

GALACTIC DISTRIBUTION OF SYMBIOTIC STARS

G. A. MEDINA TANCO AND J. E. STEINER

Instituto Astronomico e Geofísico - USP

Av. Miguel Stéfano 4200, CEP 04301, Sao Paulo, SP, Brazil

Statistical distances to the known galactic symbiotic stars are derived from the calibration of the absolute K magnitude of galactic bulge symbiotic giants versus spectral type. The resulting space distributions of S, D and yellow symbiotic stars are studied.

The spectral types of bulge symbiotic giants calculated by [1] from absorption bands in the near infrared are combined with K magnitudes from [2] to obtain a spectral-type-K-magnitude calibration for galactic bulge symbiotics ($K \approx -0.175 \times [SpT] - 5.82$). Extrapolating this relation outside the bulge, one can estimate the spatial distribution and total number of symbiotic stars in the galaxy. The sample of symbiotic stars seems complete up to $K \approx 5$ ($r < 2.9$ kpc). This implies a surface density of $\approx 0.64 \text{ */kpc}^2$ in the solar vicinity, from which the surface density of symbiotic stars in the galaxy: $N(r) = 13.5 \times e^{-r/2.78} \text{ kpc}^{-2}$. Hence, the total number of symbiotic stars in the Galaxy is: $\approx \int N(r) 2\pi r dr \simeq 650$. Other results are: (1) most of the symbiotics are located inside a thick disk of $\approx r = 8 - 10$ kpc and $\Delta z/2 = 1$ kpc, where L and T_{eff} are \approx constant; (2) above $z = 1$ kpc the scale height decreases strongly. T_{eff} increases also at higher z , which points to a different population (possibly of lower metallicity) and; (3) there is a sharp difference between the inner and outer regions of the solar circle in both, L , T_{eff} and probably n , which can be related with the observed relative abundance of oxygen and carbon giant stars.

References

1. Medina Tanco, G. A. and Steiner, J. E. (1994), Spectral Classification and HR Diagram of Symbiotic Stars, *Astron. J.* submitted
2. Kenyon, S. J. (1986), *The Symbiotic Stars*. Cambridge Univ. Press, Cambridge.