

30 DORADUS: THE STELLAR CONTENT AND IMF

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I have *UBV* photometry for roughly 1500 stars and *BV* photometry for an additional 900 stars in the 30 Doradus region as a part of my thesis work. Spectra and spectral classifications for over 200 stars have been obtained (by me and various other sources) for most of the early stars in the region. The reductions and classifications are nearly complete. It should be noted that the OB associations of 30 Doradus present unique problems in the analysis of the stellar contents due to the extreme crowding and highly variable nebulosity and reddening.

Using these preliminary data I obtain an initial mass function (IMF) for 30 Doradus having a slope of $\Gamma = -1.5$ (in this notation, the Salpeter slope is -1.35) for stars with masses $> 9 M_{\odot}$. However, a single value for the IMF slope can be misleading, and should not be taken to imply that the slope is constant over the entire region. It is fairly clear that there have been several episodes of star formation in 30 Doradus during the last few million years, and one should not assume *a priori* that the slope of the IMF will be the same everywhere. More likely, the value quoted here is the average of different slopes in different regions.

This is supported by recent findings by Parker *et al.* (1991) for the OB associations Lucke-Hodge 9 and 10. Although these two associations are neighbors and supposedly share a similar environment, their slopes are $\Gamma = -1.6$ and $\Gamma = -1.0$ respectively. Parker & Walborn (1991) discuss that the morphologies of 30 Doradus and Lucke-Hodge 9 and 10 are very similar (two million years ago the region N 11 which contains Lucke-Hodge 9 and 10 could have looked very much like 30 Doradus does now). This leads to the possibility that in further analysis I will find that the inner region of 30 Doradus (corresponding to Lucke-Hodge 9 in N 11) will have a steeper IMF slope while the outer regions (corresponding to Lucke-Hodge 10 in N 11) will have flatter slopes.

REFERENCES

- Parker, J.Wm., Garmany, C.D., Massey, P., and Walborn, N.R. 1991, AJ, submitted
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