En el montaje en haz paralelo se debe ubicar apropiadamente un diafragma que delimite la banda de longitudes de onda que se estudie. Para aumentar la relación señal sobre ruido en la observación con altas resoluciones de nebulosas débiles se pueden emplear diversos métodos: utilizando un separador dieléctrico líquido (y así aumentando la región de cielo inspeccionada), usando varios anillos de interferencia, o aumentando el área colectora del étalon (Meaburn).

El Laboratorio de Astronomía Espacial de Marsella ha facilitado al Observatorio de Córdoba el siguiente instrumental para el empleo de estas técnicas:

a) un objetivo a distancia finita (CFT) WRAY, F/1,25, para fotografía con filtros interferenciales.

b) un interferómetro de Perot-Fabry, con un órden de interferencia central para Hα p = 1058, fineza 10, e interfranja de 283 km/sec. Los anillos que el étalon produce son fotografiados por un objetivo Angenieux F/0,95.

Ambos equipos están complementados por filtros interferenciales para Hα que cubren el dominio de velocidades entre 0 km/sec y 1000 km/sec.

Este instrumental se encuentra ya en operación con diversos instrumentos de variado poder resolvente.

SOME PROBLEMS ASSOCIATED WITH LARGE SCALE GALACTIC STRUCTURE

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Abstract

The distribution and motions of both neutral and ionized hydrogen can be studied throughout the Galaxy by radio methods. The neutral hydrogen is observed through the 21-cm hyperfine transition line; the continuity of many prominent features indicates that we are seeing the galactic spiral pattern, but it is difficult to locate the spiral arms in space because we are restricted to kinematic distance estimates for the hydrogen.

In recent years, new surveys with high resolving power have

yielded an enormous amount of new information, but have not yet greatly improved the understanding of the basic problems. First-order interpretations of the spiral pattern have been obtained, with distances derived from a circular-orbit axisymmetric-rotation model. However, departures from circular motion are observed on various geometrical scales, and also the gravitational perturbations produced by the spiral features themselves must affect the motion of the gas. In addition to the complexities of motion, the detection of so much structural detail has shown that the distribution is extremely complex. The distribution and the velocity field have to be derived in a combined solution, with assistance from theoretical approaches such as the density-wave theory of C.C. Lin. Comparisons between present observations and the predictions of the Lin theory show a fair measure of agreement, but there are some disagreements: the latter might be related to localized irregularities.

Spiral patterns derived by radio and optical methods tend to disagree in the local region, with the radio pattern showing more circular arms. Comparisons between the motions of the HI and young stars indicate that these two systems move together to within about 2 km/sec, and reasons must be sought elsewhere for the difference between the radio and optical spiral patterns.

The detection of the high-level recombination lines of hydrogen has made velocity measurements possible for HII regions over the whole Galaxy. Direct comparisons between the HII velocities and the HI longitude-velocity distribution indicate that the HII and HI also have essentially the same kinematics. One important difference has been found in the HI and HII distributions. The HII, as indicated by both the thermal radio continuum and the recombination-line sources, shows a peak at 4 - 7 kpc from the center, whereas the neutral gas peaks at 7 - 11 kpc. This difference in location is similar to that found for Sc galaxies.

A review of present knowledge on the distribution of neutral and ionized hydrogen is to appear in a forthcoming article in the Annual Reviews of Astronomy and Astrophysics, vol. 7 (1969), together with a discussion of the main problems to be solved.