

A significant excess (600%) of objects with an axial ratio between 0.6 and 0.7 was found; this could indicate an excess of Seyfert galaxies at intermediate viewing angles, or it could be the result of some past interaction in these objects. Any of these two options gives important clues about the geometrical features of the "engine" in Seyfert galaxies.

#### MBG02223-1922: A NEWLY IDENTIFIED LUMINOUS SEYFERT GALAXY

R. Coziol<sup>1</sup>, M. Peña<sup>2</sup>,  
S. Demers<sup>1</sup>, and S. Torres-Peimbert<sup>2</sup>

In the context of the Montreal Blue Galaxy (MBG) survey (Coziol et al. 1993, AJ, 105, 35), we report the identification of MBG02223-1922 (ESO 545- G 013, MCG-03-07-011, IRAS F02223-1921) as a new, bright, Seyfert 1 galaxy. In this work, we present optical spectrophotometry (from 4300 to 6800 Å) and direct imaging in *B*, *V* and *I* bands, obtained with the 2.1-m telescope at Observatorio Astronómico Nacional, B.C., México.

Analysis of the spectrum reveals unusually broad and composite forbidden lines suggesting a complex dynamical structure of the Narrow Line Region. For all the lines we find a broad component of 1000 to 2000 km s<sup>-1</sup> wide and a narrow one of about 400 km s<sup>-1</sup>. We derive a redshift of  $z = 0.0338 \pm 0.0002$  and an absolute magnitude  $M_B = -21.8$  for this galaxy, which places it among the 10% most luminous Seyfert 1 galaxies known. Fluxes from the nucleus, from the far-infrared (*IRAS*) to the optical, follow a well determined power law,  $F_\nu = \nu^\alpha$ , with a relatively flat index,  $\alpha = -1.34$ , typical of *UV*-bright selected Seyfert 1 and QSOs.

This galaxy has also an extended emission line region and it is the host of a starburst. From spatial informations in long slit spectroscopy, we observe an emission region extending 2 arcsec with a giant H II region 5 arcsec west of the nucleus.

The object shows mildly strong IR luminosity,  $L_{IR} = 6.3 \times 10 L_\odot$ . This, along with a relatively flat far-infrared index ( $\alpha(12,60) = -1.33$ ), an average value of the flux ratio  $\log [F(60\mu\text{m})/F(\lambda 5007)] = 2.5$  and an internal reddening  $E(B-V) = 0.38$  suggest that only a small amount of dust is present in the nucleus. The different properties of this object seem to indicate an intermediate nature between the two main Seyfert-type galaxies. MBG02223-

1922 is probably a good example of what is called a Seyfert 1.8.

The full version of this work has been published in Coziol et al. (1993, MNRAS, 261, 170).

#### MEPSICRON SPECTROPHOTOMETRY OF SEYFERT GALAXIES

I. Cruz-González, J. Guichard,  
L. Carrasco, and A. Serrano

Instituto de Astronomía  
Universidad Nacional Autónoma de México

Based on observations of 52 Seyfert galaxies (26 Sy 1 and 26 Sy 2) carried out at the Observatorio Astronómico Nacional at San Pedro Mártir, B.C., the characteristics of the narrow line region (NLR) and the broad line region (BLR) were studied. We report the following results:

(1) The comparison of the observed line intensities with the Stasinska (1984, A&AS, 55, 15) models suggest that the photoionization mechanisms for line formation is dominant in the NLR, but in the case of [O II] an additional mechanism (possibly shocks) could be present.

(2) An estimate of the masses and sizes of the BLR of Sy 1 galaxies shows that the typical masses and radii are  $\leq 10^8 M_\odot$  and  $\leq 0.1$  pc, respectively. It is found also that these objects are radiating on average at 1/8 of the Eddington luminosity.

(3) Using emission nebulae methods (Osterbrock 1989) it is found that the NLR masses and radii for Sy 2 galaxies are  $\approx 10^{5-6} M_\odot$  and 50 pc.

(4) The presence of Fe II features in both types of Seyfert galaxies is studied and a correlation between the blue emission and the total optical emission is found.

#### PROGRAMA DE CONSULTA DEL CATALOGO DE CUASARES DE HEWITT Y BURBIDGE 1989

Jorge Espinoza G.

Depto. de Física, Universidad de Santiago, Chile

y

Luis E. Campusano

Depto. de Astronomía, Universidad de Chile

El programa de consulta fue desarrollado para realizar una búsqueda selectiva de cuasares en el *Hewitt and Burbidge 1989 Optical Catalog of QSOs*, el cual contiene información de 4296 cuasares y 87 objetos BL Lac. El programa fue escrito en lenguaje C del sistema SUN, utilizando las capacidades

<sup>1</sup> Observatoire du Mont Megantic, Université de Montréal, Canada.

<sup>2</sup> Instituto de Astronomía, Universidad Nacional Autónoma de México.

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  $\alpha$  y  $\delta$  (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  $\alpha$  y  $\delta$ , 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  $\delta$  versus  $\alpha$  de los objetos seleccionados.

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

Ricardo Flores

Depto. de Física, Universidad de Chile

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

D.R. Gonçalves, V. Jatenco-Pereira, and R. Opher

Instituto de Astronômico e Geofísico, USP, Brazil

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

Nora Loiseau

Instituto de Astrofísica de Canarias, Spain

and

Françoise Combes

Observatoire de Meudon, France

We are mapping southern nearby active and starburst galaxies in the  $^{12}\text{CO}(1-0)$  and  $^{12}\text{CO}(2-1)$  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