limits. Statistical errors involved in the star-count are analyzed in terms of the signal-to-noise ratio, the plate limit and the reseau size. Systematic errors due to the non-linearity in the number distribution of stars with magnitude are thoroughly analyzed, and a methodology is presented to correct for the effect of the systematic errors in the observed radial density gradient. The graphs are meant to be used in selecting proper size of the reseau and estimating errors inherent to the star-count analysis.

Efficiency of DRAO Radio Telescope

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In order to improve the antenna efficiency, we performed three kinds of works.

First, we adjusted the surface panel with the theodolite. The resultant surface random error is about 210μm.

Second, we compensated the gravitational deformation by the computer control of subreflector. The corrected antenna temperature is nearly constant within 10% above 30° in elevation.

Third, a new pointing model was made by observing the SiO maser sources. The pointing error is 8 seconds of arc rms.

After above works, the aperture efficiency and the beam efficiency at 100GHz were found to be 30% and 43% respectively. Now the scientific observations can be performed with our telescope.

秋 季 學 術 大 會

일시 : 1989年 10月 13日~14日
장소 : 천문우주과학연구소

<研 究 論 文>

The Presence of Wielen Dip in the Disk Stellar Luminosity Function

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The disk stellar luminosity function is redetermined in order to check the Wielen dip is real or not, by mean absolute magnitude method utilizing the proper motion data of LHS catalog. The reduced proper motion diagram was used to exclude the contamination of the population II stars.

The derived luminosity function shows the similar dip in the magnitude range of $8<M_B<12$, with the one mentioned by Upgren and Armandroff (1981) in the Wielen's (1974) luminosity function which was derived from the nearby stars. It is found that the most critical problem in the mean absolute magnitude method so far used, is that one relation between the mean absolute