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OBSERVATIONS OF RADIO STARS FROM ASTROLABE OF YUNNAN OBSERVATORY

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The photoelectric astrolabe of Yunnan Observatory was installed at the formal site in 1980. The instrument took part in the determination of the Earth Rotation Parameters and joined the Main Campaign of Project MERIT. On Débarbat's (1986) call for intensive observations of selected radio stars by optical astrometry, 50 radio stars have been selected and observed since 1986. The instrument was automated and equipped with photo counting detector in the later of eighties under direction of Professor Li Dongming. It can automatically be operated to observe stars as faint as those of magnitude 11.0 (Xu Jiayan et all, 1993). The objects from the astrometric catalogue of radio stars (Walter et al., 1990) have been selected into the program in order to contribute to the link of the optical reference frame to the VLBI reference frame based on extragalactic objects. By the end of 1994 the observations of 43 radio stars are obtained from two transits each. The internal mean errors of the right ascensions and declinations are $\pm 0^s.004$and$\pm 0''.068$, respectively.

I. OBSERVATIONS AND REDUCTIONS

The observational and reduction procedure is the same one described in Hu Hui et al., 1994. Similarly, the same method described in the paper is adopted to calculate the differences YPA-CAT (where CAT stands for the positions in FK5 or CMC, and CMC stands for Carlsberg Meridian Catalogue), and the differences YPA-RSS (where RSS stands for the radio positions given in the astrometric catalogue of radio stars). The mean, standard error of mean, standard deviation of the YPA-CAT are 0"008, 0"013, 0"081 for right ascension and -0"021, 0"029, 0"127 for declination, respectively. They indicate that the YPA's external accuracy is very good.

II. EXPLANATION OF TABLE

The observations for the 43 radio stars are presented in Table 1.

Column 1: the number in the astrometric catalogue of radio stars.

Column 2: observed mean visual magnitude.

Columns 3 and 5: right ascension and declination for equator and equinox J2000.0 and epoch of observation. The declinations of the stars near the elongation are not given, to which the method of equal altitudes is not sensible.

Columns 4 and 6: mean errors of right ascension and declination.

Columns 7 and 8: the number of the observed transits in east and west, respectively.

Column 9: mean epoch of observations minus 1900.00.

Column 10: the root-mean-square error.

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Table 1. Observations of radio stars (Mean Julian epoch of observations; equator and equinox J2000)

No.	Mg.	α h m s	m_α s	δ o ′ ″	m_δ ″	N_e	N_w	Epoch -1900	σ ″
2011	4.14	0 47 20.419	0.002			66	27	88.52	0.05
1010	5.47	1 16 36.340	0.004	-2 30 00.85	0.02	22	21	93.83	0.03
1014	6.13	1 25 35.663	0.001			39	39	93.87	0.02
1025	2.49	3 02 16.778	0.002	4 05 23.50	0.02	33	33	93.90	0.02
1026	2.11	3 08 10.136	0.001	40 57 20.38	0.04	37	36	93.88	0.02
2061	8.10	3 13 21.988	0.006	48 06 36.78	0.06	10	18	94.83	0.06
1028	6.56	3 26 35.364	0.001			37	26	93.89	0.02
2602.	8.29	3 32 25.161	0.005	-3 18 47.40	0.03	16	24	94.91	0.03
1036	4.75	4 18 14.583	0.005	50 17 44.15	0.04	25	23	93.90	0.04
2113	2.19	5 32 00.398	0.006	0 17 56.87	0.05	26	23	93.79	0.06
1056	1.74	5 36 12.805	0.002	-1 12 06.79	0.02	36	53	88.35	0.02
1061	7.83	5 41 02.300	0.004	-2 43 00.80	0.03	34	28	93.91	0.04
2658	6.94	5 41 26.771	0.003	3 46 40.74	0.05	28	21	93.59	0.05
1063	1.30	5 55 10.281	0.002	7 24 25.33	0.04	74	61	88.74	0.03
2129	9.25	6 03 53.644	0.005			23	30	93.81	0.08
2166	8.82	7 27 24.164	0.005	15 39 34.98	0.16	29	21	93.59	0.09
1084	4.36	7 43 18.697	0.001			23	35	93.79	0.02
1091	9.90	8 37 30.150	0.006			10	13	94.56	0.10
2183	9.87	8 39 08.542	0.006			25	21	93.61	0.10
2706	8.66	8 43 56.153	0.003			28	21	93.62	0.07
1118	10.62	11 40 46.367	0.011	51 59 53.44	0.07	22	21	93.28	0.07
1137	8.32	13 10 36.931	0.004			21	21	93.23	0.06
1140	8.25	13 30 46.836	0.004			21	21	93.23	0.08
1143	4.93	13 34 47.759	0.003			21	36	93.31	0.03
1147	6.81	13 56 09.562	0.002			22	21	93.23	0.04
2298	10.63	15 39 15.242	0.004			27	30	93.35	0.06
2340	8.32	17 10 25.588	0.005	48 57 56.43	0.04	21	31	93.30	0.04
1189	7.28	17 58 06.999	0.005	15 08 21.46	0.17	21	28	93.36	0.08
2356	9.74	17 58 38.517	0.004			21	21	93.36	0.08
1201	4.10	18 50 04.780	0.001			13	34	88.67	0.02
1207	5.96	19 08 25.858	0.007	52 25 33.03	0.04	28	21	93.40	0.04
2614	6.45	19 18 48.381	0.002			27	26	88.65	0.05
2442	8.10	20 19 32.443	0.003	38 43 53.86	0.11	22	30	93.55	0.05
1225	6.77	20 20 27.983	0.003	43 51 16.32	0.06	21	26	93.57	0.03
1227	9.24	20 32 22.431	0.005	41 18 19.29	0.14	22	21	93.56	0.08
2460	7.51	21 02 25.870	0.002			26	32	93.62	0.03
1246	10.00	22 01 30.634	0.010	43 53 25.36	0.17	11	18	94.71	0.11
1250	6.87	22 08 41.164	0.003	45 44 29.09	0.05	30	59	88.69	0.04
1251	6.39	22 30 06.519	0.003	49 21 23.40	0.03	28	25	93.74	0.03
1257	5.60	22 53 02.274	0.004	16 50 28.51	0.15	16	28	94.77	0.06
1263	7.18	23 13 23.748	0.004	2 40 30.51	0.04	10	23	94.78	0.04
1265	3.80	23 37 33.757	0.003	46 27 31.98	0.03	28	34	93.77	0.03
1271	5.89	23 49 40.963	0.001			30	33	93.78	0.02