Revista Mexicana de Astronomía y Astrofísica, **27**, 223-226 (1993)

ABSTRACTS OF CONTRIBUTED PAPERS/RESUMENES DE CONTRIBUCIONES

A NEW INTERPRETATION OF BROAD EMISSION LINE WIDTHS IN HIGH LUMINOSITY AGNs

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We present the results of our recent statistical investigations of broad emission line profiles (the λ1400 feature, C IV λ1549, C III] λ1909, and Mg II λ2798) in high quality spectra of intermediate and high redshift QSOs (originally observed by Sargent, Steidel, & Boksenberg for Lyman limit, C IV, and Mg II absorption line studies). Approximately 200 spectra are involved. The most striking trends are found with increasing line width ($\geq 3\sigma$, several $> 8\sigma$): the intensity ratios C III]/C IV, Mg II/C III], and λ1400/C IV increase, the equivalent width of C IV decreases, the C IV profile becomes less-sharply peaked, and the peaks of C III] and C IV become increasingly blueshifted relative to the peak of Mg II. Traditionally, the line width has been interpreted as a measure of the typical velocities reflecting the dynamics of a single zone. We suggest that different line widths may be the simple consequence of having two kinematically distinct zones, with differing emission from each region in different objects. We describe our line profiles with an empirical two Gaussian scheme: a blueshifted ($\sim$ 1000 km s^{-1}) broad (FWHM $\sim$ 7000 km s^{-1}) base and a narrow (FWHM $\sim$ 2000 km s^{-1}) core. Profiles generated in this way can reproduce, in general, the observed trends with line width (line shape, asymmetry, and line shift) although additional assumptions are needed to account for the correlations with the line ratios. We discuss some mechanisms which may give rise to two such quasi-independent components.

NEAR-INFRARED MOLECULAR HYDROGEN EMISSION AS A PROBE OF THE STRUCTURE AND ENERGETICS OF PHOTODISSOCIATION REGIONS

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We have mapped the v=1-0 S(1), v=2-1 S(1), and v=6-4 Q(1) near-infrared emission lines of molecular hydrogen in several extended photodissociation regions, including the Orion A molecular cloud. We