PRELIMINARY RESULTS OBTAINED WITH PA II OF BEIJING ASTRONOMICAL OBSERVATORY IN SAN JUAN

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There are six Photolectric Astrolabes in China: one Mark I, three Mark II and two Mark III. The Mark II No. 2 (PA II) was installed at Shahe Station of Beijing Astronomical Observatory at the end of 1975 and has been in operation since March 1976. Its aperture is 200 mm and its secondary mirror is 49 mm; it has an equivalent focal length of 2400 mm. Its zenith distance is 30°. It is used with a vacuum telescope tube and two reflecting mirrors with a stable angle. This optical system achieves a high stability. Since 1979, four preliminary catalogues of stars have been compiled using the data observed with the instrument. The potential of the equal altitude method in the field of position astronomy has been shown in several general stars catalogues observed with different chinese photoelectric astrolabes since 1973.

The astrolabe Mark II was a semi-automatic instrument before modernization. The instrument required fine guiding by the observer, and its limiting magnitude was only 7.0. From 1987, the instrument was modified into an automatic one and photon-counting detectors are now in use.

During the 1988 IAU General Assembly, Commission 8 established the working group "Astrolabes" to undertake the compilation of a New General Astrolabe Catalogue (NCGA). Astronomers from Argentina and China became interested in the project. The Photoelectric Astrolabe Mark II was moved and installed at San Juan Observatory in Argentina on January, 1992 for observations of the star catalogue in southern hemisphere. From February 23 up to August 31, the instrument has been working satisfactorily. About 40 000 stars have been observed and 1500 residual of stars have been reduced. The mean precision of a single determination is $\sim 0''.18$. The limiting magnitude is fainter than 11.0. The declinations are from $-2.5°$ to $-60°$. In this paper, the relation between residuals, magnitudes, and spectral types S are analyzed.

The project from 1992 to 1995, is to observe 3600 stars whit this instrument. The observing list has been selected from: *(a)* Most of FK5 and FK4Supp stars (about 1200 stars, $V = 2 - 8$); *(b)* Faint fundamental stars in FK5 (about 800 stars, $V = 6.0 - 9.5$); *(c)* Intermediate fundamental stars (IMF) (about 600, $V = 9.0 - 11.5$); *(d)* Radio stars (about 100) and other stars (about 900).

REDUCTION OF MERIDIAN PHOTOELECTRIC OBSERVATIONS AT THE BORDEAUX OBSERVATORY

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Since 1984 the Bordeaux photoelectric meridian circle observed about 170 000 transits of 15 000 objects. The main purpose of this program was to obtain positions of a list of HIPPARCOS stars to be included in the Input Catalogue.

Most of the HIPPARCOS stars, specially those fainter than magnitude 9, had poorly known proper motions. For a significant fraction of them, the proper motion data was completely absent.

Over these years proper motions larger than $0.1''$/year, if not duly accounted for, would contaminate the results, with grossly overestimated standard deviations for the relevant stars positions.

To prevent such effects, we reduced the whole observational data-set with the inclusion of proper motion unknowns in both coordinates for all stars whose observations spanned more than one year.

We have adopted the global or overlap reduction concept and the huge least squares problem was solved by iterations. The δ dependent terms which remained undetermined were fixed by the fundamental stars.

We present the reduction method used and some results that have been obtained.

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CALIBRATION AND PERFORMANCE OF THE HARD X-RAY IMAGING TELESCOPE TIMAX

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The TIMAX experiment (Braga et al. 1991, Exp. Astr., 2, 101) is a hard X-ray imaging telescope operating in the 30–100 keV energy range. The imaging capability is provided by the use of a coded-mask, which is based on a 7×5 "Uniformly Redundant Array" pattern (Fenimore & Cannon 1978, App. Opt., 17, 337). With only one motor and suitable stop pins, we can rotate a carbon-fiber wheel with most of the mask elements attached to it by 180°, and a bar, which is also part of the mask pattern and is allowed to rotate freely over the wheel, by 90°; this combined rotation creates an antimask of the original mask, except