del ambiente de ventanas generado por SUNVIEW, lo cual permite seleccionar en forma interactiva los cuasares del catálogo de Hewitt & Burbidge mediante el ingreso de parámetros α y δ (ascensión recta y declinación), rangos de corrimiento al rojo y magnitud aparente.

Como resultado el software agrupa los cuasares de interés en dos archivos ASCII que contienen la siguiente información: parámetros de búsqueda, posición del cuasar en α y δ, corrimiento al rojo, magnitud aparente índices de color, líneas de emisión y referencias bibliográficas para el objeto. Finalmente es posible modificar los archivos durante la ejecución del programa, imprimirlos y crear un gráfico δ versus α de los objetos seleccionados.

SYSTEMATICS OF SPIRAL GALAXY ROTATION FROM TIDAL TORQUING. COMPARISONS WITH THE DATA

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We discuss the disk galaxy rotation curves expected in the tidal torque theory of angular momentum, in which the protogalactic angular momentum is not universal. If the fraction of dissipative material in a collapsed protogalaxy is approximately 5%, the value suggested by nucleosynthesis constraints if it is a universal constant, the amount of variation expected in the angular momentum *(a)* leads to rotation curves for bright galaxies whose systematics are much like those pointed out by Casertano & van Gorkom, and *(b)* the mass inside a "Holmberg" radius of 4.5 disk scale lengths shows a spread of values consistent with observations.

ALFVÉN WAVES IN THE FORMATION OF QUASAR CLOUDS

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The problem of the formation of broad line emitting clouds (BLEC) in quasars has not been resolved. The difficulty is that the BLEC is near the central engine of the quasar which is an intense source of radiation. The ambient region is at a temperature of $\sim 10^8$ K, while the BLEC is at a temperature $\sim 10^4$ K. We suggest that the BLEC are formed by a thermal instability in the presence of Alfvén wave heating. We investigate a heating-cooling function which depends on: line and continuum excitation, heating and cooling associated with recombination, radiative losses due to resonance transitions in metal ions, thermal bremsstrahlung, Compton heating-cooling, and resonance surface damping of Alfvén waves. We find that a thermal instability exists with this heating-cooling function in the observed range of fluxes of quasars and can explain the existence of the quasar clouds.

MOLECULAR GAS IN FIVE SOUTHERN ACTIVE GALAXIES

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We are mapping southern nearby active and starburst galaxies in the ^{12}CO(1–0) and ^{12}CO(2–1) lines with the 15-m SEST radiotelescope. This is part of an ongoing project to investigate possible peculiarities in the dynamics, content and distribution of the gas which could lead to one or another type of activity, as proposed by some recent models of gas fueling into active galactic nuclei. Large scale stellar bars, rings or closely interacting companions seem to be present in most active galaxies, most probably providing for the mechanism of transport of the gas of the disc into the nuclear or circumnuclear regions. But there must be other relevant parameters in these mechanisms, like the total gas content, given that many of the barred or interacting galaxies do not show enhanced nuclear activity.

The galaxies in our sample were selected for their angular size, morphology and significant FIR luminosity, which is an indication of their activity. All of the galaxies studied happen to have companions, sometimes strongly interacting. We present results for five southern galaxies with different levels of activity, four of which are also barred: NGC 134, IC 1623, NGC 986, IC 2554 and NGC 4027. In the Seyfert-like NGC 134 the CO line is weaker in the center, with more intense and broad profiles around it. The strongly barred starburst galaxies NGC 986 and NGC 4027 show intense and narrow peaks in the nuclear region, and wider lines associated with the bars, with indications of inflow of gas along the bars. In the asymmetric SB(s) dm NGC 4027 the CO total intensity peaks $\sim 20''$ to the north of the optical center, probably better correlated with the H I distribution. The nearby merging galaxy IC 2554, with a Liner nucleus and spread starburst activity, shows strong point-to-point variations in the intensity and ratio of the CO lines. It is a case of enhanced nuclear and extranuclear

activity. A very particular case in our sample is the ultraluminous IC 1623A/B, where the molecular gas is not concentrated to the nucleus but rather associated with dust lanes between the two merging galaxies, showing very wide profiles (~ 450 km s^{-1}).

FAR INFRARED AND OPTICAL PROPERTIES OF A SAMPLE OF SEYFERT GALAXIES[1]

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The optical spectra of a sample of 38 *IRAS* galaxies have been analyzed in order to determine the chemical enrichment of the ionized gas and its possible relation with star formation events which have occurred in the nuclear region of these galaxies. The optical and IR observations allow us to separate them in type 1 and 2 Seyferts and analyze the relationship between the luminosity of optical emission lines and the far-IR luminosity (L_{IR}). The stellar population is analyzed using stellar population templates and mostly W(CaII K) as dilution diagnostic by young components. The internal reddening affecting the stellar population is derived. By comparing the far-IR colour indices with the corresponding values obtained from models of dust grains emission, the temperature of the dust and its spatial distribution have been inferred.

[1] Based partly on observations made at CTIO and CASLEO.

QSO ABSORPTION LINE SYSTEMS

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Most of the QSO absorption line systems showing metallic lines are generally associated with galactic haloes of intervening galaxies (Sargent 1988). However, deep imaging observations and similarities of these systems with those observed in nearby galaxies seem to indicate that the absorption lines could be produced in star forming regions of the interving objects (Yanny et al. 1990, ApJ, 351, 412; York et al. 1990, ApJ, 351, 412).

The detailed analysis of high redshift absorption systems shows that the observed equivalent widths of the metallic lines can be explained by absorption in an H II region ionized by an O4 star, and with density $n_H \leq 10$ cm^{-3} and undersolar abundances (Viegas & Gruenwald 1991, ApJ, 377, 39).

About 20 low redshift systems (or Mg II systems) have also been analysed, leading to the same conclusions (Gruenwald & Viegas 1992, ApJ, submitted). The halo model has also been tested, assuming that the gas is photoionized by the *UV* integrated radiation from the QSOs (Madau 1992, ApJ Letters, in press). Considering the same observed systems, the halo model can only reproduce the observed lines if the chemical abundances are close to solar.

THE LYα FOREST AT $4.2 < z < 4.5$

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A preliminary analysis has been made of the spectrum of the $z = 4.5$, $m \approx 18.3$ QSO 1033–03 observed with the CTIO 4-m telescope + echelle spectrograph in February 1992. The resolution is 12 km s^{-1} FWHM and the signal-to-noise ratio is 10–15 in the Lyα forest continuum. The data have been profile-fitted as in Rauch et al. 1992 (ApJ, 390, 387). There are 66 Lyα absorption lines in a complete sample spanning $4.2 < z < 4.5$ with a H I column density completeness limit of 13.6 in log and mean error of 0.13 in log. The H I column density number distribution can be described by a power law $dN/dN_{HI} \propto N_{HI}^{-\beta}, \beta = 1.60 \pm 0.07$ (using a maximum-likehood estimator) with a Kolmogorov-Smirnov probability of a power law fit of 0.34. This value for β is in the lower range of values found at $1.8 \lesssim z \lesssim 3.8$ ($\beta \sim 1.7 \pm 0.1$ e.g., Rauch et al.). We do not find the correlation between H I column density and Doppler parameter suggested by Pettini et al. 1990 (MNRAS, 246, 545). The median Doppler parameter is $b = 26$ km s^{-1} with a mean error in b of 7 km s^{-1}. The median is more useful for comparison to lower z results than the mean because the median is less sensitive to contamination by possible unidentified metal lines at low b and unresolved blends at high b. The possible contamination of the sample by metal lines is judged at $\lesssim 5\%$ as defined by systems with $b < 10$ km s^{-1}. The median in this sample is lower than the median of 30–35 km s^{-1} found at $1.8 \lesssim z \lesssim 3.8$ (e.g., Rauch et al.), implying that the clouds are cooler and/or less dynamically active at early epochs.

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