REVIEW OF THE CATALOGUES IN POSITIONAL ASTRONOMY MADE IN MYKOLAIV

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More than 30 different catalogues of positional astronomy have been compiled at the Nikolaev Observatory since its foundation to present. Among them there are 11 absolute catalogues, 18 catalogues compiled by differential method, 5 special star zones of photographic observations of stars (archive of astroplates), and several thousands position determinations for Solar System bodies with different instruments.

CATALOGUES COMPILED BY ABSOLUTE METHOD

During the 20th century 11 absolute catalogues have been compiled [3]. Right ascensions of stars have been observed with the Freiberg–Kondratiev transit instrument and were published as four catalogues, such as Nik15(α) (number of stars is 1903, period of observations is 1913–1924, year of publication is 1927), Nik30(α) (701, 1929–1935, 1949), Supplement to FK3 (571, 1939–1950, 1958), Nik60(α) (622, 1959–1963, 1967). Declinations of stars have been observed with the Repsold vertical circle and were published as five catalogues, such as Nik15(δ) (1904, 1914–1921, 1940), Nik25(δ) (172, 1925–1927, 1930), Nik30(δ) (707, 1929–1939, 1951), Nik50(δ) (587, 1939–1951, 1958), Nik60(δ) (744, 1957–1964, 1977). Due to high accuracy they have become a part of the fundamental catalogues FK. The unique catalogue of absolute right ascensions of 531 stars (531, 1974–1977, 1980) was compiled from observations with the APM-10 transit instrument during three polar nights at the Spitsbergen [4].

CATALOGUES COMPILED BY DIFFERENTIAL METHOD

The first such works were Knorre fifth sheet of the star map of the Berlin Academy of Sciences (5665, 1827–1832, 1832) [6] and the Kortazzi Catalogue of equatorial zone (5954, 1872–1899, 1900) [5]. The observations were made with Ertel meridian circle.

Nine catalogues were compiled by differential method in the fundamental system based on observations with the Repsold meridian circle. They are

1. Catalogue AGK3R (9994, 1956–1966, 1966);
2. Catalogue of faint stars (2600, 1956–1966, 1969);
3. Catalogue of 117 stars near the extragalactic nebulas (117, 1956–1966, 1969);
4. Catalogue of proper motions for faint stars (12590, 1972);
5. Catalogue of positions for 5976 SRS stars and 727 BS stars (6703, 1964–1966, 1983);
6. Catalogue of zodiacal stars (9580, 1969–1972, 1982);
7. Catalogue of right ascensions for 586 FCFS stars (586, 1974–1976, 1982);
8. Catalogue of positions of high luminosity stars (1575, 1984–1986, 1991);
9. Equatorial zone of Kortazzi Catalogue (1314, 1984–1986).

From 1931 till 1992 the high accuracy time service has published seven catalogues of right ascensions of stars based on observations with two instruments of the Mykolaiv time service, such as the "Askaniya–Verke" transit instrument and the APM-10 transit instrument. They are

1. Time service catalogue (254, 1947–1952, 1958);
2. Catalogue of right ascensions for 101 stars (101, 1953–1955, 1958);
3. Catalogue of right ascensions for 299 stars (299, 1957–1959, 1962);
4. Catalogue of right ascensions of time service program (299, 1957–1959, 1962);
5. Catalogue of right ascensions for 312 stars (312, 1965–1967, 1977);
6. Catalogue of right ascensions for star pairs (231 pairs, 1965–1967, 1970);
7. Catalogue of right ascensions for 395 stars (395, 1967–1969, 1977).

The high accuracy catalogue of reference stars in the fields around extragalactic radio sources (17000, 1996–1998, 2000) was observed with the automatic meridian circle (AMC) and compiled in the end of the 1990s [1]. Within the frame work the Joint project on improving of the link between optical and radio reference coordinate systems the catalogue of positions of 200 extragalactic radio sources (ERS) in the ICRF was compiled in 2003.

SPECIAL PHOTOGRAPHIC OBSERVATIONS OF STARS (ARCHIVE OF ASTROPLATES)

Five special star zones were photographed with the Zone Astrograph during 37 years of photographic astrometry history at the Nikolaev Observatory, such as

1. Zone near the celestial pole (I epoch) δ ($+70° \div +90°$) (period of observations is 1929–1931, number of plates is 196, limiting magnitude up to 11^m); Zone near the celestial pole (II epoch) (1973–1975, 277, 11^m);
2. Mikhailov's list of stars (1976–1977, 201, 9^m);
3. Zodiacal zone, $\pm 10°$ around ecliptic (1975–1983, 1134, 12^m);
4. ROAS program (1978–1981, 210, 11^m);
5. Equatorial zone, δ ($\pm 4°$) (1990–1993, 485, 12^m).

They are a part of our archive of astroplates, which volume is about 8600 plates. Now the information about the Archive of astroplates is placed in the Observatory Database [2].

OBSERVATIONS OF THE SOLAR SYSTEM BODIES

Several thousands position determinations for the Sun, the Moon, and major planets with the Freiberg–Kondratiev transit instrument (FKTI), the Repsold vertical circle (RVC), the Repsold meridian circle (RMC), and the Zone astrograph (ZA) have been made at the NAO. The most long-time series observations (with interruptions) were made for such bodies, as

the Sun, Mercury in 1929–1989 (FKTI), 1929–1984 (RVC);
Venus in 1929–1989 (FKTI), 1929–1984 (RVC), 1967–1997 (ZA);
Mars in 1960–1975 (FKTI), 1960–1982 (RVC), 1960–1976 (RMC), 1961–1997 (ZA);
Jupiter, Saturn in 1960–1975 (FKTI), 1960–1976 (RMC), 1961–1997 (ZA);
Uranus, Neptune in 1960–1999 (RMC), 1961–1997 (ZA);
the Moon in 1939–1975 (FKTI), 1960–1976 (RMC).

Besides, the long-time series observations were obtained with the Zone astrograph for such bodies, as

19 selected minor planets in 1961–1997;
Galilean satellites of Jupiter in 1962–1998;
bright satellites of Saturn in 1973–1997.

At present, we work at the compilation of the Observatory Database. We intend to include the Nikolaev catalogues, which have been compiled in different years.

[1] [`http://mao.nikolaev.ua/eng/cat_amc.htm`].

[2] [`http://mao.nikolaev.ua/eng/database.htm`].

[3] Intern. Conf.: Nikolaev Astronomical Observatory. Stellar Way of 175 years in Length / Ed. G. Pinigin.–Mykolaiv: Atoll, 1998.–302 p.

[4] *Kalihevich N. S., Kiyaev V. I., Pavlov A. S., et al.* Absolute right ascensions of 531 stars compiled from observations at the Spitsbergen // Dep. by VINITI.–1980.–**754–80**. (in Russian).

[5] *Kortazzi J.* Catalogue de 5954 etoiles entre $-2°10'$ et $+1°10'$ de declinaison 1855 pour l'equinoxe de 1875 deduit des observations faites au cercle meridien de l'Observatoire de la Marine imperiale a Nicolajew pendant les annees 1876 a 1899.–Leipzig, 1900.

[6] *Petrov G. M., Pinigin G. I.* Karl Knorre – first astronomer of the Nikolaev Observatory (to 200th anniversary from birthday) // Intern. Conf.: Extension and Connection of Reference Frames Using Ground Based CCD Technique / Ed. G. Pinigin.–Mykolaiv: Atoll, 2001.–P. 313–320.