

DISTRIBUTION AND RADIAL VELOCITIES OF LATE SUPERGIANT STARS IN THE LMC AND THE SMC

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In 1983, our group published two catalogues of KM supergiants, respectively members of the LMC (Rebeiro et al., 1983) and of the SMC (Prévot et al., 1983).

In the LMC, no difference is observed between the general structure of the galaxy, as shown by the O-F supergiants and that shown by the KM supergiants. There are two concentrations of supergiants, one in Shapley III, one in 30 Doradus region, and four small concentrations toward the west.

As noted previously (Martin et al., 1976), there is no correlation between gas and stars; the stellar concentrations are situated in HI poor regions.

Radial velocities of 279 KM stars and 33 FG stars have been measured with Coravel at the 1.5 m Danish telescope at ESO. For 247 stars, correlation peaks are very good, and it is possible to estimate that the radial velocity standard error is  $1.5 \text{ km s}^{-1}$ . For 65 stars, the accuracy is not quite as good, but is acceptable. Although the observations and the data reductions are not finished, the present sample is adequate to establish that, within each concentration of stars, the radial velocity dispersion is small - about  $6 \text{ km s}^{-1}$ . In the 30 Dor region this dispersion is larger, ( $14 \text{ km s}^{-1}$ ) but a more detailed examination reveals that we are dealing with the overlapping of three well-defined velocity fields, one on the western side and two on the eastern side. Within each of these fields, radial velocities have a dispersion of 6 to  $8 \text{ km s}^{-1}$ .

Comparing these results with those published by McGee and Milton (1965) on the neutral hydrogen complexes, we observe that there is very good agreement between the mean radial velocities of stars and the radial velocities of neighbouring HI complexes.

Study of the 30 Dor field is somewhat more difficult because, on the eastern edge, there are two HI components, one at about  $300 \text{ km s}^{-1}$

and the other at about  $244 \text{ km s}^{-1}$ .

These two components are seen at the southern edge of 30 Dor. We observed only three radial velocities in this region, but it is interesting to note that two of these are high radial velocities ( $293.5$  and  $315.3 \text{ km s}^{-1}$ ), and one is low ( $221 \text{ km s}^{-1}$ ).

In the SMC, as in the LMC, the distributions of the KM and the OB supergiants are the same. As noticed by several authors, there is apparently a positive correlation between the surface density of stars and gas, as observed in the 21 cm line (McGee and Newton 1981). However, this correlation disappears when the distributions are compared in various ranges of radial velocity, and the overall correlation might be due to chance. The actual situation looks similar to that in the LMC.

Further radial velocity observations are in progress. We hope to complete this structural and kinematical study of the Magellanic Clouds in the near future.

#### REFERENCES

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