ON THE SPECTROPHOTOMETRIC STAR CATALOGUE

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ABSTRACT. The data on energy distributions in spectra of 555 stars are reduced to one system and averaged. The results of stellar spectrophotometry are used which have been obtained at astronomical institutions in Moscow (Sternberg Astronomical Institute), S.-Petersburg (Main AO RAS), Alma - Ata (Astrophysical Institute), Crimea (Simpheropol State University, CrAO), Odessa (OAO) during 25 recent years. For only 180 stars the scatter of individual data (of catalogues) does not exceed 10% in all the considered wavelength range (320–1080 nm) for B - M spectral types.

Key words: Stars: fundamental parameters, energy distribution; Catalogs

For three recent decades the electrospectrophotometry has advanced in many astronomical organizations at the territory of the former USSR. Energy distributions - $E(\lambda)$ - are obtained in spectra of several hundreds of bright stars. It should be noted that due to the influence of demands of purely applied character the technique of obtaining $E(\lambda)$ data was unified. Similar optical - mechanical systems were used as well as analogous procedures of observations of stellar spectra and subsequent calculations. With electronic engineering development, often parallel to it, only register electronic devices were modified as well as storage units and processors of observational information. Errors of results obtained also proved to be the same, as a rule, of the order of 2–3% (to 5%) in the most powerful energy range of a spectrum and 5–10% at the edges of the observed spectral bands including the ultraviolet range.

However, the comparison of spectrophotometry results obtained by different authors has shown the large discrepancies - up to several dozens (!) of percents sometimes.

Here an attempt is made to obtain the mean energy distributions in stellar spectra without giving preference to any catalogue, and merely excluding from considerations the stars for which divergences are more than 25%. All the materials from stellar spectrophotometry (catalogues) published up to 1989 and obtained at traditional centers of such works have been taken: GAISH (Voloshina et al. 1982, 1983; Glushneva et al. 1984, 1988; Kolotilov et al. 1980; Shenavrin et al. 1989), MAO RAS (Alexeyev et al. 1978, 1984, Alexeyeva et al. 1988), AFI (Kharitonov et al. 1978, 1988, Tereshchenko et al. 1987; Glushkova et al., 1988), CrAO (Burnashov 1982), Simferopol State University (Terez 1987), Odessa AO (Komarov et al. 1983).

All the energy distributions in spectra of stellar radiation are reduced to the OAO Vega system (Komarov et al. 1978) in order to exclude any systematic discrepancies related to the use of different systems of primary standards. For visual demonstration in analyzing and averaging all the data in total, a graphic method has been used. With that, obvious erroneous data have been excluded, and namely: "springing out" dots, "tails", displacements of some parts in the wavelength or in stellar magnitudes etc. Then the averaging is made of data in all the wavelength range inherent to original catalogues from every star. So, two groups of data on mean $E(\lambda)$ have been obtained: from 320nm to 900nm and from 320nm to 1080nm.

The resulting catalogue recorded on magnetic diskettes comprises 555 stars. Only 180 of these have been obtained from initial data, the

scatter in which does not exceed 10%, and in 75 stars it is not more than 5%.

Average values obtained are noted to be ambiguous, i.e. not uniform, as in the averaging of different stars, a various quantity of original catalogues – from 2 to 12 – participated. And a great number of "participants" did not always contribute to the result improvement – for most G– and K–type stars, the error range still remained large, over 10%.

No systematic divergences of initial catalogues are found. Neither is detected any certain dependence of "error corridor width" proximity of results upon a spectral type of stars. It should be only noted that in all A7 – type stars considered the discrepancy between $E(\lambda)$ data all over the range does not exceed 7%.

The catalogue of mean $E(\lambda)$ is diskette recorded and a list of stars is enclosed, the initial data of proximity ranges being indicated from four parts of the spectrum: the "blue" (320–450nm), the "yellow" (450–550nm), the "red" (550–750nm) and near–IR (750–900nm). A part of the spectrum from 900 to 1080nm is mainly represented by one, and more rarely, by two original catalogues.

The Catalogue will be published in the next issue of the "Odessa Astronomical Publications".

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FUNDAMENTAL CHARACTERISTICS OF COOL GIANT STARS

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ABSTRACT. The methods are suggested for determination of fundamental characteristics of cool giant stars from photometry in the Geneva and Gildenkern systems, using for calibration of a great number of standard stars. The catalogues of T_{eff}, lg g, [Fe/H] are obtained for 1000 stars and 600 stars in Geneva-Observatory and Gildenkern systems, respectively.

Effective temperature scales and gravity accelerations are determined. The metallicity distribution is obtained according to the spectral types. The metallicity data of stars, belonging to dynamical groups and open clusters, have not confirmed the presence of a linear "metallicity – age" relationship. A conclusion is made on the existence of two age groups among disc giants. The absolute stellar magnitudes (M_v), the bolometric stars magnitudes (M_{bol}), the luminosities (L), the radii (R), the masses (M) for 1370 stars by using the catalogue values of the effective temperatures (T_{eff}), gravites (g), metallicities ([Fe/H]) have been determined. The relation of those values to a spectral type and metallicity have been obtained.

Key words: Stars: characteristics.