FEII, FEI EMISSION LINES FROM ACCRETION DISKS: AN EXPLANATION FOR "FEII PROBLEM" IN AGNS ?

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For the solution of the puzzling "FeII problem" in active galactic nuclei(AGNs) (Netzer et al. 1983; Wills et al. 1985), we pay our attention to optical band and suggest: (1)the observed so-called "FeII emission lines" features may be blending of FeII multiples and FeI multiples. Our previous work(Wei et al. 1993) has showed that there are many FeI emission lines whose wavelength lie around the observed "FeII emission lines" features. In fact, FeI emission lines have been observed in the spectrum of PHL 1092(Bergeron et al. 1980; Cheng et al. 1993). (2)the emission lines from accretion disk must be considered besides the emission from broad line region.

Using a Non-LTE α-disk model without external continuum irradiation, we calculate the HI, FeII and FeI emission lines from an accretion disk with one set of the parameters of the disk, $M_{bh} = 10^8 M_\odot$, $\dot{M} = 0.67 M_\odot/yr$, $\alpha = 0.01$. Considering the emission lines from both accretion disk and broad line region, in which the relative intensity of the emission lines from broad line region is take from Wills et al.(1985), $\frac{I(FeII)_{opt}^{BLR}}{I(H\beta)^{BLR}} \simeq 3$, we estimate the ratio of $\frac{I(FeII+FeI)_{opt}}{I(H\beta)}$ is about 6. It nearly reach the average observation value of 7. So the model and results presented here indicate a new way to solve the strong intensity of "FeII problem" in AGNs.

For the observed large changes in the ratio of the intensities of optical to UV FeII emission lines in different objects, our explanation is that the different viewing angle of the disk result in different ratio of observed $I(FeII)_{UV}/I(FeII)_{opt}$ from object to object.

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