RESUMENES/ABSTRACTS

PHYSICAL PARAMETERS IN INTERSTELLAR MASERS

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We discuss the physical conditions that can originate the very high brightness temperature masers, as the 8 km s^{-1} highly polarized maser in Orion. We present the latest observations of this peculiar source and its interpretation in terms of a proto-planetary system.

INTERSTELLAR MATTER AROUND THE WOLF-RAYET STAR HD 50896

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The neutral hydrogen distribution has been studied in the direction of the Wolf-Rayet star HD 50896. The H I observations with intermediate angular resolution (9′) shows, at low radial velocities, a cavity in the atomic gas distribution towards HD 50896. The H I minimum is aspherical, and the WR star is offset with respect to either the geometrical center of the H I void or the absolute minimum inside the cavity. These findings are discussed within the framework of the interstellar bubble theory.

MOLECULAR MATERIAL ASSOCIATED WITH THE GALACTIC SUPERNOVA REMNANT G18.8+0.3

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^{12}CO J = 1 → 0 observations toward the galactic supernova remnant G18.8+0.3 have been made with the SEST 15-m telescope. High resolution continuum observations at λ = 20 cm have also been made using the VLA. In the velocity range 9 to 15 km s^{-1} (LSR) the molecular material has a peculiar spatial distribution with respect to the SNR: it seems to engulf it. Moreover, the molecular emission is clumpy. Most of the clumps are seen elongated approximately along the highly distorted radio continuum border of G18.8+0.3. This spatial correspondence strongly suggests that G18.8+0.3 is interacting with a nearby molecular cloud.

CO IN SOUTHERN BARRED GALAXIES

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The aim of this work is to use the SEST radio telescope for the determination of the distribution and kinematics of the molecular gas, in galaxies with diameters between 5′ and 8′, through the observation of the CO lines. The six galaxies observed up to now (NGC 613, NGC 1313, NGC 1433, NGC 1566, NGC 1672, and NGC 2442) have all been classified as barred galaxies in the BGRCII. Except for NGC 1313, in all the other observed galaxies the detections had enough signal-to-noise ratio for producing contour maps.

The angular resolution of the SEST (43″ at 2.6 mm), does not permit to study the detailed correlation with the visible structures in the galaxies (arms, nucleus, bar, etc.). We can, however, determine

the large scale properties of the molecular gas distribution over the galactic plane and of its velocity field. From the latter we can derive also the rotation curve.

The parameters that can be derived from these maps are: the systemic velocity (therefore the distance to the galaxy), the total molecular gas mass, M_{H_2} (and, using the H I mass, the total gas mass, M_H), the total mass of the galaxy (from the rotation curve), M_T, and the ratios between all these masses and between these masses and the luminosity.

The results show that: a) the molecular gas distribution is centrally peaked in the five galaxies; b) the molecular gas mass is $(3.7\pm0.6)\times10^9$ $M_\odot$ except for NGC 1433 (0.4×10^9 $M_\odot$); c) M_{H_2}/M_{HI} = 0.5 to 1.4; d) M_H/M_T = 0.04 to 0.4, and e) the average ratios between the intensities of the lines for the ^{12}CO(2–1) and ^{12}CO(1–0) transitions, are 1.3 for all the detected galaxies.

OBSERVAÇÃO DE MASERS DE METANOL

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A molécula do metanol, através da sua emissão maser em 12,7 GHz, está intimamente ligada a regiões galácticas que estão atravessando o período de intensa formação de estrelas. Assim, a busca e detecção dessa molécula em regiões onde já foran encontrados masers de vapor d'água nos permite conhecer um pouco melhor a composição química dessas nuvens moleculares. Com o intuito de estudar essa emissão instalamos no ROI um receptor com características excelentes (temperatura de sistema da ordem de 200 K). Apresentamos os primeiros resultados observacionais desses masers, as especificações do programa especialmente desenvolvido para esse propósito e os planos futuros associados a novos espectrômetros acústico-ópticos de alta resolução.

YOUNG MASSIVE STARS IN THE GALACTIC DISK

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Regions of massive star formation can be identified as *IRAS* point-like sources with characteristic FIR colors in the galactic plane. The close association of these sources with molecular clouds provides a way of determining their kinematic distances and therefore luminosities and other properties. We have used observations of CS (2–1) to identify and associate 208 point-like sources with particular GMC's in the fourth galactic quadrant. At least 15% of the total FIR emission from massive star forming molecular clouds is produced in the close vicinity of the stars. The radial distribution of the FIR luminosity generated by embedded massive stars is similar to that of H_2 but the "massive star" ring is narrower than the molecular ring; from the 3 kpc expanding arm to the Carina arm in the outer Galaxy the FIR surface luminosity is proportional to the 2^{nd} power of the H_2 surface density. The radial distribution of embedded massive stars, similar to that of the FIR emissivity and to the radial variation of the ISRF, may be tracing the overall level of star formation activity in the galactic plane. We have obtained near infrared images of the most conspicuous massive star forming regions in the fourth galactic quadrant using the infrared camara mounted on the Dupont Telescope at the Carnegie Observatory in Cerro Las Campanas. Clusters of OB stars at distances of up to 10 kpc were resolved, and *JHK* photometry of these sources is presently underway.

BURBUJAS DE GAS NEUTRO ALREDEDOR DE ESTRELLAS DEL TIPO O

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En base a observaciones de la línea de 21-cm del H I, hemos detectado burbujas de gas neutro alrededor de las siguientes estrellas del tipo O: HD 112244, HD 135240, HD 135591, HD 175754 y HD 175876.

Las burbujas observadas tienen radios entre 30 y 85 pc, velocidades de expansión menores que 10 km s^{-1} y edades dinámicas de pocos millones de años. La energía cinética de estas burbujas de gas neutro es menos que el 10% de la energía cinética entregada al medio circundante por los vientos de las estrellas asociadas. Por lo tanto, seguramente los fuertes vientos de las estrellas O han soplado las burbujas de H I que hemos detectado en su alrededor.

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