REDUCTION OF COMPILED CATALOGUE IN THE SELECTED EXTRAGALACTIC RADIO SOURCE (ERS) FIELDS

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ABSTRACT. The work is devoted to the problem of deriving of the compiled catalogue of the positions of reference stars 12 - 15^m in the ICRF ERS vicinities for $-20° < \delta < 90°$. This research is made on the basis of the international Joint Project "Improvement of the link between optical and radio reference frames" collaboration [5]. Nikolaev Astronomical Observatory, Astronomical Observatory of Kyiv University, Main Astronomical Observatory of the Russian Academy of Sciences and Astronomical Institute of the Romanian Academy take part in compilation of the catalogue. The catalogue is created on a basis both original astrometric materials of these observatories and other known catalogues of stars in the ICRF ERS vicinities. It is planned to receive the first version of the catalogue in 2003 year.

1. INTRODUCTION

To solve the task of the maintenance and improvement of connection between radio and optical reference systems it is necessary to observe the optical counterparts of the reference ERS. To obtain their coordinates it is necessary to have secondary reference stars of 12-15 mag in ERS vicinities in Hipparcos reference system. For last decade a number of the catalogues with secondary reference stars in the ERS fields were made by different observatories (Kyiv, Nikolaev, Pulkovo, Bucharest and others). On the basis of these catalogues we intend to obtain

the compiled catalogue in the selected ERS fields in declination zone $-20^\circ < \delta < 90^\circ$.

2. OBSERVATIONS

Short description of individual catalogues is presented below. Four catalogues were obtained with the telescopes-astrographs and 3 others were obtained with CCD meridian circles.

Kyiv PIRS (Photographic Intermediate Reference Stars) Catalogue. The observations were carried out in 1989-1993 with the astrograph of the Kyiv university (D=200 mm, F=4126 mm) for 116 ERS fields. Tycho-2 catalogue was used as basic for the reduction of stars of 12-15 mag. Accuracy is about 80-100 mas in both coordinates for a single observation.

ERLcat (Extragalactic Reference Frame Link Catalogue). The observations were carried out in 1976-1994 by joint efforts of Hamburg Astronomical observatory and USNO for 398 fields with ERS [1,4]. The Northern Hemisphere was covered with the 23-cm zone astrograph located at Hamburg Observatory. The Southern Hemisphere was covered with the USNO Twin Astrograph at the Black Birch Astrometric Observatory in New Zealand. The reduction is performed for 89422 stars in an interval 12-15 mag with use of Hipparcos catalogue as basic. Accuracy is about 55 mas in both coordinates for a single observation.

Pulkovo. The observations of the stars of 10-16 mag in the vicinities of 36 ERS were made in 1991-1995 using the Pulkovo Normal Astrograph [6]. In order to reduce to Hipparcos frame the Tycho catalogue was used.

Bucharest. The observations of the 188 ERS fields were made with the Double Astrograph (D=380 mm, F=6000 mm) in 1991-2000. As the reference catalogue Tycho-2 was used.

CAMC. The number of catalogues (CAMC 1-11) are obtained with the Carlsberg Automatic Meridian Circle (D=178 mm, F=2665 mm) during the period from May 1984 to May 1998 [3]. The numbers of catalogues (CAMC 1-11) are contained 18000 reference stars in the fields of radio sources.

AMC1B. The CCD observations were made with the Nikolaev Axial meridian circle (D=180 mm, F=2480 mm) for 14403 stars in the vicinities of ERS. The observational epochs of 198 ERS fields were 1996-1998.

MAC1. The observations have been made with the Kyiv meridian axial circle (D=180 mm, F=2.3 m) for 256 fields of ERS in 2001-2002 [2]. Accuracy for stars 12-14 mag is about 50-100 mas in both coordinates for a single observation.

From the analysis of observed date it follows, that there are enough crossed fields for compilation of the summary catalogue, especially taking into account that in the catalogues for each field with ERS there are, as a rule, some plates or some observations. It's planning that the first version of the summary catalogue of stars in the fields with ERS for $-20^\circ < \delta < 90^\circ$ will be received in the first half-year of 2003.

3. REFERENCES

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