

## THE HOMOGENEOUS CATALOG OF THE MAIN PARAMETERS OF OPEN STAR CLUSTERS

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**Abstract.** A brief summary of the updated catalog of homogeneously estimated reddenings, distances from the Sun and ages for 367 open star clusters is given.

**Key words:** databases – catalogs – clusters: open

### 1. INTRODUCTION

The investigation of the structure, dynamics and kinematics of the Galaxy requires large sets of homogeneous data on the positions and ages of the galactic objects. The most suitable objects for these studies are open clusters because of the opportunity of precisely estimating both their distances and astrophysical ages. To obtain such a homogeneous set of data, we decided a decade ago to redetermine the main cluster parameters (color excesses, distances from the Sun and ages) for as many clusters as possible using a method of diagram fitting to the photometry of all cluster stars existing in literature. First of all, we produced computer programs for the treatment of the photometric data in the *UBV* and after that in the Strömgen and *DDO* systems.

The main ideas used in programming are discussed by Loktin & Matkin (1990) and Matkin & Loktin (1990) for the *UBV* system, by Loktin (1995) for the *DDO* system and by Malisheva (1996) for the *uvby $\beta$*  system.

## 2. DATA

The first version of the catalog was published by Loktin & Matkin (1994). It contained the information on 320 clusters we obtained by treating more than four hundred files of published photometry in the *UBV* system. The second version of the catalog contains the information on 367 clusters for which the data from *UBV*, *BV*, *DDO* and *uvby $\beta$*  photometry are combined. Every published photometric file was treated separately and then all the estimates of the cluster parameters were averaged using the adopted system of weights. All clusters of doubtful existence were rejected.

## 3. STRUCTURE OF THE CATALOG

Our catalog consists of three plain ASCII files.

The first file contains the galactic and equatorial coordinates of the clusters and separate estimates of cluster parameters for all photometric files. We did not try to transform the photometry for each cluster into one system because (a) it is difficult to choose the best one in the sense of systematic errors of the set of data, (b) in many cases the numbers of common stars were small. Our experience shows that noticeable systematic errors in photometry are rare and the errors of diagram fitting in most cases are larger than the errors in photometry. Besides, we can treat the data of different investigators as nearly statistically independent, what allows us, in most cases, to estimate the errors of the mean values of cluster parameters.

The second file of the catalog contains the averaged values of cluster mean color excesses, distances from the Sun and ages. The adopted system of weights is obtained by taking into account the subjective quality of photometric diagrams (including the influence of nonmembers, magnitude intervals of the main photometric sequences, etc.) and the number of stars used.

The third file contains the bibliography for the data used.

## 4. CURRENT SITUATION

For the investigation of the parameters of the spiral pattern of the Galaxy we use the second version of our catalog containing data on 367 clusters. We are now working on the third version, and thanks to the opportunities given by the Internet, we gathered for this work much more data in the photometric systems we already used.

Now we have to treat more than 700 data files in five photometric systems. We are preparing new computer programs for the treatment of *UBV* photometry and a program for the treatment of *RGU* photometry. A modern set of theoretical isochrones will be used for distance/age determination. This work must be finished by the end of this year and then it will be sent to the Strasbourg Data Center. Also, it will be put as a database on our university server for online access. Every interested person may get freely the second version and in the future the third version of our catalog.

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