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**NEW CATALOGUE OF SUSPECTED VARIABLE STARS.  
SUPPLEMENT — VERSION 1.0**

E.V. KAZAROVETS<sup>1</sup>, N.N. SAMUS<sup>1</sup>, O.V. DURLEVICH<sup>2</sup>

<sup>1</sup> Institute of Astronomy, Russian Academy of Sciences, 48, Pyatnitskaya Str., Moscow 109017, Russia  
elena\_k@sai.msu.su, samus@sai.msu.su

<sup>2</sup> Sternberg Astronomical Institute, Moscow University, 13, Universitetsky Ave., Moscow 119899, Russia  
gcvs@sai.msu.su

In the course of systematization and evaluation of data on photometrically unstable objects, we have compiled a preliminary catalogue of suspected variables (version 1.0) which is a natural continuation of the New Catalogue of Suspected Variable Stars (NSV Catalogue; Kukarkin et al., 1982). This Supplement to the NSV Catalogue contains information on 11206 stars suspected in variability, in most cases, within the recent 20 years. The new catalogue numbers of suspected variable stars begin with No. 15001, to avoid confusion with the NSV catalogue. In the system of the GCVS, this is the first catalogue presenting the new accuracy standard (to 1–2 arcsec) for coordinates of variability suspects in our Galaxy. It presents photometric and spectral-type data, possible variability types, additional information (on duplicity or multiplicity, large proper motion, revealed mistakes, etc.), along with identifications, whenever possible, with well-known general and special catalogues, thus reflecting specific features of objects entering corresponding catalogues and enabling us to considerably reduce the needed volume of verbal remarks. Compared to 33 tables of identifications with different catalogues available to users of the GCVS and the NSV Catalogue, the Supplement to the NSV Catalogue gives identifications of its stars with more than 50 different catalogues.

Detailed references to catalogues and lists used for identifications (with author names, complete names of catalogues, and bibliographic descriptions) and byte-by-byte descriptions of the Supplement's tables can be found in the readme file of the electronic version, NSVSUP, of the present Supplement.

The main table of the Supplement to the NSV Catalogue is a compact presentation of data resulting from the analysis of photometric and spectroscopic information contained in more than 50000 bibliographic descriptions currently constituting the Supplement's ever growing data base. We hope that this compact and formalized presentation of data for each star will facilitate users' orientation in the tremendous volume of available information. In our understanding, the catalogue's main goal is to provide necessary data on each variable star making it possible to locate it, rather easily, on the sky, to find it in other catalogues, and, whenever possible, to get an idea about the character of variability. It may serve the international community of variable star researchers as a tool for designing observing programmes: each suspected variable, after thorough investigation,

can enter the General Catalogue of Variable Stars, and some of them may even become new prototypes in variability classification.

Observers need high accuracy of coordinates for variable stars. According to practical requirements of ground-based and orbital observations, to typical parameters of seeing and of automatic telescope pointing, we tried to achieve an accuracy about 1 arcsec for objects of our catalogue. Such positional accuracy will, most probably, exclude ambiguity in pointing to the majority of objects, except variable components of multiple systems needing individual approach to identification of each of the closely located companions. Such accuracy of coordinates also makes it possible to undertake automatic identifications of most variable stars with objects of numerous modern electronic catalogues.

For variables down to 9th–10th magnitudes, we accepted coordinates from SAO or PPM catalogues. The Hubble Space Telescope Guide Star Catalogue enabled us to improve coordinates for the majority of fainter stars (to 14th–15th magnitudes). We used the USNO A1.0 catalogue to find positions of still fainter stars (to the limit of Sky Surveys, 21–22<sup>m</sup>). For faint stars not contained in the latter two catalogues, we determined coordinates relative to GSC stars. For each star having a finding chart, we compared the chart with the image of the corresponding star field created using the visualization software kindly provided by A.A. Volchkov (Sternberg Astronomical Institute) for the GSC and by J. Manek (Stefanik Observatory, Czech Republic) for the USNO A1.0 catalogue. We rounded the resulting coordinates to 0.1 second of time in right ascension and to 1 arcsecond in declination. GSC numbers for the stars of the NSV Supplement are included into the table of identifications. The number of the Supplement's stars with GSC identifications is 5921 (or 53%), 160 of them having simultaneously two or more GSC numbers.

In the electronic version of the Supplement, the coordinates of suspected variables are presented for two equinoxes, B1950.0 and J2000.0. The numbering of stars in the catalogue follows increasing right ascension for the equinox B1950.0: all our variable star catalogues and the majority of special catalogues give positions for this equinox. Only recently, many catalogues began to choose the equinox J2000.0, thus making it necessary to transform the coordinates in the catalogues of variable stars (GCVS and the NSV Catalogue) to J2000.0. In the process of this transformation for the GCVS, currently under way in our group, we also find and identify each star and improve its coordinates; for the Supplement to the NSV Catalogue, we have already solved these problems during its compilation, so the transformation was straightforward.

Among the stars of the Supplement, there are 1956 stars suspected in variability in the cause of the orbital observations of the Hipparcos experiment. The manner of presentation of Hipparcos variables in our catalogue does not differ from that used for the rest of suspected variables; we have adjusted the variability types suggested in the Hipparcos catalogue according to the standard GCVS classification. The Hipparcos variables in the Supplement to the NSV Catalogue are mostly stars with information insufficient for reliable determination of their variability types, so that they could not be assigned GCVS names and included into the special, 74th Name-List of Variable Stars (to be published in the IBVS in the nearest future). A number of stars were not named because of their spectroscopic and/or photometric characteristics contradicting the existing variability types (thus, either re-reductions of data or new observations are needed, for example, to check the period of brightness variations, the luminosity class, etc.).

For each of the 118322 stars of the Hipparcos catalogue, more than 100 homogeneous brightness measurements, gathered during 4 years of orbital observations (1989–1993), in the Hipparcos system, are available on CD-ROM. So it was important to identify stars of

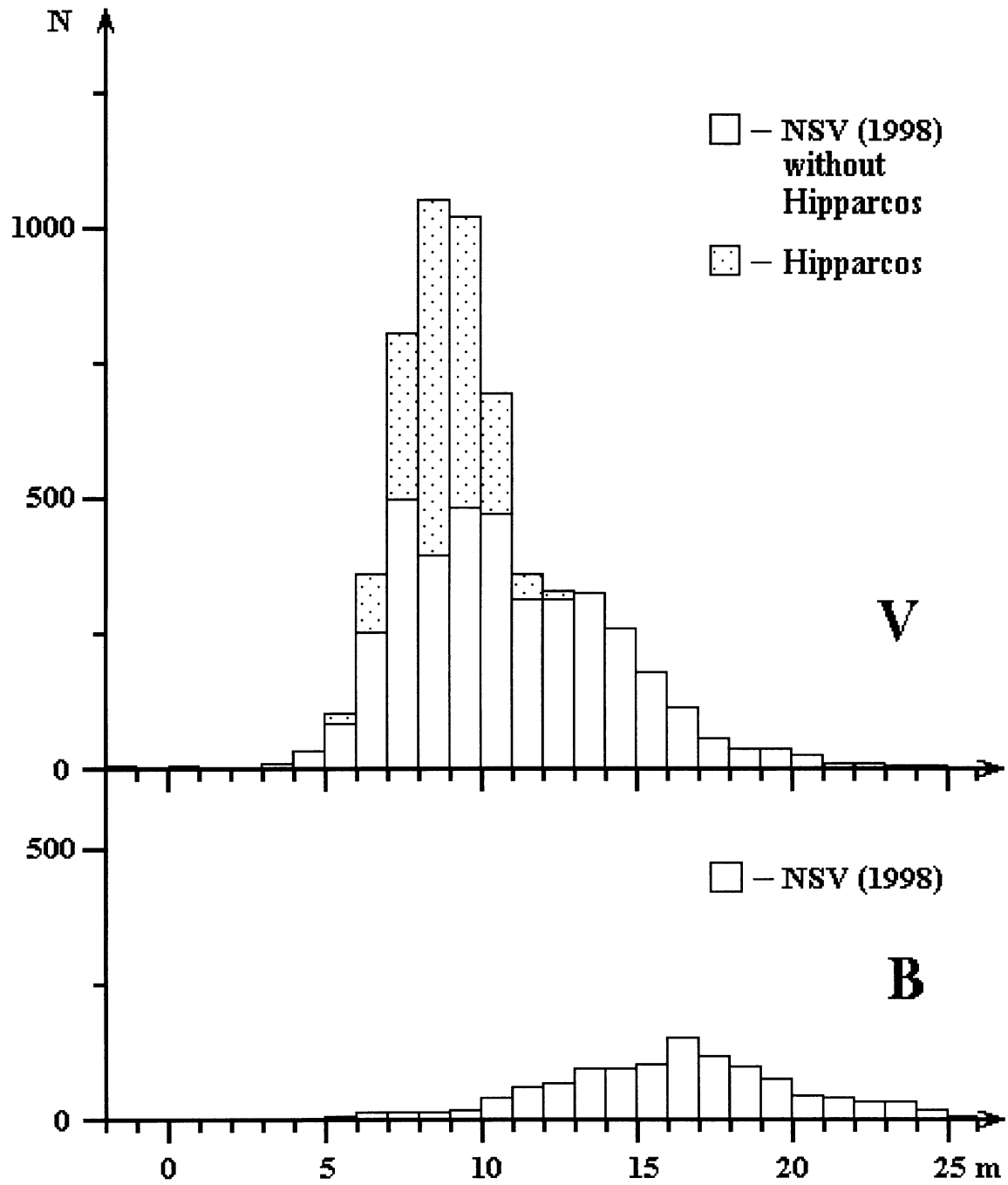


Figure 1. The brightness distribution in  $V$  and  $B$  bands for stars of the Supplement to the NSV Catalogue

our Supplement with those Hipparcos catalogue stars not recognized as variables. We got 1420 such identifications and included them into the identification table, thus enabling the users to combine data of our catalogue with Hipparcos observations and to determine, for some stars, variability types not found by the ESA scientific team.

We are planning to add cross-identification tables arranged in the order of numbers of external catalogues and making it possible to find corresponding GCVS names or NSV/NSV Supplement numbers.

Figure 1 shows the brightness distribution ( $V$  and  $B$  light) for the stars of the NSV Supplement. In the upper panel, we also demonstrate the contribution of Hipparcos discoveries of variable stars to the NSV Supplement. Among the stars of the Supplement,  $V$  magnitudes are presented for slightly more than 50% of them;  $B$  magnitudes, for about 10%; the rest of the stars have magnitudes presented in other bands. In the NSV Catalogue proper, two thirds of stars had photographic or  $B$  magnitudes.

The NSVSUP Catalogue is available by INTERNET, at the GCVS home page of the Sternberg Astronomical Institute:

ftp ftp.sai.msu.su, /pub/groups/cluster/gcvs/gcvs/nsvsup/ (anonymous)

http://www.sai.msu.su/groups/cluster/gcvs/gcvs/nsvsup/

E-mail: gcvsai.msu.su

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