Poster

THE Hβ LINE PROFILE ALONG THE QUASAR MAIN SEQUENCE

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The quasar main sequence (MS) appears, at the very least, to be a useful tool to organize quasar diversity in large quasar samples. Several parameters are correlated with the MS defined in the optical plane FWHM (Hβ) versus Fe II prominence, also known as the optical plane of the 4D eigenvector 1 correlation space. The shape of the Balmer line Hβ shows a most intriguing behavior: the ratio FWHM over radial velocity dispersion σ is changing along the sequence. Previous work has shown that profiles are usually well fit by a Lorentz function if FWHM (Hβ) is $\leq$ 4000 km/s (Population A following Sulentic et al. 2000): by a double Gaussian if the lines are broader (Population B). Here we present the preliminary results of a systematic study of the Hβ line profile in bins of 1000 km/s, over four intervals in Fe II prominence (defined by the intensity ratio $R_{\rm Fe\,II}$ between the Fe II blend at λ4570 Å and Hβ). In particular we test which model of the broad Hβ line profile among a Lorentz, a double Gaussian, and a Voigt function provides the best description of the line profile as a function of line width and $R_{\rm Fe\,II}$. Some implication are drawn on the dynamics and geometry of the broad line region.