measuring emission lines during active phases is challenging; continuum flares dilute emission lines, leading to artifacts like broadening emission line profiles. It becomes clear that characterizing emission line variability requires high SNR spectra specially during the active periods. *ii*– Improved FeII emission modeling is needed beyond using a single template. *iii*– There are some hints for correlations between variations of emission line luminosity and continuum, although the link between BLR emission and jet variability requires further study. *iv*– The rapid response of MgII line emission to continuum flares suggests that some BLR clouds are near the jet.

The poster in zenodo.org can be found here