HVC 131+1−200: ¿COLISION DE UNA NUBE DE ALTA VELOCIDAD CON EL PLANO GALACTICO?

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Se presentan resultados observacionales en la línea de 21-cm del H I, obtenidos con el radiotelescopio de 100 metros de Effelsberg (Bonn), que mostrarían evidencias de interacción de una Nube de Alta Velocidad con el Plano Galáctico.

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H I STRUCTURES IN OB ASSOCIATIONS

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Since early stages of their lives, O and B stars strongly modify the medum in which they are born. Radiation pressure and stellar winds blow a low-density and highly ionized bubble into the ISM. These bubbles are usually surrounded by a cold expanding shell. These two structures are detectable in H I: the bubbles appear as holes in the N_{HI} distribution, and the shell like a ring or a disc, depending of the velocity. This work shows the results of a search of such structures in the direction of two OB associations: Car OB2 and Ara OB1. Due to the general galactic emission, H I maps have serious difficulties to show the expected features, and a numerical method to subtract the background should have been developed. Several observational parameters are shown, and an energy balance between the shells and the stars are presented.

OBSERVATIONAL ANALYSIS OF TWO GLOBULAR FILAMENTS IN LUPUS

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Two dark clouds with filamentary aspect, located in the Lupus region, are analyzed. The observational material consist in: 1) *Polarization of field stars*, located from the clouds at angular distances from several arcmin to few degrees; 2) *Polarization of weak stars*, located close to the border of each filament; and 3) *CO observations*, at 115 GHz. The polarimetry gave us an estimate of the orientation of the magnetic field, and its influence on the cloud's shape. By means of the CO observations, it was possible to know the velocity field and the distribution of the molecular material.

ON THE NATURE OF THE EXCITATION OF THE HERBIG-HARO OBJECT 2

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We present VLA observations of the $NH_3(1,1)$ and $NH_3(2,2)$ lines toward the HH2 object. We detected several small ($\sim 20''$) clumps located near HH2. These clumps are cold, $T_R(2,2;1,1) \leq 20$ K, and with narrow line widths, $\Delta V \leq 1$ km s^{-1}. We find that these clumps appear a few arcsec downwind with respect to the HH2 optical knots. We propose that these clumps are random ambient high-density clumps on the way of the collimated wind from VLA 1, or alternatively random ambient clumps with the observed ammonia emission enhanced by the radiation field generated at the bow-shock of the VLA 1 jet, as proposed by Wolfire & Königl (1992, preprint) to explain the HCO^+ emission near HH7–11 and HH1–2. We suggest that the observed optical knots in HH2 could be part of the bow-shock of the VLA 1 jet, but now being disrupted and fragmented by the interaction with ambient clumps such as those observed in ammonia.

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PICO DOS DIAS SURVEY: A SEARCH FOR YOUNG STELLAR OBJECTS (YSO) PROGRESS REPORT

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The Pico dos Dias Survey (PDS) is a search for optical counterpart to *IRAS* sources within a young

star infrared color box. In the present form we search for optical objects within the boundaries defined by Weintraub (1990, ApJS, 74, 575). There are about 3 500 of such sources in both hemispheres, 20% having possible optical counterparts brighter than 14.5 mag, as a result of the correlation with the Guide Star Catalogue (GSC).

We have taken coudé spectra with CCD in the 6 500 A region, and we defined as a T Tauri star (TTS) an object having both the Li absorption line and Hα emission line. We found 45 sources associated with new TTS, 7 being optical pairs and for 28 we suspect they are TTS. We also suspect the Herbig Ae/Be nature for 76 objects. In two cases the object may be a Fuori-like star. We found 6 new late type Li-rich giant stars. Some of the new found YSO are high latitude objects. The survey is now 80% complete south of +30°.

MOLECULAR GAS IN CENTAURUS A. THE ^{12}CO J = 2–1 MAP

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We mapped the ^{12}CO J = 2–1 line in Centaurus A using the 15-m Swedish-ESO Submillimetre Telescope (SEST) on La Silla, Chile. Centaurus A (NGC 5128) is a nearby (3 Mpc) elliptical galaxy with a prominent dust lane, extensive radio lobes and a compact radio continuum source. Due to its proximity and peculiar morphology, it has been observed over a large part of the electromagnetic spectrum. The detailed study of the molecular interstellar medium, however, has begun only recently with the availability of a large millimeter telescope in the southern hemisphere.

We present a map of the ^{12}CO J = 2–1 emission along the dust lane of Centaurus A. In several observing runs between December 1990 and May 1992 we measured a total of 240 positions extending over an area of 200″ × 70″. The angular resolution of SEST at the frequency of the ^{12}CO J = 2–1 transition (230.5 GHz) is 22″. The grid spacing was typically 8″ in the inner parts of the dust lane and 16″ in the outer parts. Integration times per position varied between 4 and 30 minutes.

Strong emission in the ^{12}CO J = 2–1 line (up to a level of T_{mb} = 0.6 K) is seen over a large part of the dust lane. The emission is generally symmetrical about the nucleus but, as in the case of the J = 1–0 and 50 micron maps, it is not centrally peaked. The striking similarity in the morphologies of the ^{12}CO J = 2–1, J = 1–0 and 50 micron maps suggests that the gas and warm dust are probably well coupled. The good spatial sampling of our map has allowed us to investigate into the kinematics of the molecular gas (Rydbeck et al. 1993, in preparation). The excitation conditions in the disk can be probed using the ^{12}CO J = 2–1/1–0 ratio, when the J = 2–1 map has been convolved to the resolution of the 1–0 map. This results in a ratio of close to unity at the position of the nucleus, a value which is also typical of the gas throughout the whole extent of the disk. Such a high J = 2–0/1–0 ratio implies that the bulk of the gas in the dust lane is warm (T > 15 K), dense ($n(H_2)$ 2×10^4 β cm^{-3}, the critical density required to thermalise the J = 2–1 level, where β is the escape probability), and, probably partially, optically thick. This conclusion is supported by a ^{13}CO J = 2–1/1–0 ratio of 0.9 at one position in the disk.

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BLUE STRAGGLERS IN OPEN CLUSTERS

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A statistical study of the observational characteristics of blue stragglers in open clusters is presented. It is based on the visual inspection of color-magnitude diagrams of the clusters with photometry published before December 1991. According to membership probability and quality of the observations, the blue stragglers have been classified into three categories. Some interesting relations as: number of blue stragglers against cluster ages, number of blue stragglers versus number of ordinary stars per cluster, and degree of concentration of the blue stragglers in each cluster are shown.

OPTICAL IDENTIFICATION OF ROSAT X-RAY SOURCES AT THE GUILLERMO HARO OBSERVATORY

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First results of an optical identification program of X-ray sources newly discovered during the *ROSAT* All-Sky Survey are presented. The sample comprises about 1 300 sources which are contained in six "study areas" of about 150 square degrees each. Selection criteria for these areas were: *(i)*