

CHANGES IN RELATIVE INTENSITIES AMONG OPTICAL Fe II LINES IN AGN SPECTRA

J. Kovačević-Dojčinović¹ , I. Dojčinović²  and
L. Č. Popović^{1,3,4} 

¹*Astronomical Observatory, Volgina 7, 11060 Belgrade, Serbia*

²*Faculty of Physics, University of Belgrade,
Studentski trg 12, 11000 Belgrade, Serbia*

³*Faculty of Mathematics - University of Belgrade, Department of Astronomy,
Studentski trg 16, 11000 Belgrade, Serbia*

⁴*PIFI Research Fellow, Key Laboratory for Particle Astrophysics,
Institute of High Energy Physics, Chinese Academy of Sciences,
19B Yuquan Road, 100049 Beijing, China*

E-mail: jkovacevic@aob.bg.ac.rs

We use a large sample of high-quality Type 1 active galactic nuclei (AGNs) spectra, taken from SDSS, to investigate the relative intensities among Fe II emission lines in the 4000-5600 Å range. We perform the fitting procedure using a complex Fe II template made by modifying the Fe II template given in Kovačević et al. (2010). The new template includes more parameters of freedom for Fe II multiplets, thus enabling more sophisticated analysis of the complex Fe II features. The Fe II lines were divided into two large groups: *consistent*, those whose relative intensities are in accordance with theoretical calculations following their transition probabilities, and *inconsistent*, those whose observed relative intensities are significantly stronger than theoretically expected. We found that the strength of the inconsistent Fe II lines relative to the consistent ones are correlated with the line widths and Eddington ratio. They have similar relative intensities in the spectra with narrow Fe II lines and high Eddington ratio. As spectra have broader lines and a smaller Eddington ratio, the inconsistent Fe II lines tend to have smaller intensities relative to consistent Fe II lines. In the case of spectra with very broad lines, they disappear, while consistent Fe II lines could still be strong.

References

Kovačević, J., Popović, L. Č., Dimitrijević, M. S. 2010. Analysis of Optical Fe II Emission in a Sample of Active Galactic Nucleus Spectra. *The Astrophysical Journal Supplement Series* 189, 15–36. doi:10.1088/0067-0049/189/1/15