INTERMEDIATE STAR REFERENCE SYSTEMS IN THE VICINITY OF RADIO SOURCES

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ABSTRACT. In the framework of CONFOR program the formation of star lists of two intermediate reference star systems is being carried out. The first list, RRS2, contains meridian stars in the fields centered at extragalactic radio/optical sources. The second one is formed on the base of 12-14 magnitude stars. The observations are in progress now. The main purpose of this program is to form a base for investigation of mutual orientation of fundamental reference system and new ones.

In the frame of program CONFOR described earlier by Gubanov et al.(1989) the work on establishment of intermediate reference systems for photoraphic determinations of extragalactic radiosource positions is being carried out. This program has as an aim the investiçotion of connection Wetvéen radiointerferometric and optical coordinate frames. The work is

Fig.1. Distribution of RRS2 stars
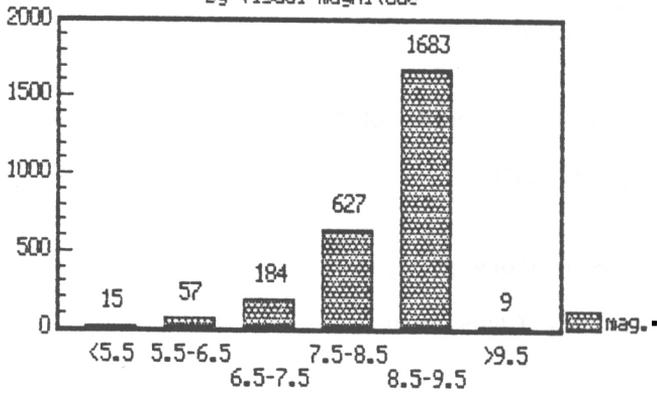by visual magnitude

Fig.2. Displacement of radiosources
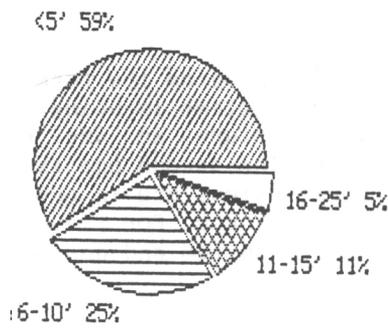from the center of reference star
systems

Fig.3. Density of RRS2 stars versus declination (number of stars per square degree)
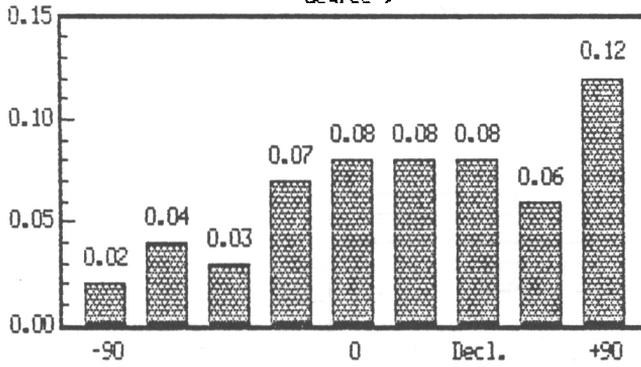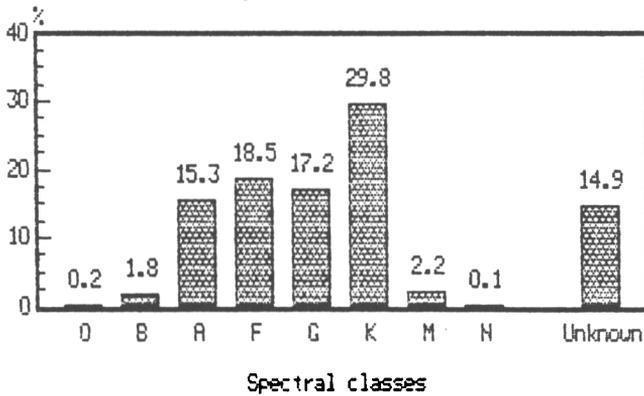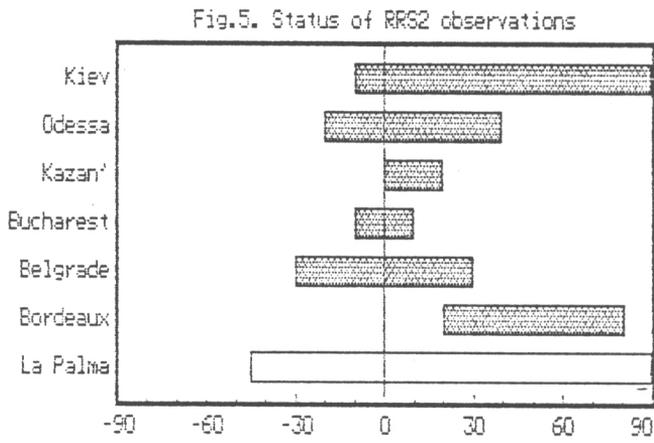

Fig.4. Distribution of RRS2 stars by spectral classes

Spectral classes

Fig.5. Status of RRS2 observations

in progress now concerning formation of observational lists and position determinations of stars belonging to two systems of intermediate reference stars in the vicinity of 238 extragalactic sources by Argue et al. (1984).

The first system (RRS2 list) contains from 9 to 13 stars per field. They are attainable for visual TCs, see Tel'nyuk-Adamchuk and Molotay (1989). The prepared list RRS2 contains 2575 stars throughout the whole sky. The mean visual magnitude of RRS2 stars is 8.5. There are near 90 per cent stars brighter than 9.1 visual magnitude in the RRS2 list (Fig.1). The angular distances between sources and RRS2 stars do not exceed 40 arcmin as a rule. Displacement of reference stars center from a source in the field is less than 5 arcmin as a rule (Fig.2). The distribution of RRS2 stars in declination zones and in spectral classes are represented in Fig.3 and Fig.4.

The corresponding observations started in 1989 using several TCs (Kiev, Kazan', Odessa, Bucharest, Belgrade). Several other observatories (e.g. Bordeaux) are planning to join this campaign. There is more than a half of RRS2 stars in the program of Carlsberg meridian circle. The zones of observations are shown in Fig.5. Meanwhile it is very important to use modern instruments,especially southern ones. All the data concerning the stars of RRS2 list can be sent by Kiev Observatory to any ob-observatory which is interested in.

On the base of the material available now and that obtained as a result of the given program it is planned to compile the combined catalogue of RRS2 stars for the purposes of astrometry of extragalactical sources.

In 1988 Kiev Univ.Observatory started the astrophotographic observations (astrograph 20/430 cm) of these fields to choose and determine the positions of stars of 12-14 mag.in the fields of 20-30 arcmin centered at each radiosource.There are 10-20 stars of this kind in each field. The coordinates of the stars mentioned will be obtained on the base of RRS2 stars as the reference ones. For the sake of positional accuracy we plane some spectrophotometrical investigations of 12-14 mag. stars.

It is reasonable to specify clearly the star list of these two systems and to observe them intentionally collecting the positional data. This will enable to spread the optical frame onto the intermediate stars as well as onto the sources themselves. As a result a good base for investigation of the mutual orientation of the fundamental frame and new ones will be given. The astrometrical data for the sets of stars in two magnitude ranges in many fields of the sky will be useful for purposes of stellar astronomy too.

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