

ABSTRACT BOOK



International
Astronomical Union
IAU XXVIth
General
Assembly
Prague
14-25 August 2006

JD16-43 Poster

Earth orientation catalogue EOC-3

An improved optical reference frame

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In the past, we collected the astrometric observations of latitude / universal time variations made worldwide at 33 observatories. These observations, referred to Hipparcos Catalogue, were then used to determine the Earth Orientation Parameters (EOP) at 5-day intervals, covering the interval 1899.7--1992.0. Later on, new astrometric catalogues (such as ARHIP or TYCHO-2) appeared as combination of Hipparcos / Tycho positions with ground-based catalogues. These catalogues yield more accurate proper motions than the original Hipparcos Catalogue.

Many of the objects observed in the programmes of monitoring Earth orientation from the ground are double or multiple systems, having non-negligible periodic motions. We aim at obtaining a star catalogue with improved proper motions and quasi-periodic terms reflecting orbital motions of the stars observed in these programmes.

We used about 4.5 million observations of latitude / universal time variations, and combined them with the catalogues ARIHIP, TYCHO-2 etc... in order to obtain Earth Orientation Catalogue (EOC). Spectral analysis of ground-based data is made in order to discover which of the observed objects display periodic motions, and the method of least squares is then used to estimate corresponding amplitudes and phases.

The third version of the catalogue, EOC-3, contains 4418 different objects (i.e., stars, components of double stars, photocenters). Our attempt leads to a description of more accurate paths of the observed objects that will be eventually used for another determination of the Earth Orientation Parameters in the twentieth century.

JD16-44 Poster

Catalogue of Reference Stars for Observation of Extragalactic Radio Sources of the Northern Sky

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Compiled catalogue of more than 12000 reference stars of 10-16 magnitude was obtained for 190 fields of the northern sky with center in the ERS for realization of optical CCD-observations of astrometric extragalactic radio sources (ICRF ERS) with the purpose of their connection to VLBI-observations (ICRS). Some differential catalogues of reference stars around extragalactic radio sources obtained from photographic and CCD-observations by different observatories were considered. Photographic observation fields around of 74 ERS were made in Pulkovo Observatory, observations around 115 ERS were made in the Observatory of Kiev University, observations around 188 ERS were made in Romanian National Observatory at Bucharest. 208 fields around ERS were obtained in Nikolaev observatory at the telescope with CCD-camera. All observations are carried out during one decade, in 90's. The comparisons were made for positions of common stars of the compiled catalogue with the same of stars from UCAC2 (up to 50 for declination) and from the Carlsberg catalogue CMC13 (up to + 30 for declination) using of proper motions of stars from the catalogue UCAC2. For majority of chosen fields from the compiled catalogue the mean external accuracy was about 0.05-0.08". The internal accuracy of positions on both coordinates was not worse than 0.10". The systematic deviations either are away or insignificant. All positions of stars in the compiled catalogue are given both for stars with chosen from UCAC2 by proper motions on epoch and equinox J2000.0 and for remaining ones on epoch of observation.