Astrometry of minor planets made at the Skalnaté Pleso Observatory in the years 1978-1980

J. Svoreň[1] and E.M. Pittich[2]

[1] *Astronomical Institute of the Slovak Academy of Sciences*
059 60 Tatranská Lomnica, The Slovak Republic

[2] *Astronomical Institute of the Slovak Academy of Sciences*
842 28 Bratislava, The Slovak Republic

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Abstract. The paper presents the results of position photographing of minor planets carried out at the Skalnaté Pleso Observatory in the years 1978-1980. 120 observations of 17 minor planets are given together with the list of reference stars and dependences.

Key words: asteroids – astrometry

1. Introduction

The presented paper is a continuation of the previous papers which gave the results of positional observations of minor planets obtained at the Skalnaté Pleso Observatory (the last paper of this series: Svoreň, Pittich; 1992) and contains the observations made in the years 1978-1980. The observations were made with a 0.3-m f/5 Zeiss astrograph. The reduction constants of the Skalnaté Pleso astrograph are as follows:

$\lambda = -\ 1^h\ 20^m\ 58.70^s$,
$\varphi = +49°\ 11'\ 20.0''$,
h = 1783 m m.s.l.,
$\rho = 0.99836$ of the equatorial radius of the Earth.

The comets were photographed on ORWO plates with ZU 21 emulsion, dimensions 9x12 cm, which roughly correspondens to field of 3°x 4°. The reference stars required to compute positions using Schlesinger's method of dependences, from two independent triangles were selected from the Star Catalog of the Smithsonian Astrophysical Observatory (1966). The differences between independent determination of the equatorial coordinates, given for each poosition, provide some information about the accuracy of the measuring (but not about the accuracy of the object position). The rectangular coordinates of the reference stars

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and the minor planets were measured with the aid of instruments for measuring coordinates produced by Zeiss (Koordinatenmessgerät and Ascoremat E-60).

A total of 120 accurate positions of 17 minor planets are given. A list of reference stars and dependences and a list of collaborators are given, together with their share in photographing, measuring and reducing the positions.

2. Positions of minor planets

The data have been arranged according to serial numbers of minor planets. The individual columns of the table contain the following:
N - ordinal number of observation,
MP - number of minor planet,
Date U.T. - date and time of the middle of the exposure,
$R.A._{1950}$ - right ascension for equinox 1950.0 (in h,m,s),
$Decl._{1950}$ - declination for equinox 1950.0 (in °,′,″),
A - the difference between independent determinations of R.A. in arc seconds,
B - the difference between independent determinations of Decl. in arc seconds.

Notes:
N. 18, 49, 96, 114 - right ascension uncertain, N. 50 - measurement difficult,
N. 84, 85, 86, 87 - poor sky, N. 110 - bad seeing,

N	MP	Date U.T.	$R.A._{1950}$	$Decl._{1950}$	A	B
1	3	1978 July 27.96667	19 56 57.00	− 5 13 34.2	0.5	0.5
2	3	1978 July 28.00486	19 56 55.00	− 5 13 46.5	0.7	0.7
3	3	1980 Feb. 22.76389	7 01 35.40	+ 8 20 53.4	0.3	0.6
4	3	1980 Feb. 22.84861	7 01 35.71	+ 8 21 42.4	0.2	0.3
5	3	1980 Apr. 15.80382	7 41 43.91	+13 59 58.3	0.0	0.2
6	3	1980 Apr. 15.83090	7 41 45.98	+14 00 02.3	0.1	0.5
7	3	1980 Apr. 16.79340	7 42 58.60	+14 02 38.6	0.8	0.3
8	3	1980 Apr. 16.81632	7 43 00.37	+14 02 41.9	0.6	0.7
9	6	1978 Feb. 6.98021	11 02 27.54	+12 28 02.9	0.3	0.2
10	6	1978 Feb. 7.00174	11 02 26.76	+12 28 15.3	0.1	0.6
11	6	1978 Feb. 12.91458	10 58 09.92	+13 29 33.6	0.2	0.1
12	6	1978 Feb. 12.94236	10 58 08.58	+13 29 49.1	0.2	0.3
13	6	1979 June 3.92188	16 03 10.60	+ 2 04 22.0	0.4	0.3
14	6	1979 June 4.00521	16 03 05.92	+ 2 04 22.5	0.5	0.6
15	7	1978 Feb. 6.99687	10 01 19.86	+ 3 03 28.9	0.1	0.8
16	7	1978 Feb. 12.90833	9 55 16.67	+ 3 27 32.0	1.2	0.0
17	7	1978 Feb. 12.93889	9 55 14.48	+ 3 27 44.5	0.4	0.0
18	7	1980 Sep. 12.92465	23 47 28.63	+10 42 50.5	0.7	0.4
19	7	1980 Sep. 12.99826	23 47 24.84	+10 42 33.0	0.4	0.1
20	7	1980 Sep. 16.83056	23 44 15.96	+10 26 31.2	0.9	0.3

N	MP	Date U.T.		$R.A._{1950}$	$Decl._{1950}$	A	B
21	7	1980 Sep.	16.90139	23 44 12.24	+10 26 10.7	0.5	0.2
22	11	1978 Nov.	6.05972	4 29 50.64	+14 54 52.4	0.1	0.6
23	11	1978 Nov.	6.15069	4 29 46.17	+14 54 40.1	1.1	0.8
24	11	1979 Jan.	19.78819	3 40 58.11	+14 55 01.9	1.1	0.5
25	11	1979 Jan.	19.86319	3 40 58.91	+14 55 17.5	1.2	0.9
26	11	1979 Mar.	19.78194	4 30 30.59	+19 18 52.2	0.6	0.3
27	11	1979 Mar.	19.84236	4 30 35.32	+19 19 07.7	1.0	0.4
28	11	1980 Feb.	9.98194	11 34 54.35	+ 7 04 26.9	1.6	0.6
29	11	1980 Feb.	10.07500	11 34 51.15	+ 7 04 58.3	0.1	0.2
30	11	1980 Mar.	10.87153	11 11 47.26	+10 29 32.6	0.1	0.7
31	11	1980 Mar.	10.93542	11 11 43.67	+10 29 59.1	0.1	0.2
32	11	1980 Apr.	15.81215	10 47 52.33	+13 03 33.1	0.5	0.2
33	11	1980 Apr.	15.84271	10 47 51.71	+13 03 35.2	0.3	0.2
34	11	1980 Apr.	16.80035	10 47 36.12	+13 04 34.2	0.0	0.3
35	11	1980 Apr.	16.82882	10 47 35.62	+13 04 36.2	0.1	0.5
36	18	1979 Jan.	19.87778	5 57 10.34	+10 24 32.3	1.1	0.2
37	18	1979 Jan.	19.94028	5 57 08.02	+10 25 02.3	1.1	0.6
38	18	1979 Feb.	21.85069	5 56 02.49	+14 46 36.9	0.3	0.1
39	18	1979 Feb.	21.92431	5 56 04.63	+14 47 07.9	0.3	0.0
40	18	1979 Mar.	19.79375	6 17 28.75	+17 22 38.5	0.5	1.0
41	18	1979 Mar.	19.85625	6 17 32.86	+17 22 55.4	0.7	0.2
42	18	1980 Feb.	25.04236	14 04 26.51	− 2 50 04.4	0.0	0.2
43	18	1980 Feb.	25.12361	14 04 26.42	− 2 49 38.9	0.1	0.7
44	18	1980 Mar.	22.94722	13 55 09.43	+ 0 18 25.7	0.2	0.7
45	18	1980 Mar.	23.08611	13 55 03.74	+ 0 19 35.4	0.0	0.9
46	18	1980 Apr.	15.82257	13 35 25.47	+ 3 30 05.7	0.2	0.0
47	18	1980 Apr.	15.84896	13 35 23.91	+ 3 30 15.5	0.1	0.4
48	18	1980 Apr.	16.81007	13 34 31.25	+ 3 37 03.7	0.8	0.6
49	18	1980 Apr.	16.83299	13 34 29.96	+ 3 37 13.0	0.5	0.8
50	25	1980 Aug.	17.94931	0 21 04.48	+29 53 07.3	0.5	1.2
51	25	1980 Aug.	18.02292	0 21 04.50	+29 53 00.6	0.6	0.4
52	25	1980 Sep.	5.95000	0 16 27.46	+27 55 27.5	0.2	0.2
53	25	1980 Sep.	6.00278	0 16 25.78	+27 54 52.5	0.4	0.3
54	25	1980 Sep.	13.01806	0 12 23.44	+26 24 44.4	0.4	0.4
55	25	1980 Sep.	13.08611	0 12 20.78	+26 23 47.3	0.0	0.5
56	39	1980 Jan.	19.96354	9 08 13.46	+ 9 18 17.2	1.0	0.1
57	39	1980 Jan.	20.01910	9 08 10.88	+ 9 18 35.6	0.1	0.1
58	39	1980 Feb.	22.86146	8 41 04.14	+12 55 29.2	0.3	0.8
59	39	1980 Feb.	22.95104	8 41 00.50	+12 56 04.0	0.3	1.0
60	39	1980 Apr.	15.80729	8 37 12.94	+16 20 25.9	0.4	0.6
61	39	1980 Apr.	15.83438	8 37 13.76	+16 20 27.1	0.7	0.4
62	39	1980 Apr.	16.79687	8 37 43.96	+16 21 24.3	0.4	0.2
63	39	1980 Apr.	16.82118	8 37 44.73	+16 21 25.7	0.2	0.3

N	MP	Date U.T.	$R.A._{1950}$	$Decl._{1950}$	A	B
64	40	1978 Feb. 6.91007	4 15 58.11	+20 56 46.7	2.0	0.2
65	40	1978 Feb. 6.93368	4 15 59.00	+20 56 51.3	0.7	0.4
66	40	1978 Feb. 12.87396	4 20 24.36	+21 18 06.7	0.2	0.9
67	40	1978 Feb. 12.91909	4 20 26.63	+21 18 15.1	0.9	1.1
68	40	1979 May 19.90556	13 30 44.02	− 3 17 22.9	0.1	0.5
69	51	1980 Sep. 16.98646	4 47 28.90	+12 46 53.6	0.1	0.4
70	51	1980 Sep. 16.99896	4 47 29.44	+12 46 50.1	0.0	0.2
71	51	1980 Sep. 17.01285	4 47 30.01	+12 46 46.5	0.7	0.8
72	51	1980 Sep. 17.02465	4 47 30.56	+12 46 44.0	0.8	0.2
73	51	1980 Sep. 17.03646	4 47 31.15	+12 46 41.1	0.9	0.1
74	51	1980 Sep. 17.04826	4 47 31.64	+12 46 39.1	1.0	0.7
75	51	1980 Sep. 17.06076	4 47 32.33	+12 46 34.6	0.1	0.5
76	51	1980 Sep. 17.07257	4 47 32.75	+12 46 32.0	0.8	0.4
77	51	1980 Sep. 17.08437	4 47 33.36	+12 46 29.7	0.9	0.1
78	51	1980 Sep. 17.09618	4 47 33.70	+12 46 27.2	0.3	1.0
79	51	1980 Sep. 17.10729	4 47 34.26	+12 46 25.2	0.4	0.2
80	51	1980 Sep. 17.11910	4 47 34.82	+12 46 21.2	1.1	0.3
81	148	1980 Apr. 15.85903	16 24 06.20	+12 41 15.9	0.2	0.3
82	148	1980 Apr. 16.84132	16 23 43.04	+12 49 21.8	0.2	0.6
83	148	1980 Apr. 16.85938	16 23 42.65	+12 49 30.3	0.7	0.3
84	148	1980 May 12.88715	16 07 28.16	+15 35 50.2	0.7	0.4
85	148	1980 May 12.91146	16 07 26.95	+15 35 55.8	0.5	0.3
86	198	1980 Nov. 11.85660	3 21 44.06	+29 16 08.4	1.0	0.6
87	198	1980 Nov. 11.89410	3 21 41.69	+29 15 46.4	1.1	0.7
88	389	1978 Feb. 6.96007	7 31 24.16	+17 26 04.9	0.2	0.2
89	389	1978 Feb. 6.98576	7 31 22.97	+17 26 02.9	0.1	0.1
90	389	1978 Feb. 12.93021	7 27 06.36	+17 22 47.9	0.5	0.4
91	389	1980 Sep. 5.92639	23 22 40.52	+ 8 49 00.8	0.5	0.2
92	389	1980 Sep. 6.01250	23 22 36.05	+ 8 48 42.0	1.0	0.3
93	389	1980 Sep. 12.85556	23 16 37.85	+ 8 21 36.1	0.4	0.1
94	389	1980 Sep. 12.93611	23 16 33.52	+ 8 21 15.6	0.3	0.2
95	389	1980 Sep. 16.82222	23 13 10.26	+ 8 03 06.9	0.9	0.1
96	389	1980 Sep. 16.89306	23 13 06.52	+ 8 02 46.7	0.4	0.3
97	389	1980 Nov. 2.77014	22 50 23.80	+ 4 11 54.8	1.0	0.6
98	389	1980 Nov. 2.81875	22 50 23.98	+ 4 11 47.8	0.5	0.1
99	480	1979 Aug. 31.88194	20 19 34.54	+13 10 20.3	0.7	0.2
100	480	1979 Aug. 31.95833	20 19 32.07	+13 09 45.8	0.6	0.4
101	480	1979 Oct. 26.78819	20 29 01.97	+ 6 00 54.6	0.4	0.4
102	480	1979 Oct. 26.84375	20 29 04.63	+ 6 00 40.6	0.2	0.3
103	480	1979 Oct. 27.80903	20 29 52.31	+ 5 55 25.1	0.5	0.7
104	480	1980 Nov. 13.88889	4 44 51.02	+17 49 59.8	0.6	0.2
105	480	1980 Nov. 13.95278	4 44 47.75	+17 49 16.5	0.7	0.6
106	480	1980 Dec. 2.94549	4 26 54.15	+14 17 41.1	0.8	1.0

N	MP	Date U.T.	*R.A.*$_{1950}$	*Decl.*$_{1950}$	A	B
107	480	1980 Dec. 2.98715	4 26 51.59	+14 17 13.7	0.1	0.8
108	480	1980 Dec. 3.97778	4 25 53.51	+14 06 32.7	0.0	0.0
109	480	1980 Dec. 12.98264	4 17 29.80	+12 34 27.6	0.1	0.8
110	480	1980 Dec. 13.04583	4 17 26.29	+12 33 53.8	0.2	0.4
111	532	1980 Nov. 2.83542	2 35 58.16	− 8 21 07.3	0.1	0.5
112	532	1980 Nov. 2.90556	2 35 54.55	− 8 21 16.1	0.9	0.0
113	704	1980 Nov. 13.99583	4 52 52.34	+37 10 40.7	0.3	0.3
114	704	1980 Nov. 14.07569	4 52 48.07	+37 10 22.3	0.2	0.5
115	704	1980 Dec. 3.01701	4 34 04.54	+35 21 59.9	0.4	0.3
116	704	1980 Dec. 3.07535	4 34 00.85	+35 21 33.6	0.4	0.3
117	704	1980 Dec. 30.93785	4 11 13.86	+31 20 22.7	0.2	0.8
118	704	1980 Dec. 30.97882	4 11 12.51	+31 19 58.7	0.2	0.6
119	796	1978 Nov. 20.74826	23 40 24.86	− 8 34 23.5	1.1	0.8
120	796	1978 Nov. 20.80729	23 40 26.80	− 8 33 02.9	0.5	0.8

3. Reference stars and dependences

The individual columns of the table contain the following:
N - ordinal number of the observation in agreement with the Section 2,
Numbers of reference stars and dependences (SAO catalogue of reference stars is used at all the calculations),
T - the exposure time in minutes.

N	Numbers of stars and dependences						T
1	143928	.31242	143979	.39045	144010	.29713	
	143954	.27600	143958	.24919	143990	.47481	8
2	143298	.31642	143979	.39553	144010	.28805	
	143954	.29200	143958	.24249	143990	.46551	10
3	114769	.40914	114902	.35716	114961	.23370	
	114815	.50925	114846	.22422	114963	.26653	2
4	114769	.41565	114902	.33587	114961	.24848	
	114815	.49761	114846	.23814	114963	.26425	2
5	97136	.50563	97230	.21531	97280	.27906	
	97136	.57653	97280	.20088	97286	.22259	3
6	97136	.50108	97230	.21735	97280	.28157	
	97136	.57265	97280	.20269	97286	.22466	3
7	97136	.34074	97230	.29015	97280	.36911	
	97136	.43631	97280	.26375	97286	.29994	3

N	Numbers of stars and dependences						T
8	97136	.33685	97230	.29190	97280	.37125	
	97136	.43304	97280	.26529	97286	.30167	3
9	99401	.44674	99438	.28234	99478	.27092	
	99398	.42308	99438	.30587	99478	.27105	3
10	99396	.46384	99452	.21145	99480	.32471	
	99404	.24690	99418	.45015	99480	.30295	3
11	99350	.31493	99408	.37298	99434	.31209	
	99350	.29547	99408	.41442	99431	.29011	2
12	99350	.31617	99408	.37494	99434	.30889	
	99350	.29694	99408	.41598	99431	.28708	2
13	121335	.40271	121372	.43475	121391	.16254	
	121325	56836	121395	.13298	121403	.29866	5
14	121335	.41794	121372	.42730	121391	.15476	
	121325	.57882	121395	.12894	121403	.29224	5
15	118060	.25514	118086	.54526	118100	.19960	
	118060	.38529	118094	.41926	118100	.19545	3
16	118000	.41920	118007	.21156	118047	.36924	
	117998	.36719	118007	.25727	118047	.37554	2
17	118000	.42356	118007	.21665	118047	.35979	
	117998	.37086	118007	.26278	118047	.36636	2
18	108836	.36790	108859	.44031	108906	.19179	
	108838	.25817	128398	.47970	108895	.26213	3
19	108836	.37855	108859	.43710	108906	.18435	
	108838	.26908	128398	.47880	108895	.25212	3
20	108785	.16641	108836	.51764	108838	.31595	
	108792	.36335	128357	.21992	108867	.41673	2
21	108785	.17952	108836	.51133	108838	.30915	
	108792	.35408	128378	.29725	108856	.34867	2
22	93977	.45163	94012	.29920	94014	.24917	
	93983	.24354	93991	.26724	94009	.48922	8
23	93977	.47178	94012	.27794	94014	.25028	
	93983	.26616	93991	.27146	94009	.46238	8
24	93542	.19864	93570	.67970	93613	.12166	
	93556	.68062	93572	.14109	93620	.17829	4
25	93537	.23697	93570	.57606	93613	.18697	
	93556	.63211	93569	.19132	93620	.17657	4
26	93973	.42775	94025	.42614	94021	.14611	
	76638	.06278	93998	.79349	94032	.14373	6

N	Numbers of stars and dependences						T
27	93973	.41290	94025	.42406	94021	.16304	
	76638	.06392	93998	.77047	94032	.16561	6
28	118916	.30743	118928	.22351	118998	.46906	
	118933	.40328	118946	.36236	119005	.23436	2
29	118940	.42758	118952	.43306	118998	.13936	
	118938	.51807	118969	.26669	118973	.21524	2
30	99487	.36195	99520	.28620	99536	.35185	
	99495	.11008	99500	.59416	99546	.29576	2
31	99487	.36888	99520	.29514	99536	.33598	
	99495	.12155	99500	.59181	99546	.28664	2
32	99245	.30459	99338	.41614	99372	.27927	
	99245	.35428	99351	.37597	99372	.26975	3
33	99245	.30521	99338	.41607	99372	.27872	
	99245	.35490	99351	.37590	99372	.26920	3
34	99245	.32065	99338	.41470	99372	.26465	
	99245	.37020	99351	.37465	99372	.25515	3
35	99245	.32116	99338	.41463	99372	.26421	
	99245	.37068	99351	.37465	99372	.25467	3
36	95016	.39071	113361	.34474	95175	.26455	
	95010	.11464	95072	.63724	95197	.24812	4
37	95016	.39836	113361	.33890	95175	.26274	
	95010	.12369	95072	.63082	95197	.24549	4
38	95024	.47085	95047	.16759	95144	.36156	
	95024	.35848	95032	.25383	95140	.38769	2
39	95024	.47053	95047	.16027	95144	.36920	
	95024	.35692	95032	.24827	95140	.39481	2
40	95472	.25921	95501	.09536	95591	.64543	
	95497	.31420	95551	.36539	95601	.32041	6
41	95472	.26411	95501	.07215	95591	.66374	
	95497	.30133	95551	.36304	95601	.33563	6
42	139696	.27634	139734	.18082	139760	.54284	
	139705	.27284	139745	.32914	139749	.39802	4
43	139696	.27881	139734	.17597	139760	.54522	
	139692	.26418	139724	.28799	139774	.44783	4
44	139634	.36492	120184	.21661	120211	.41847	
	120175	.28509	139647	.41248	120215	.30243	2
45	139634	.36795	120184	.24205	120211	.39000	
	120175	.24364	139647	.58681	120226	.16955	2

N	Numbers of stars and dependences						T
46	119957	.19123	120019	.41653	120094	.39224	
	119957	.29573	120052	.41285	120094	.29142	3
47	119957	.19253	120019	.41713	120094	.39034	
	119957	.29715	120052	.41347	120094	.28938	3
48	119957	.23228	120019	.44324	120094	.32448	
	119957	.34349	120052	.43937	120094	.21714	3
49	119957	.23330	120019	.44383	120094	.32287	
	119957	.34463	120052	.43997	120094	.21540	3
50	73906	.29312	53868	.32183	73962	.38505	
	53832	.21691	73931	.25006	73967	.53303	4
51	73906	.29329	53868	.31961	73962	.38710	
	53832	.21499	73931	.25267	73967	.53234	4
52	73869	.39107	73892	.33610	73912	.27283	
	73855	.28060	73874	.24875	73926	.47065	4
53	73869	.39618	73892	.34080	73912	.26302	
	73855	.27738	73874	.25900	73926	.46362	4
54	73793	.29373	73857	.42569	73874	.28058	
	73793	.36183	73842	.33245	73889	.30572	4
55	73793	.39032	73858	.14354	73877	.46614	
	73804	.24505	73854	.66067	73865	.09428	4
56	117453	.35951	117460	.19192	117503	.44857	
	117446	.08228	98411	.48072	117488	.43700	5
57	117453	.36035	117460	.20359	117503	.43606	
	117446	.09387	98411	.47957	117488	.42656	5
58	98012	.30833	98057	.26874	98130	.42293	
	98004	.24690	98074	.22300	98102	.53010	3
59	98012	.30563	98057	.28378	98130	.41059	
	98004	.25814	98074	.21647	98102	.52539	3
60	97901	.18849	98005	.46345	98088	.34806	
	97901	.21962	98005	.43721	98096	.34317	3
61	97901	.18719	98005	.46378	98088	.34903	
	97901	.21845	98005	.43743	98096	.34412	3
62	97985	.40640	98039	.33060	98070	.26300	
	97956	.36808	98061	.29220	98065	.33972	3
63	97985	.40353	98039	.33165	98070	.26482	
	97956	.36612	98061	.29353	98065	.34035	3
64	76525	.41230	76551	.25675	76571	.33095	
	76532	.33972	76541	.43140	76571	.22888	3

N	Numbers of stars and dependences						T
65	76495	.20520	93863	.41032	76568	.38448	
	76533	.46256	76535	.27273	76578	.26471	3
66	76551	.04751	76571	.35094	76593	.60155	
	76562	.25837	76571	.38618	76609	.35545	5
67	76551	.04049	76571	.34818	76593	.61133	
	76562	.25595	76571	.37981	76609	.36424	5
68	139378	.20031	139410	.45015	139417	.34954	
	139382	.49934	139399	.28028	139458	.22038	4
69	94094	.25404	94161	.15529	94180	.59067	
	94116	.21178	94146	.53762	94213	.25060	15
70	94086	.27317	94161	.43405	94215	.29278	
	94087	.31129	94161	.28791	94207	.40080	15
71	94094	.25188	94161	.15515	94180	.59297	
	94116	.20966	94146	.53771	94213	.25263	15
72	94086	.14779	94153	.35941	94180	.49280	
	94101	.22304	94146	.48456	94213	.29240	15
73	94086	.14679	94153	.35887	94180	.49434	
	94101	.22202	94146	.48481	94213	.29317	15
74	94094	.24857	94161	.15541	94180	.59602	
	94116	.20690	94146	.53747	94213	.25563	15
75	94094	.24715	94161	.15529	94180	.59756	
	94116	.20565	94146	.53754	94213	.25681	15
76	94108	.16584	94153	.43315	94180	.40101	
	94101	.21890	94146	.48546	94213	.29564	15
77	94094	.24511	94161	.15536	94180	.59953	
	94116	.20387	94146	.53737	94213	.25876	15
78	94094	.24436	94161	.15537	94180	.60027	
	94116	.20324	94146	.53752	94213	.25924	15
79	94094	.24324	94161	.15548	94180	.60128	
	94116	.20234	94146	.53732	94213	.26034	15
80	94094	.24220	94161	.15532	94180	.60248	
	94116	.20122	94146	.53740	94213	.26138	15
81	102093	.15759	102161	.42363	102201	.41878	
	102093	.29341	102196	.44121	102201	.26538	20
82	102093	.18071	102161	.47881	102201	.34048	
	102093	.33424	102196	.49880	102201	.16696	15
83	102093	.18103	102161	.47982	102201	.33915	
	102093	.33495	102196	.49978	102201	.16527	15

N	Numbers of stars and dependences						T
84	101924	.37857	101978	.25327	102020	.36816	
	101934	.20780	101946	.47825	102029	.31395	15
85	101924	.38052	101978	.25503	102020	.36445	
	101934	.21081	101946	.47791	102029	.31128	15
86	75878	.46044	56443	.26054	75957	.27902	
	75878	.25654	56443	.34524	75927	.39822	3
87	75878	.46566	56443	.25792	75957	.27642	
	75878	.26370	56443	.34183	75927	.39447	3
88	96985	.37946	97018	.24555	97083	.37499	
	96985	.34977	97013	.27217	97083	.37806	3
89	96985	.38377	97018	.24464	97083	.37159	
	96985	.35417	97013	.27115	97083	.37468	3
90	96905	.40201	96933	.17627	97009	.42172	
	96920	.23431	96948	.54070	97006	.22499	5
91	128137	.30604	128161	.25717	128201	.43679	
	128149	.43733	128183	.39425	128197	.16842	12
92	128137	.31392	128161	.26117	128201	.42491	
	128149	.45292	128183	.38896	128197	.15812	12
93	128091	.42590	128109	.34234	128146	.23176	
	128084	.41736	128099	.27931	128149	.30333	12
94	128091	.44355	128109	.33778	128146	.21867	
	128084	.42242	128099	.28890	128149	.28868	12
95	128044	.36171	128077	.47377	128102	.16452	
	128047	.45883	128084	.26712	128091	.27405	12
96	128044	.41619	128077	.32648	128097	.25733	
	128056	.44120	128077	.47631	128102	.08249	12
97	127790	.39546	127829	.19668	127837	.40786	
	127801	.34931	127818	.54829	127861	.10240	14
98	127790	.39507	127829	.19535	127837	.40958	
	127801	.34747	127818	.55017	127861	.10236	14
99	105960	.40302	106050	.50344	106088	.09354	
	105983	.42368	106005	.24286	106071	.33346	20
100	105960	.40528	106050	.51688	106088	.07784	
	105983	.43405	106005	.24173	106071	.32422	20
101	125802	.30819	125883	.35507	126024	.33674	
	125802	.36847	125908	.31519	126024	.31634	30
102	125802	.30459	125883	.35452	126024	.34089	
	125802	.36480	125908	.31471	126024	.32049	30

N	Numbers of stars and dependences						T
103	125802	.24483	125883	.33696	126024	.41821	
	125802	.30204	125908	.29909	126024	.39887	30
104	94070	.14708	94103	.29015	94157	.56277	
	94080	.14912	94089	.35516	94169	.49572	12
105	94070	.15712	94103	.28255	94157	.56033	
	94080	.16278	94089	.34661	94169	.49061	12
106	93930	.22281	93977	.62213	93990	.15506	
	93931	.05663	93959	.54210	93988	.40127	11
107	93930	.23252	93977	.61190	93990	.15558	
	93931	.06955	93959	.53307	93988	.39738	11
108	93937	.51939	93977	.29089	93990	.18972	
	93931	.28808	93959	.47230	93990	.23962	10
109	93857	.50295	93864	.25448	93908	.24257	
	93839	.39131	93864	.24867	93916	.36002	10
110	93857	.50628	93864	.26353	93908	.23019	
	93839	.39214	93864	.25869	93916	.34917	10
111	130009	.50912	130043	.29485	130054	.19603	
	130016	.45445	130028	.41717	130086	.12838	8
112	130009	.52151	130043	.29814	130054	.18035	
	130016	.52144	130028	.28035	130063	.19821	8
113	57463	.39447	57519	.30420	57568	.30133	
	57487	.36661	57495	.38292	57579	.25047	2
114	57483	.42087	57519	.42301	57568	.15612	
	57487	.38839	57510	.42746	57564	.18415	2
115	57313	.35871	57333	.20079	57369	.44050	
	57301	.13640	57339	.47107	57362	.39253	3
116	57313	.37365	57333	.19264	57369	.43371	
	57301	.14369	57339	.47733	57362	.37898	3
117	57056	.10739	57091	.55125	57103	.34136	
	57064	.11490	57070	.40815	57114	.47695	3
118	57023	.33091	57103	.34020	57144	.32889	
	57052	.22589	57092	.49053	57121	.28358	3
119	146840	.17843	146847	.54148	146903	.28009	
	146853	.52044	146857	.39025	146895	.08931	15
120	146840	.18944	146847	.52258	146903	.28798	
	146853	.49888	146857	.40646	146895	.09466	15

4. List of collaborators

Name	Exposures	Measurements	Reductions
G. Červák	–	4	–
J. Fabricius	–	5	–
J. Klobušník	80	59	–
E.M. Pittich	–	–	90
P. Rychtarčík	–	17	–
P. Schalling	40	25	–
J. Svoreň	–	10	30

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