

Carbon to Oxygen Abundance Ratios in the Atmospheres of Carbon Stars of the Orion and Perseus Galactic Arms

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The abundance ratio C/O in the atmospheres of carbon stars of the Orion and Perseus galactic arms is determined on the basis of a great number of homogeneous spectra obtained with the 2.6-m telescope of the Byurakan Astrophysical Observatory (Armenia) in 1990–1991. The reciprocal dispersion for observations of faint carbon stars was 101–136 Å/mm and the wavelength range was 4000–6800 Å. We used the empirically-obtained correlation between the intensities of the CN Red System and C₂ Swan bands, on the one hand, and C/O ratios determined from model calculations of synthetic spectra (which were compared to 30 high-resolution spectra of carbon stars [Lambert et al. 1987, *ApJS*, 62, 273]), on the other hand, and so obtained the individual C/O abundances in the atmospheres of 342 faint carbon stars. Twenty-eight high-carbon-abundance C stars were found. They all have similar spatial distribution and many common spectral peculiarities.

The distributions of carbon stars by C/O abundance ratio interval were studied in the Orion and Perseus galactic arms. In Orion most carbon-star atmospheres have carbon to oxygen ratios in the interval $1.0 \leq C/O \leq 1.1$, but in the Perseus Arm most are in the interval $1.1 \leq C/O \leq 1.2$.

A detailed discussion of these results has been submitted to *Astrophysics and Space Science*.