THE GENERAL CATALOG OF VARIABLE STARS
(GCVS)

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Abstract. Because of the present day scientific situation, the GCVS project, which was initiated in the forties on behalf of the IAU, now faces the need for serious change. The most important directions of the future work are likely to be: determination of accurate coordinates for known variables; continuation of the catalog of suspected variables; development of an improved classification of variable stars.

Key words: stars: variable – catalogs

By the end of the 19th century, active photographic work brought about a very rapid increase in the number of known variable stars. In the twenties of this century, the Astronomische Gesellschaft initiated yearly publication of catalogs of variable stars with ephemerides for periodic stars. The last German catalog of variables, published in 1943, contained 9476 stars.

After the 2nd World War, the IAU decided to redistribute among other countries projects of general importance to the astronomical community that were earlier based upon German scientific groups. One of the projects was the variable star catalog, and the Moscow team became responsible for it.

The first GCVS edition (Kukarkin & Parenago 1948) contained 10820 stars. The GCVS includes only rather well studied, reliably established variables, and therefore it must be accompanied by catalogs of suspected variables.
The GCVS project was lead by P.P. Parenago (1906–1960), B.V. Kukarkin (1909–1977) and P.N. Kholopov (1922–1988). These outstanding scientists contributed very much to our knowledge of variable stars.

The 4th edition of the GCVS (Kholopov 1985–1987; Samus 1990–1995), which was recently completed, has a rather unlucky history. Its preparation was started under B.V. Kukarkin but two editors died during the work. Its volumes I–III contain the main catalog with 28,435 galactic variable stars. Vol. IV contains the reference tables (including cross-identification tables allowing identification of the GCVS stars by their names in such catalogs as BD, CoD, CPD, BS, HD, etc.). Vol. V is a catalog of extragalactic variable stars. It contains 10,979 variables in 35 external galaxies, as well as 984 extragalactic supernovae or suspected supernovae. Only variable stars in galactic globular clusters still remain outside the scope of the GCVS. The last catalog of such stars has been published quite a long ago (Sawyer Hogg 1973). These stars are not very numerous but most of them lack accurate equatorial coordinates. This leads to confusion between the GCVS and the catalog of globular cluster variables. We are now measuring the equatorial coordinates with sufficient accuracy for identifications for many globular cluster variable stars (Evestineeva et al. 1994, 1995).

The 4th edition of the GCVS is available in printed form from us as well as in electronic form from data centers or directly from the Sternberg Astronomical Institute (by FTP 158.250.29.1, or neptun.sai.msu.su, where the archived GCVS files are stored in the directory /pub/groups/cluster/gcvs/...).

In 1994 the IAU stopped its financial support for the GCVS, though the IAU Commission 27 considers the GCVS to be one of its most important projects. The flow of data on variable stars grows steadily. We expect many thousands of new variables to be discovered as a result of the search for gravitational lensing effects and by space borne instruments. In the following, we describe our immediate plans and the prospects for further GCVS work.

1. We shall continue the regular publication of Name lists of Variable Stars (Kazarovets & Samus 1995) as far as we are able to handle the data flow on new discoveries. When preparing a Name list, we check whether it is possible to identify a star with already known or suspected variables, whether the star’s variability is really beyond doubt and whether it is possible to classify the new variable. We also check identifications with positional catalogs. The Name
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lists are available in electronic form, including a merged list Nos. 67–72.

2. By the end of 1996, we plan to finish the preparation of the extension (E.V.K., N.N.S.) of the New Catalogue of Suspected Variable Stars (Kholopov 1982), containing about 10,000 stars. This extension already exists in a preliminary electronic form and its structure resembles that of the Name lists. Unlike earlier published variable star and suspected variable star catalogs, we attempt to provide coordinates accurate to 1" for most of the stars.

3. We shall continue our work on the determination of sufficiently accurate equatorial coordinates for variable stars in globular clusters, in anticipation of the possible incorporation of these stars into GCVS.

4. The accuracy of positions given in the GCVS, except those in Vol. V, is too poor. It is important to know accurate coordinates for the old GCVS variables, especially anticipating many new discoveries. We have recently checked about 3000 variables discovered by L. Plaut [who did not publish finding charts but sent them to the GCVS team (Antipin et al. 1994 and references therein)] for possible Guide Star Catalog identifications and for positional errors. We plan to make the electronic finding charts for Plaut’s variables available to the astronomical community. Recently we have prepared a list of improved positions for all variables in the constellation of Andromeda. This list is incorporated into the GCVS version available from us by FTP. We are going to add more and more constellations to this GCVS version with improved positions.

5. The system of variable star classification used in the GCVS is rather obsolete. It is important to work out a new classification based upon modern developments in the astrophysics of stellar variability. (However, the new classification must not contain too many types.) We shall incorporate this classification into the electronic GCVS, update ephemerides for periodic variables and present the revised computer version “GCVS 4.2”.

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