

WOJCIECH BURZYŃSKI¹, MAREK ZAWILSKI²

¹ PTMA Branch of Białystok, Faculty of Physics - University of Białystok,

ul. Ciołkowskiego 1L, 15-285 Białystok, bialystok@ptma.pl

² PTMA, Branch of Łódź, ul. Pomorska 16a, 91-416 Łódź, lodz@ptma.pl

Report of the Section of Observation of Positions and Occultations of the Polish Amateur Astronomers Society for the year 2018

Introduction

The year 2018 was a quite exceptional for observers of Section of Observation of Positions and Occultations of the Polish Amateur Astronomers Society (*pol.* 'SOPiZ PTMA'). During the year several SOPiZ (or otherwise said 'national') records were beaten:

- the largest number of grazing occultations events recorded in a year
- the largest number of total lunar occultations recorded during one night
- observation of the faintest graze lunar occultation observed in Poland

Furthermore, observers of the Section have recorded such rare phenomena as the star occultation by irregular Jovian moon (P5M06) Himalia, the discovery of a new double star by the occultation method and the possible discovery of an asteroid's satellite.

1. Total lunar occultations

The year 2018 is primarily the end of a 3-years long serie of Aldebaran (alpha Tauri) lunar occultations that could be observed from the Earth. Aldebaran occultation series are separated by 18.6 years which is the duration of the Moon's nodal cycle. The "Eye of the Bull" lunar occultation will not happen again on the Earth until 2033. The next Aldebaran lunar occultation visible from Poland will happen on Jan, 29th 2034.

Meanwhile, on Feb 23rd, we were watching the last such phenomenon visible in Poland in the near future.



Fig.1. The Aldebaran just seconds before the occultation by the Moon, taken at Łódź by Marek Zawilski on Feb 23rd, 2018.

Faint stars occultation.

On April 20, 2018, the young 26 % sunlit Moon passed through the dense star field of Milky Way in the constellation of Orion. It was a good opportunity to test both occultation software and equipment by **Wojciech Burzyński**.

The coordinates of the station: Lat. $53^{\circ}12'31.2''\text{N}$, Long. $23^{\circ}31'37.7''\text{E}$ in the WGS-84 datum.

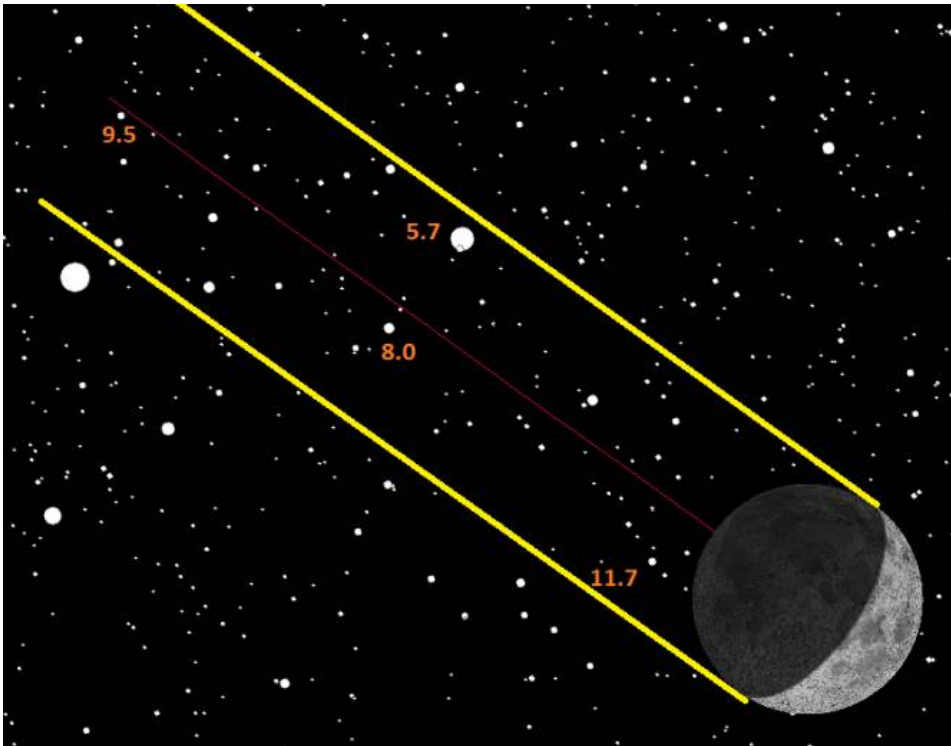


Fig.2. The sky area covered by the Moon lies between yellow lines showing Moon's position during observation time (18:30 - 21:50 UT)

THE SETUP AND SOFTWARE:

- Sky-Watcher „Star Discovery” 150/750 mm ALT-AZ & GOTO mount
- „TomaszTech” Video Time Inserter for analogue cameras, 1pps GPS
- NOVUS NVC GDN5811C-2 integrating camera, sensitivity 0.00002 lx
- DELL 3540 i5 laptop with 8 GB of RAM and 128 GB SSD disk drive
- prediction software: Occult 4.5 and LOW 4.1
- recording software: Virtualdub v. 1.10.4
- evaluation software: Tangra v. 3.6

65 lunar occultations have been recorded in total in one night by single observer! This is probably a national record.

RESULTS AND REMARKS:

- hard to make light curves (LCs) for stars fainter than 9.5 mag
- only 10 LC's clearly readable
- average magnitude of occulted star: 10.0 mag
- 32 timings with 0.02 - 0.04 sec. accuracy (stars brighter than 10.3 mag)
- 20 timings with 0.1 - 0.5 sec. accuracy
- 7 timings with 1 sec. accuracy
- 6 timings absolutely unreadable
- occultation of a 8.94 mag star was observed at low altitude of 6.9°
- the setup can reach 12.5 mag stars being occulted by the crescent Moon
- some stars had no ephemeris in both the Occult and LOW software

No	STAR	MAG	Eph Occult	Eph LOW	Time UT
1	XZ 83308	10.87	18:31:54.1	18:31:55	18:31:54.24
2	XZ 83372	10.15	18:33:41.4	18:33:40	18:33:41.49
3	XZ 83313	11.73	no eph.	18:36:17	18:36:17.2
4	XZ 83384	10.41	18:39:10.0	18:39:12	18:39:10.0
5	TYC 1322-951	12.16	no eph.	no eph.	unreadable
6	XZ 83470	11.56	no eph.	18:41:10	18:41:12.3
7	XZ 8399	8.81	18:43:08.8	18:43:09	18:43:08.92
8	XZ 83475	11.19	18:43:32.2	18:43:32	18:43:31.68
9	TYC 1321-96	10.67	no eph.	no eph.	18:44:55.2
10	XZ 83540	10.26	18:46:49.7	18:46:51	18:46:49.9
11	XZ 83328	10.92	no eph.	18:47:11	18:47:12.6
12	XZ 83545	10.86	18:47:22.3	18:47:22	18:47:22.3
13	XZ 83528	11.28	18:48:41.9	18:48:41	18:48:42.2
14	XZ 83580	9.77	18:52:03.1	18:52:03	18:52:03.29
15	TYC 1322-1435	12.36	no eph.	no eph.	18:53:23
16	XZ 83633	9.83	18:54:35.1	18:54:35	18:54:35.25
17	3UC220-047697	10.74	no eph.	no eph.	18:56:25.5
18	XZ 83693	10.93	18:58:48.1	18:58:50	18:58:48.1
19	XZ 83690	10.76	19:00:12.1	19:00:10	19:00:12.29
20	XZ 8431	9.02	19:01:23.3	19:01:21	19:01:23.7
21	XZ 83769	11.22	19:04:14.5	19:04:14	19:04:15
22	XZ 83759	11.62	no eph.	19:04:55	19:04:56
23	XZ 83750	10.41	19:10:26.6	19:10:26	19:10:26.60

No	STAR	MAG	Eph Occult	Eph LOW	Time UT
24	XZ 8464	8.04	19:18:01.1	19:18:02	19:18:01.26
25	XZ 83914	10.18	19:18:35.4	19:18:35	19:18:35.49
26	XZ 83943	9.63	19:21:24.8	19:21:23	19:21:25.02
27	XZ 83832	11.14	no eph.	19:24:32	unreadable
28	XZ 83997	10.31	19:27:18.4	19:27:18	19:27:18.39
29	XZ 84040	10.45	19:30:01.8	19:30:05	19:30:01.75
30	XZ 84047	11.67	no eph.	19:30:39	unreadable
31	XZ 84060	11.23	19:32:33.4	19:32:34	unreadable
32	XZ 84076	11.53	no eph.	no eph.	19:36:30
33	XZ 84112	10.27	19:42:26.9	19:42:29	19:42:26.96
34	XZ 84173	11.30	no eph.	19:46:53	unreadable
35	XZ 84175	10.19	19:53:07.7	19:53:10	19:53:07.80
36	XZ 8528	9.94	19:57:06.7	19:57:06	19:57:06.68
37	XZ 8553	8.02	20:09:50.1	20:09:50	20:09:50.06
38	XZ 84453	10.79	20:10:32.6	20:10:34	20:10:32.8
39	XZ 8549	9.29	20:14:49.1	20:14:49	20:14:49.18
40	XZ 8557	9.55	20:17:18.0	20:17:18	20:17:18.06
41	XZ 8550	5.76	20:18:32.1	20:18:33	20:18:32.10
42	TYC 1322-256	11.74	no eph.	no eph.	20:20:45
43	XZ 84591	11.30	no eph.	20:24:45	20:24:43.8
44	XZ 84605	10.85	20:25:40.6	20:25:42	20:25:40.7
45	XZ 84596	11.10	no eph.	20:26:32	20:26:33.6
46	XZ 84642	11.26	no eph.	20:30:38	20:30:39.5
47	XZ 84652	10.23	20:38:40.6	20:38:40	20:38:40.68
48	XZ 8583	9.24	20:40:14.1	20:40:17	20:40:14.10
49	XZ 84773	10.84	no eph.	20:45:25	20:45:25
50	XZ 84728	9.40	20:46:07.4	20:46:08	20:46:07.80
51	XZ 84768	9.74	20:46:28.3	20:46:27	20:46:28.56
52	XZ 8579	8.31	20:48:43.7	20:48:42	20:48:44.10
53	XZ 84854	10.85	no eph.	20:51:57	20:51:56.5
54	XZ 8608	9.12	20:58:32.6	20:58:33	20:58:32.64
55	XZ 8610	8.31	21:00:33.6	21:00:32	21:00:33.86
56	XZ 8598	7.76	21:02:16.0	21:02:17	21:02:16.09
57	XZ 84980	9.98	21:05:03.4	21:05:04	21:05:03.5
58	XZ 85012	10.78	no eph.	21:11:21	21:11:22
59	TYC 1322-961	11.10	no eph.	no eph.	21:21:27

No	STAR	MAG	Eph Occult	Eph LOW	Time UT
60	XZ 85171	9.55	21:25:14.3	21:25:13	21:25:14.47
61	XZ 8656	9.01	21:30:02.0	21:30:03	21:30:02.22
62	XZ 8629	8.73	21:33:13.4	21:33:27	21:33:13.56
63	TYC 1322-1333	10.93	no eph.	no eph.	21:36:15
64	TYC 1322-1413-1	11.37	no eph.	no eph.	21:42:21.2
65	XZ 8688	8.94	21:48:26.0	21:48:27	21:48:26.13

Tab.1. Faint stars occultations results obtained in one night of Apr, 20th 2018.

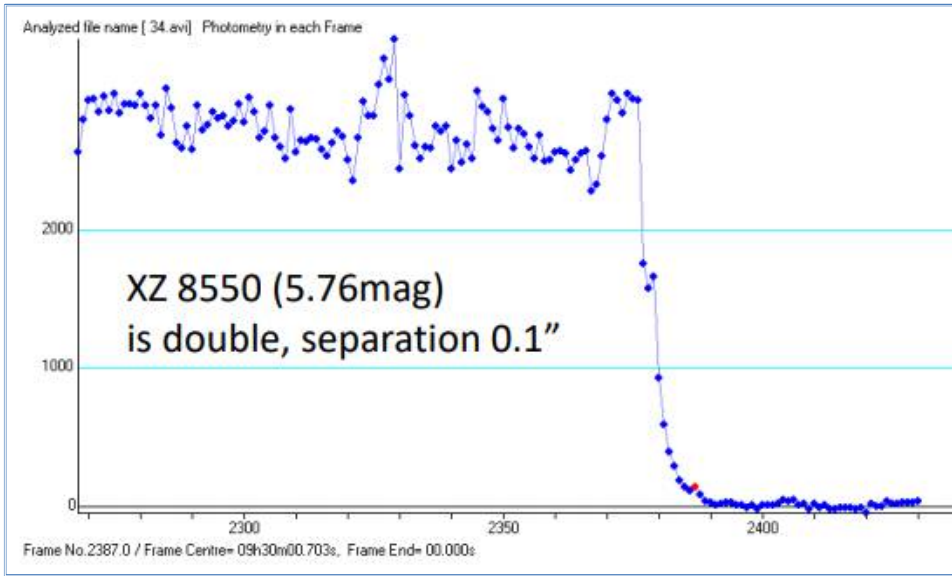


Fig.3. The lightcurve of XZ 8550 double star lunar occultation recorded during the night of Apr, 20th 2018. The stepped LC means double star occultation.

Another set of total lunar occultation results have been obtained in 2018 at Łódź and Tobolice (Tab.2 and Tab.3) by Marek Zawilski.

No.	Location	Abbr.	Geogr. coord. WGS84		Height	Telescope [#]
			Longitude ° ' "	Latitude ° ' "	m a.s.l.	aperture/focal length [mm]
1	Łódź, Pomorska	Ld-1	19 27 33.4	51 46 41.3	225	Cass. 150/2250
2	Łódź, Julianowska	Ld-2	19 27 04.8	51 47 55.2	230	Cass. 90/1250
3	Tobolice	Tb	19 03 22.3	51 54 48.2	140	Cass. 200/2032

Tab. 2. Marek Zawilski's stations and telescopes ([#] all with electrical driving).

Date 2018	Ph. #	Star					Stn	Tel/ Time	Weather conditions	Observed time UT	Eph. UT*	O-C
		No.	Name	Mag.	Double	Sep. ["]				h m s	s	s
Feb 21	DD	ZC 405	μ Ceti	4.3	4.2/6.2	0.021	Ld-2	2/W	good	17 36 55.27 ¹ 55.31 ³	56.3	-1.0
Feb 23	DD	ZC 692	α Tauri Aldebaran	0.9			Ld-1	1/W	good	17 08 41.59 ¹ 41.63 ² 41.67 ³	41.5	+0.1
Feb 23	RB	ZC 692	α Tauri Aldebaran	0.9			Ld-1	1/W	good	18 08 50.39 ⁴ 50.43 ⁶	50.4	0.0
Apr 8	RD	ZC 2797	π Sagittarii	2.9	3.6/3.6	0.10	Ld-2	2/W	good ^a	03 49 50.56 ⁴ 50.60 ⁵ 50.64 ⁶	48.4	+2.2
Apr 18	DD	SAO 93806		7.7	8.2/8.3	298.1	Ld-2	2/W	good	19 35 26.55 ⁸	26.2	+0.3
Apr 20	DD	SAO 95361		8.0	8.9/8.9		Ld-2	2/Z	good	20 12 00.94	01.2	-0.3
Apr 20	DD	ZC 240	68 Orionis	5.8	5.7/9.4	0.10	Ld-2	2/Z	good	20 16 37.93 ¹ 38.00 ³	38.3	-0.3
Sep 5	RD	XZ 90090		10.0			Tb	3/Z	good ^b	01 44 51.96	50.6	+1.4
Sep 5	RD	XZ 90335		9.9			Tb	3/Z	good ^b	02 24 36.53	34.8	+1.7
Sep 27	RD	ZC 364	ξ^2 Ceti	4.3	4.2/6.2	0.021	Tb	1/W	good	21 29 25.25 ⁸	24.3	+1.0
Sep 30	RD	ZC 636	55 Tauri	7.0	7.3/8.6	0.62	Ld-2	2/Z	good	00 39 20.43 ⁸	18.9	+1.5
Sep 30	RD	ZC 650	63 Tauri	5.6	5.9/7.9		Ld-2	2/Z	good	02 43 04.48 ⁹ 04.51 ⁸	02.5	+2.0

Tab. 3. Results of observations of total lunar occultations recorded by Marek Zawilski.

REMARKS:

phenomenon: **DD** – disappearance at dark limb, **DB** – disappearance at bright limb,
RD – reappearance at dark limb, **RB** – reappearance at bright limb

* according to the Occult v.4.2.6.0 software

¹ first decrease of light;

² next decrease of light but star still visible;

³ complete disappearance;

⁴ first detection of light;

⁵ distinct increase of light;

⁶ full brightness returned;

⁷ duplicity not detected;

⁸ brighter component;

⁹ weaker component

^a Sun 3° below the local horizon;

^b a distinct lunar ashy light disturbed observations.

Time – timing method:

W – Watec camera and IOTA video time inserter (VTI) (± 0.05 s);

Z – ZWO ASI 120MM digital camera, adjusted and checked computer time using NTP Dimension4 software, integration time 100-200 ms.

2. Grazing lunar occultations

Although collective results of grazing lunar occultations for 2018 are not yet developed by the global collector, dr. Mitsuru Soma from the National Astronomical Observatory of Japan, the number of these phenomena observed in the first half of the year allows to conclude that the vast majority of all 2018 worldwide observations of grazing lunar occultations was recorded by the Polish observers. Despite of a very accurate lunar limb profile made by the Kaguya and LRO probes, we are still trying to observe grazing lunar occultations in Poland. It is still possible to improve very slightly the profile data but perhaps the most important are emotional impressions felt by observers.

	Date	Star no	Star mag	Teamleader	Obs. no	Eventsno
1a	2018/03/21	ZC 508	4,1	Wojciech Burzyński	5	41
1b	2018/03/21	ZC 508	4,1	Jacek Drązkowski.	1	7
2	2018/05/20	SAO 97097	8,9	Wojciech Burzyński	1	5
3	2018/05/23	SAO 119000	7,3	Wojciech Burzyński	1	3
4a	2018/08/08	ZC 895	5,9	Adam Nowak	1	4
4b	2018/08/08	ZC 895	5,9	Leszek Benedyktowicz	3	19
4c	2018/08/08	ZC 895	5,9	Wojciech Burzyński	2	21
5	2018/08/30	SAO 110203	9,08	Wojciech Burzyński	3	10
6	2018/09/04	SAO 94684	7,2	Wojciech Burzyński	1	6
7	2018/11/30	SAO 99271	9,83	Wojciech Burzyński	1	3

Tab.4. Lunar grazing occultations results obtained in Poland in 2018.

In 2018 the Polish observers organized 10 grazing lunar expeditions for 7 different events during which they recorded 119 contacts in total. **This is the largest number of grazing lunar occultations events recorded in a given year in Poland.** These were mostly single-man expeditions and most of them have been made by **Wojciech Burzyński**. The largest collective campaign, with 6 observers in total, was the occultation of ZC 508 star on March 21, 2018. Only 3 graphical reductions of grazes, with most contacts, are shown below. The "contact" should be understood as disappearance, reappearance or short flash of the target star caused by the shape of the Moon's profile.

On Nov, 30-th 2018, Wojciech Burzynski recorded the faintest grazing lunar occultation observed in Poland ever. The SAO 99271 star occulted by the Moon has a visual magnitude of 9.83.

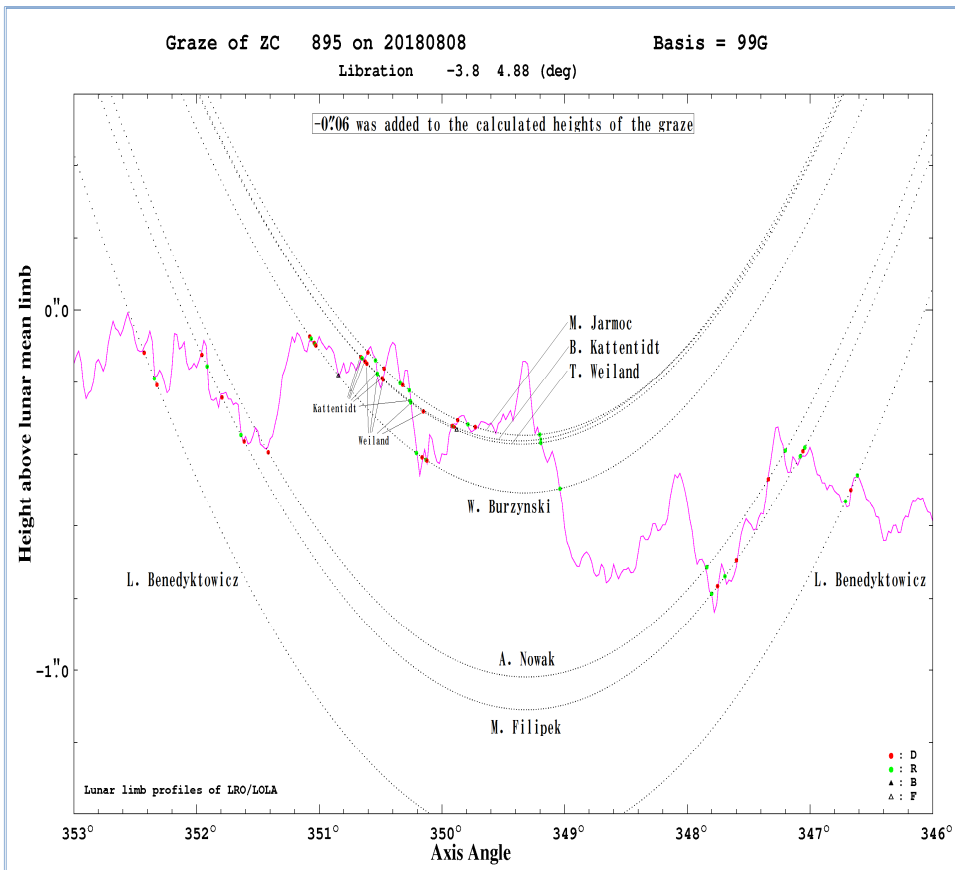


Fig.4. The result of international cooperation - the collective reduction of lunar grazing occultation of ZC 895 star. The event was observed on Aug, 18th 2018 from Poland, Germany and Austria.

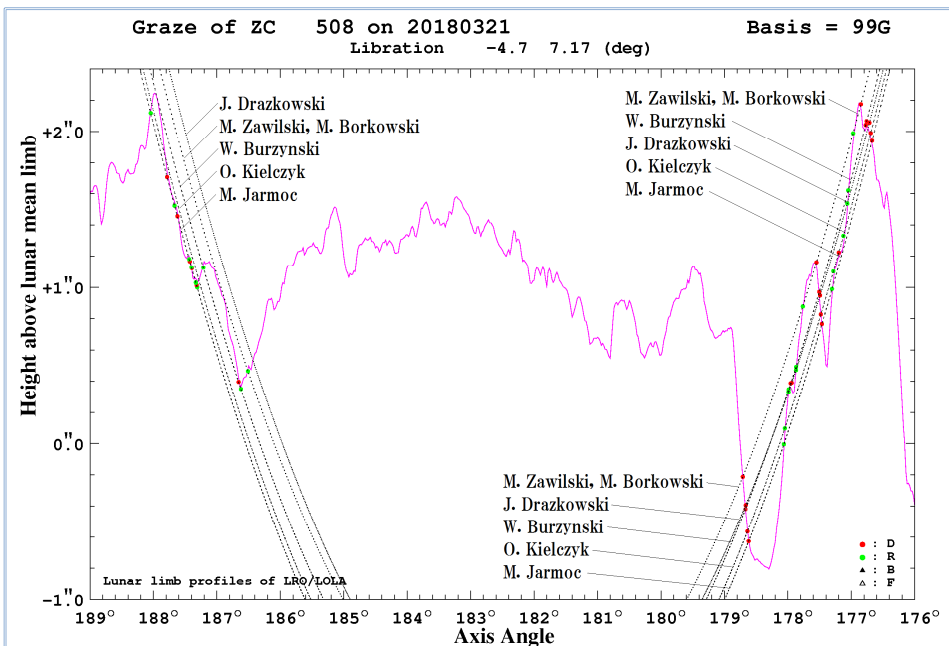


Fig.5. The best lunar grazing occultation result recorded in Poland in 2018 - the ZC 508 occultation were observed from 2 sites.

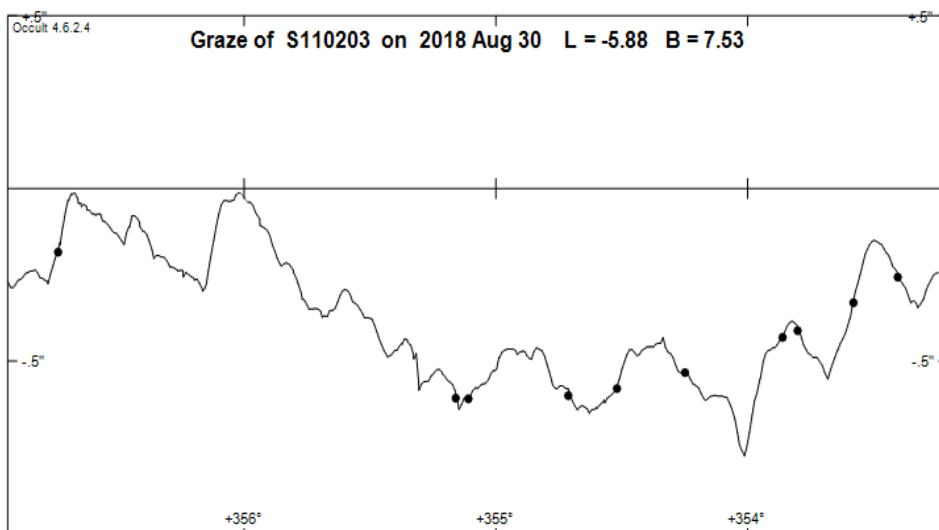


Fig.6. Grazing occultation result of SAO 110203 star (9.1 mag) obtained by Wojciech Burzyński on Aug 30, 2018.

3. Asteroidal and planetary occultations

In 2018 Polish observers were recorded 12 asteroidal occultations in total - 4 positives and 8 negatives. As in the previous year, **Dariusz Miller** of Warsaw was the most active observer of asteroidal occultations.

	Date	Star	Asteroid / Planet	Result Duration	Observer
1	2018-02-23	HIP 22583	(129) Antigone	POSITIVE 12.1 s	Wojciech Burzyński
2	2018-05-08	TYC 5618-00689-1	(252) Clementina	NEGATIVE	Dariusz Miller
3a	2018-05-20	TYC 6168-00860-1	(P5M06) Himalia	POSITIVE 7.04 s	Anna Marciniak
3b	2018-05-20	TYC 6168-00860-1	(P5M06) Himalia	POSITIVE 7.36 s	Eberhard Bredner
3c	2018-05-20	TYC 6168-00860-1	(P5M06) Himalia	POSITIVE 7.51 s	Marek Zawilski
3d	2018-05-20	TYC 6168-00860-1	(P5M06) Himalia	NEGATIVE	Marcin Filipek
3e	2018-05-20	TYC 6168-00860-1	(P5M06) Himalia	POSITIVE 7.36 s	Adam Nowak
4a	2018-07-26	TYC 1769-01181-1	(476) Hedwig	POSITIVE1 5.51 s	Maciej Jarmoc
4b	2018-07-26	TYC 1769-01181-1	(476) Hedwig	POSITIVE2 5.45 s	Maciej Jarmoc
5	2018-08-18	TYC 1770-00737-1	(1049) Gotho	NEGATIVE	Marek Zawilski
6	2018-08-30	TYC 2404-00358-1	(524) Fidelio	NEGATIVE	Dariusz Miller
7	2018-09-08	HIP 7594	(654) Zelinda	NEGATIVE	Dariusz Miller
8	2018-09-19	4UC 378-171137	(2258) Viipuri	POSITIVE 0.70 s	Wojciech Burzyński
9	2018-10-15	TYC 3340-02139-1	(433) Eros	NEGATIVE	Wojciech Burzyński
10	2018-10-15	TYC 2426-01057-1	(-) 1998 WZ31	NEGATIVE	Dariusz Miller
11	2018-11-07	TYC 2852-01417-1	(-) 2011 WG157	NEGATIVE	Dariusz Miller
12	2018-12-05	4UC 600-012360	(38) Leda	NEGATIVE	Dariusz Miller

Tab.5. Asteroidal occultations results obtained in Poland in 2018.

During the same night of the Aldebaran's last seen lunar occultation in 2018, **Wojciech Burzyński** has observed the asteroidal occultation of (129) Antigone with a positive result. Due to some technical problems with electronic recording equipment he made it visually.

Despite this, the visual result fits perfectly with the rest of European observations made with CCD cameras - please see the yellow chord no 8:

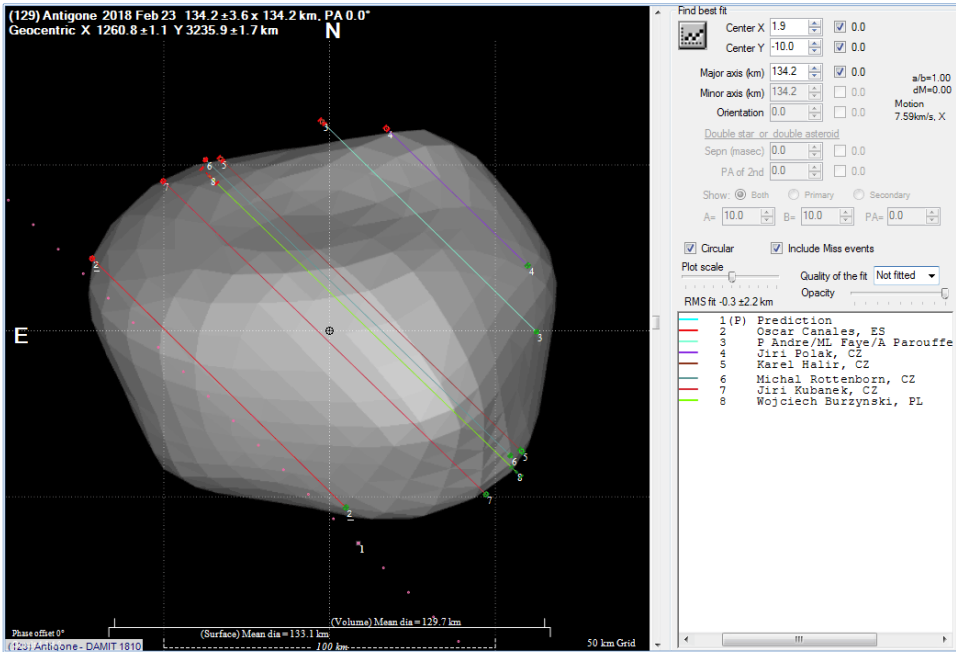


Fig.7. Every chord means the single 'positive' observation. The DAMIT shape model of (126) Antigone has been added.

(476) Hedwig occults TYC 1769-01181-1: new double star detection

The occultation of TYC 1769-01181-1, 11.9 mag star, by the (476) Hedwig is the first case of discovery of the double star by the Polish observer, **Maciej Jarmoc**, by using an occultation-method.

At the same time, observers from Slovak Republic (Peter Delincak - only one component occulted) and Czechia (Jiri Kubanek - both components occulted) made co-discoveries about the fact that the star was new close double with the components separation of 0.040".

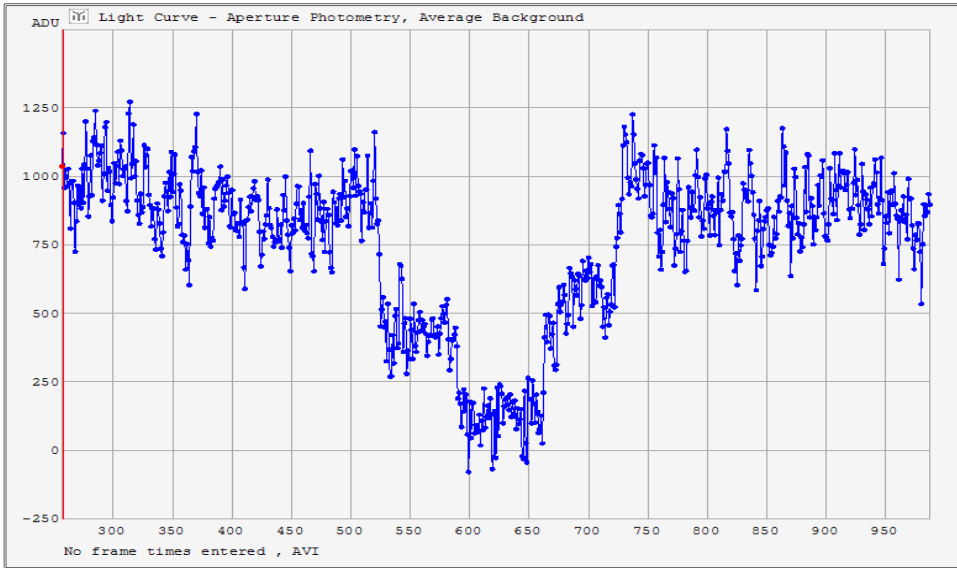


Fig.8. The lightcurve recorded by Maciej Jarmoc during (476) Hedwig asteroidal occultation on Jul 26, 2018. The stepped LC means double star occultation by the asteroid.

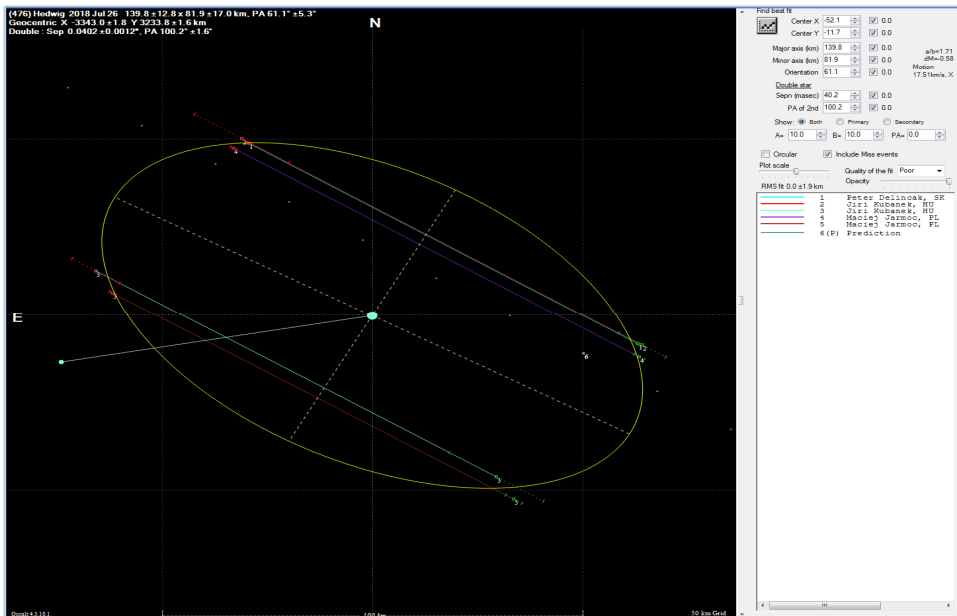


Fig.9. The double star solution made from (476) Hedwig asteroidal occultation on Jul, 26th 2018.

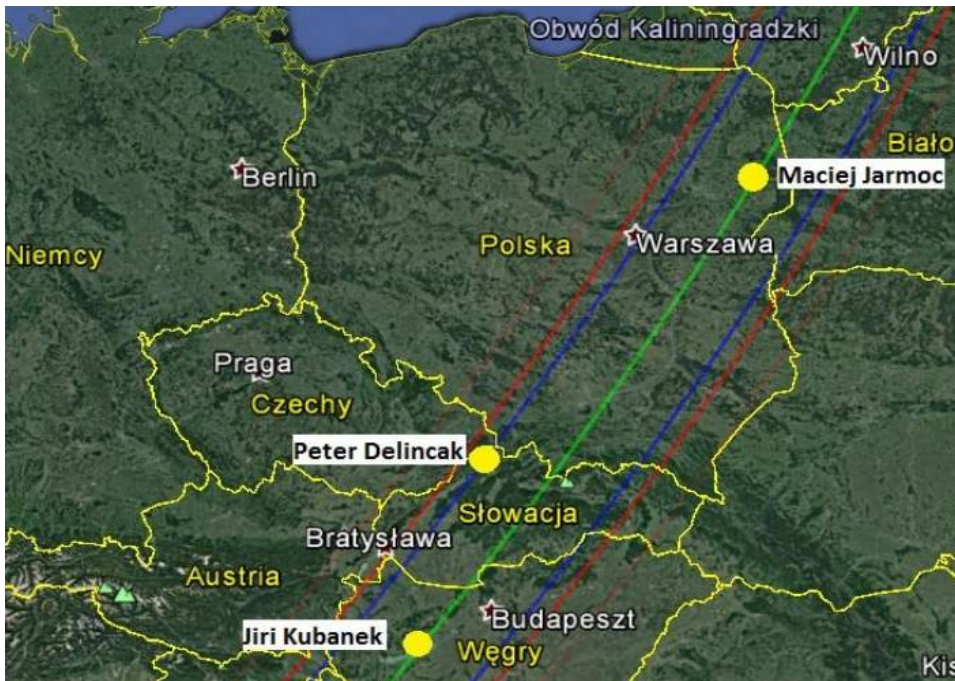


Fig. 10. The occultation path of (476) Hedwig asteroidal occultation on Jul, 26th 2018 with 'positive' observation sites marked.

(P5M06) Himalia occultation on May 20, 2018.

A quite rare event was observed on May 20 - the occultation of 10.3 mag. star, TYC 6168-00860-1 (or UCAC4 371-069226) by one of the irregular Jovian moon - Himalia. The occurrence of this type of phenomena is unusual because stars occulted by planet's moons usually are very faint. This time the star was bright enough so that the observations could be performed using the amateur equipment. The occultation of TYC 6168-00860-1 star by the Himalia was also exceptional because the visibility path passed through almost entire territory of Poland. This has even prompted the German experienced occultations observer, **dr. Eberhard Bredner**, to travel 800 km one way to observe such a rare phenomenon. Unfortunately, the results obtained are insufficient to draw accurate shape of the Himalia - among others, this was caused by an inaccurate timekeeping of one of the observers.



Fig.11. The occultation path of (P5M06) Himalia planetary occultation on May, 20th 2018 passed through central Europe.

2018/05/20 P5M06 Himalia TYC 6168-00860-1											
chords											
P+	prediction	22:18:03	22:18:03				E 18 59 10	N 53 00 00	0	WS	;
0-	Alex Pratt	22:18:04	22:20:04	M279	VID	UK	W 01 36 28.0	N 53 50 15.4	114	WS	;
0-	Jan-Maarten Winkel	22:15:35	22:21:35	M310	VID	NL	E 06 15 36.9	N 51 54 13.6	66	WS	;
0-	Henk Bulder	22:15:00	22:17:30	M305	VIS	NL	E 06 17 35.5	N 52 40 15.9	4	WS	;
0-	Stephan Boettcher	22:13:30	22:20:00	M300	VIS	DE	E 09 52 08.1	N 54 16 23.4	68	WS	;
0-	Helmut Denzau	22:12:00	22:22:00	M356	VID	DE	E 10 33 06	N 54 20 34	40	WS	;
0-	Konrad Guhl	22:15:00	22:22:00	M180	VID	DE	E 13 11 24	N 53 15 57	74	WS	;
0-	Michal Rottenborn	22:16:18	22:20:18	M303	VID	CZ	E 13 19 55.8	N 49 42 26.4	326	WS	;
0-	Christian Weber	22:15:24	22:20:19	L102	CCD	DE	E 13 25 41.6	N 52 30 58.5	40	WS	;
0-	Dieter Ewald	22:13:01	22:21:30	L127	VIS	DE	E 13 42 05.4	N 52 46 40.0	63	WS	;
0-	Peter Enskonatus	22:17:00	22:20:00	M200	CCD	DE	E 13 43 04	N 52 25 42	38	WS	;
0-	Tomas Janik	22:15:56	22:20:17	M254	VID	CZ	E 14 00 09.3	N 50 44 00.5	460	WS	;
0-	Vaclav Priban	22:11:16	22:21:03	M300	VID	CZ	E 14 28 35.8	N 50 08 27.0	325	WS	;
0-	Jan Manek	22:16:14	22:20:14	M205	CCD	CZ	E 14 46 51.7	N 49 54 33.2	530	WS	;
0-	Gerhard Dangl	22:16:37	22:20:20	M254	VID	AT	E 15 14 08.5	N 48 47 13.0	539	WS	;
0+	A. Marciniak et al	22:17:50	22:18:39	M150	VID	PL	E 16 56 40.0	N 52 26 57.8	85	WS	;
7.04	22:18:04.02	0.16	22:18:11.06	0.16	GPS++						
Observation with B. Marciniak/P. Krzenciessa.;											
0-	Petr Zelny	22:15:50	22:20:20	M252	VID	CZ	E 17 58 24.5	N 49 27 47.9	338	WS	;
0+	Eberhard Bredner	22:10:00	22:20:00	M200	VID	PL	E 18 13 37.3	N 52 11 10.1	100	WS	;
7.36	22:17:59.29	0.08	22:18:06.65	0.08	GPS++						
0-	Peter Delincak	22:17:51	22:18:26	M400	CCD	SK	E 18 42 09.5	N 49 24 15.2	680	WS	;
0+	Marek Zawilski	22:16:00	22:20:00	M203	CCD	PL	E 19 03 22.4	N 51 54 48.3	140	WS	;
7.51	22:17:56.18		22:18:03.69	0.07	NTP						
0-	Marcin Filipek	22:11:00	22:21:00	M250	VIS	PL	E 19 44 58.6	N 50 12 46.1	430	WS	;
0+	Adam Nowak	22:16:54	22:19:05	M200	CCD	PL	E 20 36 23.9	N 50 47 05.3	258	WS	;
7.36	22:17:49.44	0.1	22:17:56.80	0.1	NTP						
Unreliable time source.;											

Tab.6. The total result of (P5M06) Himalia planetary occultation on May, 20th 2018. All 'positives' are from Poland.

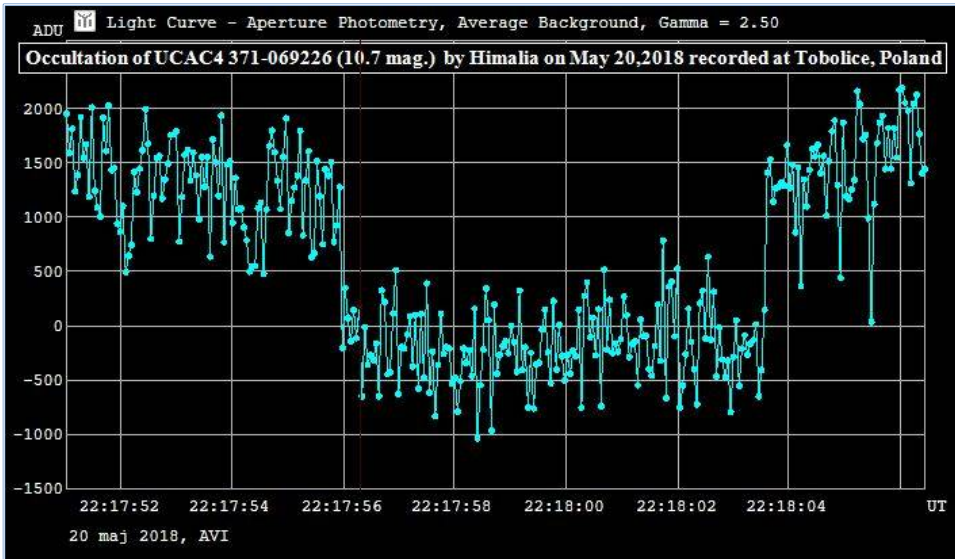


Fig.12. The lightcurve for the whole phenomenon obtained at Tobolice naer Łódź by **Marek Zawilski**

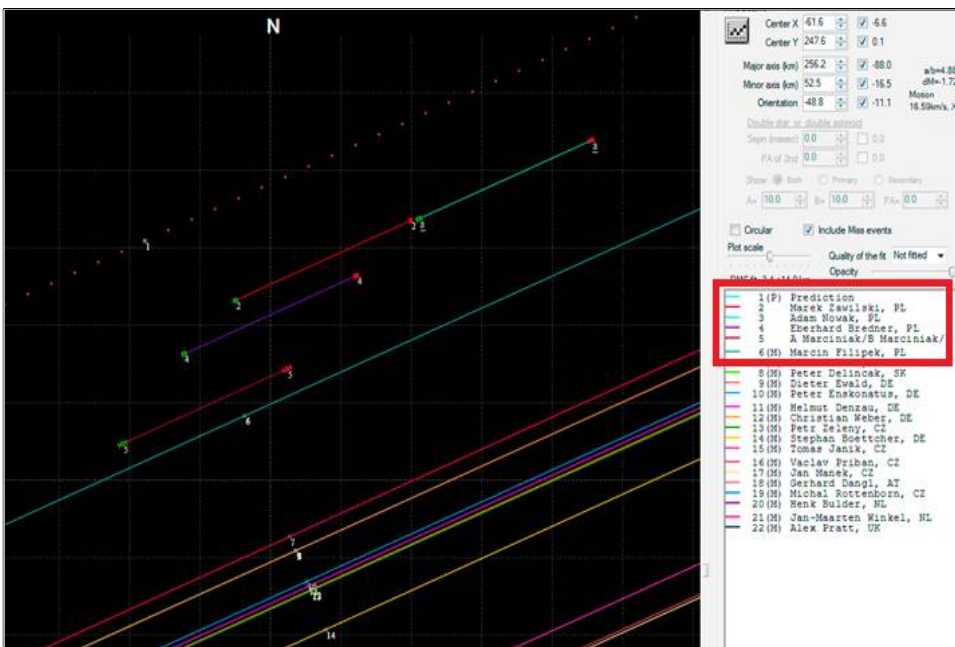


Fig.13. The total result of (P5M06) Himalia planetary occultation on May, 20th 2018. Unfortunately, the results obtained are insufficient to draw accurate shape of the Himalia's body

(2258) Viipuri occultation: possible asteroid's satellite detection

In the case of the occultation of 4UC 378-171137 star by the asteroid (2258) Viipuri we are dealing with a possibility of re-discovery its small satellite, with a diameter of 3-5 km. The event of a similar type, associated with (2258) Viipuri, was observed in the USA in 2013. It is not entirely possible to treat observation made by **Wojciech Burzyński** and **Maciej Jarmoc** as a confirmation of the existence of the asteroid's moon. It is equally likely that asteroid (2258) Viipuri has occulted a close double star with companions separation of 0.088 ". The investigation of this event's nature is in progress.

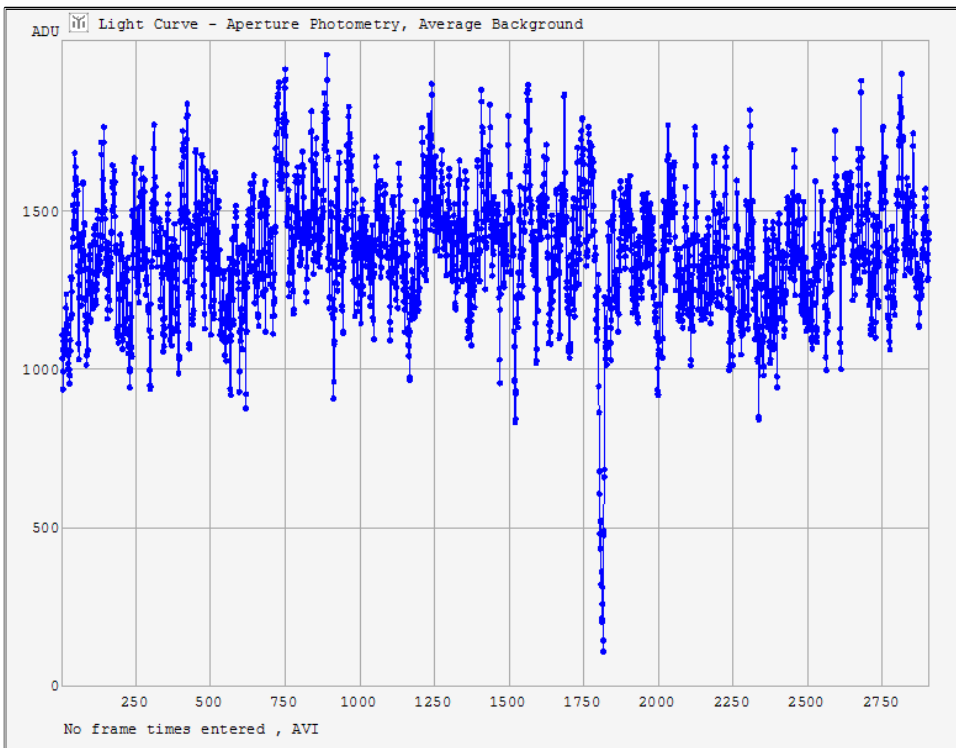


Fig.14. The LC recorded during (2258) Viipuri asteroidal occultation on Sep 19, 2018. Possible asteroid's satellite or a new double star detection.

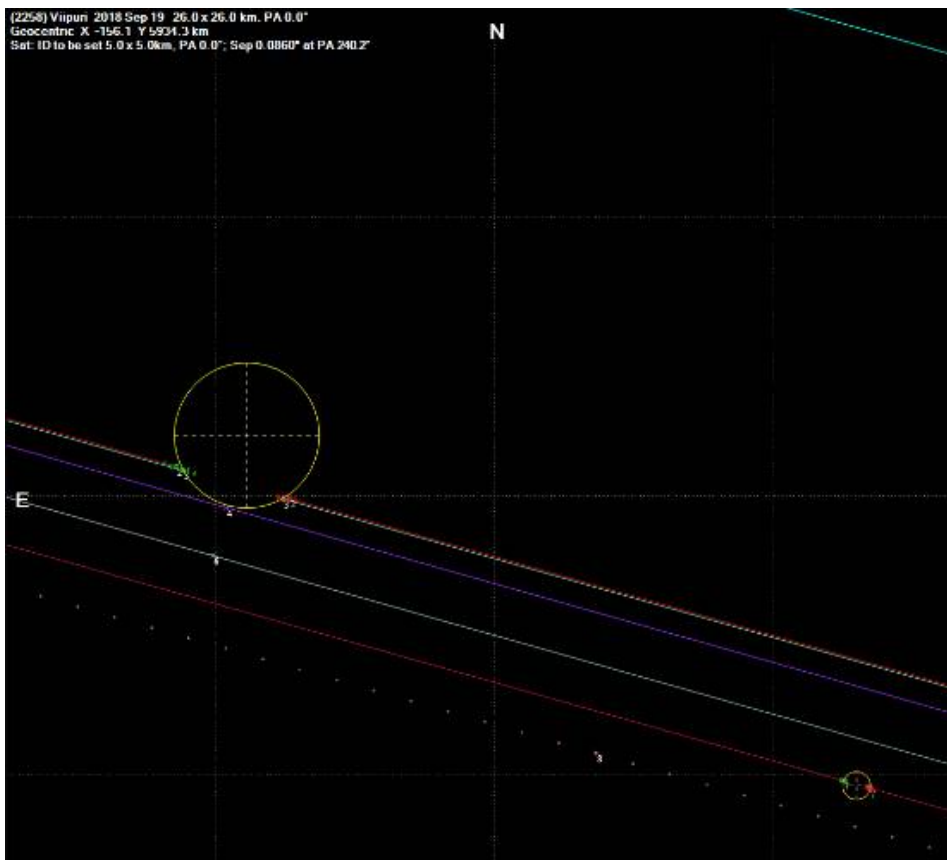


Fig.15. The total result of (2258) Viipuri asteroidal occultation. The red chord with no 7 was observed by Wojciech Burzyński and Maciej Jarmoc.

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