

A Deep Visual-Red and Near Infrared Objective Prism Spectral Survey of the Milky Way

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The deep visual-red and near infrared low dispersion (1250 Å/mm at H γ and 7000 Å/mm at Å band) objective prism spectral survey of the Milky Way equatorial ten degree belt has been done by 70 cm meniscus telescope equipped with 2° prism ($30^\circ \leq l \leq 115^\circ$ infrared).

The Kodak IIIa-J and IIIa-F spectroscopic plates were hypersensitized by baking in dry air or in dry nitrogen. The silver-nitrate (AgNO₃) treatment was used for Kodak IV-N plate hypersensitization. The limiting visual magnitudes of the survey performed are 16^m.0 (J, F) and 18^m.0 (N, V-I = 3.0).

Carbon stars are identified by the presence of the C₂ and CN molecules absorption band system at $\lambda\lambda$ 5165, 5635 Å and $\lambda\lambda$ 7945, 8025, 8320 Å respectively. More than eleven hundred new C stars are revealed.

The study of the latitude and longitude distribution of all C stars discovered in the region $90^\circ \leq L \leq 165^\circ$ shows that the first one is uniform and the other one is nonuniform. The later comes from significant increasing in the surface density of Carbon stars from anticenter to Cas-Cyg directions. The mean surface density of C stars in the studied region is 1.0 per sq. degree i.e., on average, it has increased 2.5 times, meanwhile in the near infrared survey 5.0 times.

By the "nearest-neighbour" method it is shown that statistically significant number of pairs and members of the open clusters are not observed. The connection of Carbon stars with dark clouds were also studied.