

ESOP 2018

*Konrad Guhl*

Observation of Total Lunar Occultation  
during lunar eclipses 1986, 2015 and  
2018

Already during the total lunar eclipse 17. October 1986 observation of shadow contacts and total eclipses are done:

NP                      UT

3429 19<sup>11</sup>                      4x                      19<sup>78</sup> 4x  
                                          19<sup>20</sup> 3x                      19<sup>25</sup>

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17/18 43 57/U 1/2 E00352 93 10.9 KO    OE 179    24 107 27U    92 128 112    4.9 0.4

19<sup>33</sup>

3430	Glenba	41 <sup>m</sup> 16.66	Einl	E00 362	} seen 0.25
				18 <sup>h</sup> 44 01.83	
3431	00387	19 <sup>25</sup> 05.66		19 <sup>h</sup> 24 <sup>m</sup> 50.83	
3432	00390	26 <sup>m</sup> 21.85		19 <sup>h</sup> 26 07.02	


3433 Unidentifiziert    28<sup>m</sup> 00.37    19<sup>h</sup> 27 45.54

↑ unidentifiziert  
 Uhen auslauf    16.10.86    6<sup>oo</sup> UT    13.95  
                                          19 10.86    11<sup>oo</sup>    14.95  
                                          = 4<sup>oo</sup> in 78<sup>h</sup> 15  
                                          → 17.10.86    20<sup>h</sup> ≤ 04.048<sup>5</sup>  
                                          → 14<sup>h</sup> 43

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17/19 24 51/D 1/2 E00387 95 8.9 KO    OE 179    30 116 72U    40 74 61    4.9 0.3

17/19 26 06/D 1/2 E00390 95 9.0 PS    OE 179    30 116 71U    45 79 66    4.9 0.3



B 3420

Shahantithe:                      MEZ

Objekt	Recht. asc.	Declinat.	Recht. asc.	Declinat.	PAR
Billy	18 <sup>h</sup> 33 <sup>m</sup> 25	33.25	18 <sup>h</sup> 34.7	-1.45	
Brinkhaus	18 <sup>h</sup> 42 <sup>m</sup> 55 <sup>s</sup>	42.9	44.2	-1.3	
Kaplanhaus	18 <sup>h</sup> 49 <sup>m</sup> 35 <sup>s</sup>	48.6	51.2	-1.6	
Tyda	18 <sup>h</sup> 51 <sup>m</sup> 05 <sup>s</sup>	51.1	52.0	-0.9	
Kap. einleit.	18 <sup>h</sup> 57 <sup>m</sup> 00	57.0	58.1	-1.1	
" Caplace	19 <sup>h</sup> 02 <sup>m</sup> 25 <sup>s</sup>	02.4	03.9	-1.5	
Plato	19 <sup>h</sup> 11 <sup>m</sup> 25 <sup>s</sup>	11.4	12.4	-1.0	

Mag. Nr.	Zeit	
3	18 <sup>28</sup>	
	18 <sup>35</sup>	
6	18 <sup>44</sup>	X
8	18 <sup>30</sup>	
10	18 <sup>48</sup>	
12	"	
14	"	
16	"	
18	"	
19	"	
35	18 <sup>55</sup>	X
1638	"	X
3840	"	
4842	19 <sup>09</sup>	
44	"	X
46	"	
50	19 <sup>11</sup>	X
52	"	
54	"	

Lunar eclipse Sept 28 2015 – what's to do?

Lunar eclipse Sept 28 2015 – what's to do?

With „occult“ for the night September 2015  
68 events calculated.

→ „..let's try“

Occultation prediction for Comthurey

E. Longitude 13 11 24.6, Latitude 53 15 57.8, Alt. 60m; Telescope dia 20cm; dMag 0.0

day	Time	P	Star	Sp	Mag	Mag	%	Elon	Sun	Moon	CA	PA	VA	AA	Libration	A	B	RV	Cct	durn	R.A. (J2000)	Dec	Mdist	SV									
y	m	d	h	m	s	No	D	v	r	V	ill	Alt	Alt	Az	o	o	o	o	L	B	m/o	m/o	"/s	o	sec	h	m	s	o	m	s	Mm	m/s
15	Sep	28	1	24	58	r	X187334	11.8	77E	178	28	224	-87S	214	189	239	-0.5	+0.9	+0.7	+0.6	.432	-146.6	0	11	16.5	0	7	40	353.8	896.1			
15	Sep	28	1	27	29	R	X	176	K0	10.8	10.3	73E	178	28	225	-77S	204	179	229	-0.5	+0.9	+0.5	+1.0	.374	-136.2	0	11	32.1	0	6	41	353.9	897.7
15	Sep	28	1	31	19	R	X	182	A0	9.6	9.5v	66E	178	28	226	-76S	203	177	228	-0.5	+0.9	+0.5	+1.0	.368	-135.0	0	11	40.7	0	7	19	353.9	900.3
X 182 = HD 728, 9.7, range 0.00, 6CR, Type DSCT, Period 0.066994 days																																	
15	Sep	28	1	37	41	m	X	54727	11.7	11.3	53E	178	28	228	94U	338	312	3	-0.5	+0.9	+9.9	+9.9	.000	90.0	0	11	53.6	0	39	54	353.9	904.1	
15	Sep	28	1	39	25	r	X	54742	11.7	11.2	50E	178	27	228	-67S	193	166	218	-0.5	+0.9	+0.4	+1.7	.298	-124.7	0	12	7.8	0	8	2	354.0	905.9	
15	Sep	28	1	42	41	D	X	218	G5	10.2	9.8	43E	178	27	229	69U	79	53	104	-0.5	+0.9	+0.9	-0.9	.514	-11.5	0	13	35.2	0	28	16	354.0	906.9
15	Sep	28	1	47	3	r	X	187335	12.4		34E	178	26	230	-42N	262	234	286	-0.5	+0.9	+0.9	-0.9	.512	166.5	0	11	30.8	0	23	33	354.1	911.8	
15	Sep	28	1	47	8	d	X	187369	11.8		34E	178	27	230	62U	74	47	99	-0.5	+0.9	+0.9	-0.7	.523	-5.8	0	13	42.5	0	30	47	354.0	910.1	
15	Sep	28	1	49	20	r	X	187340	12.0		30E	178	26	231	-70N	234	206	259	-0.5	+0.9	+0.7	-0.2	.512	-166.0	0	11	47.3	0	16	34	354.1	913.5	
15	Sep	28	1	52	7	r	X	54730	11.6	11.2	25E	178	26	231	-76N	227	199	252	-0.5	+0.9	+0.7	+0.0	.494	-158.8	0	11	58.1	0	15	31	354.1	915.6	
15	Sep	28	1	52	28	r	X	187341	12.2		24E	178	26	231	-59N	244	216	269	-0.5	+0.9	+0.8	-0.5	.528	-175.7	0	11	47.8	0	19	40	354.1	916.0	
15	Sep	28	1	52	49	m	X	187351	12.3		23E	178	26	232	74U	338	310	3	-0.5	+0.9	+9.9	+9.9	.000	90.0	0	12	19.2	0	45	46	354.1	915.3	
15	Sep	28	1	55	0	R	X	190	F	10.7	10.5	19E	178	25	232	-83N	220	191	245	-0.5	+0.9	+0.6	+0.2	.466	-151.4	0	12	10.2	0	14	38	354.2	917.8
15	Sep	28	1	55	34	r	X	187347	12.5		18E	178	25	232	-74N	229	200	254	-0.5	+0.9	+0.7	-0.1	.500	-160.5	0	12	3.7	0	16	35	354.2	918.3	
15	Sep	28	1	56	37	d	X	54846	11.6	11.0	17E	178	25	232	74U	106	78	131	-0.5	+0.9	+1.0	-1.8	.421	-37.5	0	14	1.4	0	23	23	354.1	917.5	
15	Sep	28	1	57	11	m	X	187365	11.6		16E	178	25	232	-36S	158	130	183	-0.5	+0.9	+9.9	+9.9	.000	-90.0	0	13	24.1	0	11	26	354.2	918.6	
15	Sep	28	1	57	53	R	X	191	F	10.4	9.9	15E	178	25	233	-76N	227	198	251	-0.5	+0.9	+0.7	+0.0	.494	-158.3	0	12	9.9	0	16	35	354.2	920.0
15	Sep	28	1	59	54	d	X	187368	12.0		11E	179	25	233	40U	34	5	59	-0.5	+0.9	+0.6	+0.5	.437	34.7	0	13	40.3	0	42	37	354.2	919.9	
15	Sep	28	2	12	58	M	X	54843	11.0	10.7	0E	179	23	236	95U	159	129	183	-0.5	+0.9	+9.9	+9.9	.000	-90.0	0	13	56.9	0	13	37	354.4	931.2	
15	Sep	28	2	13	55	M	X	54781	11.1	10.7	0E	179	24	236	46U	339	309	4	-0.5	+0.9	+9.9	+9.9	.000	90.0	0	13	1.9	0	50	1	354.3	932.0	
15	Sep	28	2	14	32	r	X	187355	11.8		0E	179	23	236	95U	237	207	262	-0.5	+0.9	+0.7	-0.4	.529	-168.8	0	12	35.6	0	22	25	354.4	933.5	
15	Sep	28	2	19	19	D	X	54867	11.1	10.8	0E	179	23	237	71U	117	87	142	-0.5	+0.9	+1.0	-2.5	.356	-48.8	0	14	41.9	0	24	39	354.4	935.9	
15	Sep	28	2	21	40	d	X	187383	12.0		0E	179	23	238	51U	82	52	107	-0.5	+0.9	+0.8	-1.1	.526	-13.8	0	14	53.6	0	35	6	354.4	937.5	
15	Sep	28	2	22	36	d	X	187381	12.4		0E	179	23	238	24U	38	7	63	-0.5	+0.9	+0.5	+0.2	.466	30.8	0	14	30.2	0	46	22	354.4	938.4	
15	Sep	28	2	24	34	D	X	54878	11.2	11.0	0E	179	22	238	46U	74	43	99	-0.5	+0.9	+0.7	-0.9	.541	-5.0	0	14	57.5	0	38	11	354.5	940.0	
15	Sep	28	2	27	19	M	109073	K2	9.6	9.1	0E	179	22	239	29U	339	308	4	-0.5	+0.9	+9.9	+9.9	.000	90.0	0	13	32.4	0	50	49	354.5	943.4	
15	Sep	28	2	31	24	m	X	187367	12.1		0E	179	21	240	23U	339	308	4	-0.5	+0.9	+9.9	+9.9	.000	90.0	0	13	38.6	0	53	12	354.5	947.0	
15	Sep	28	2	33	11	d	X	54879	11.6	11.4	0E	179	21	240	32U	46	14	71	-0.5	+1.0	+0.5	-0.1	.503	23.4	0	14	58.7	0	46	58	354.6	947.6	
15	Sep	28	2	34	18	d	X	187379	11.6		0E	179	21	241	11U	2	330	27	-0.5	+1.0	+0.1	+2.9	.214	67.0	0	14	15.2	0	52	15	354.6	949.1	
15	Sep	28	2	35	29	D	109080	G0	9.2	9.0	0E	179	21	241	15U	348	316	13	-0.5	+1.0	-0.8	+9.1	.086	81.0	0	14	1.3	0	52	7	354.6	950.4	
15	Sep	28	2	43	42	R	X	218	G5	10.2	9.8	0E	179	19	243	67U	238	205	263	-0.5	+1.0	+0.5	-0.5	.543	-168.5	0	13	35.2	0	28	16	354.8	959.1
15	Sep	28	2	44	48	R	109080	G0	9.2	9.0	0E	179	20	243	14U	330	298	355	-0.5	+1.0	+9.9	+9.9	.087	99.0	0	14	1.3	0	52	7	354.7	959.3	
15	Sep	28	2	45	56	r	X	54846	11.6	11.0	0E	179	19	243	74U	212	179	237	-0.5	+1.0	+0.4	+0.4	.441	-142.5	0	14	1.4	0	23	23	354.8	961.0	
15	Sep	28	2	48	44	r	X	187369	11.8		0E	179	19	244	60U	244	211	269	-0.5	+1.0	+0.6	-0.7	.554	-174.2	0	13	42.5	0	30	47	354.8	963.8	

Till 2h50 33 occultation

Occultation prediction for Comthurey

E. Longitude 13 11 24.6, Latitude 53 15 57.8, Alt. 60m; Telescope dia 20cm; dMag 0.0

day	Time	P	Star	Sp	Mag	Mag	%	Elon	Sun	Moon	CA	PA	VA	AA	Libration	A	B	RV	Cct	durn	R.A. (J2000)	Dec	Mdist	SV									
y	m	d	h	m	s	No	D	v	r	V	ill	Alt	Alt	Az	o	o	o	L	B	m/o	m/o	"/s	o	sec	h	m	s	o	m	s	Mm	m/s	
15	Sep	28	2	50	10	r	X187368		12.0		0E	179	19	245	37U	284	251	309	-0.5	+1.0	+0.7	-1.9	.459	145.3	0	13	40.3	0	42	37	354.8	964.9	
15	Sep	28	2	57	38	r	X187379		11.6		0E	179	18	246	12U	317	283	342	-0.5	+1.0	+1.0	-4.5	.219	113.0	0	14	15.2	0	52	15	354.9	971.5	
15	Sep	28	2	59	35	D	X 54935		11.5	11.1	0E	179	18	246	62U	58	25	83	-0.5	+1.0	+0.5	-0.5	.551	11.4	0	16	2.8	0	49	15	354.9	971.7	
15	Sep	28	2	59	38	R	X 54867		11.1	10.8	0E	179	17	246	73U	201	167	226	-0.5	+1.0	+0.3	+0.9	.371	-131.2	0	14	41.9	0	24	39	355.0	973.7	
15	Sep	28	2	59	52	d	X187397		12.4		0E	179	18	246	52U	39	5	64	-0.5	+1.0	+0.4	+0.1	.481	31.1	0	15	48.1	0	53	36	354.9	972.1	
15	Sep	28	3	13	58	r	X187381		12.4		0E	179	16	250	27U	281	247	306	-0.5	+1.0	+0.6	-1.8	.490	149.2	0	14	30.2	0	46	22	355.2	987.9	
15	Sep	28	3	17	5	D	X 54970		9.9	9.7	0E	179	16	250	89U	82	47	106	-0.5	+1.0	+0.5	-1.2	.560	-11.6	0	16	49.6	0	46	18	355.2	988.7	
15	Sep	28	3	20	7	r	X187383		12.0		0E	179	15	251	55U	236	202	261	-0.5	+1.0	+0.4	-0.5	.558	-166.3	0	14	53.6	0	35	6	355.3	994.0	
15	Sep	28	3	22	46	m	X187393		12.1		0E	179	15	251	45U	340	305	5	-0.5	+1.0	+9.9	+9.9	.000	90.0	0	15	31.8	1	1	19	355.3	995.5	
15	Sep	28	3	24	10	R	X 54878		11.2	11.0	0E	179	14	252	50U	245	210	270	-0.5	+1.0	+0.4	-0.8	.575	-175.2	0	14	57.5	0	38	11	355.3	998.2	
15	Sep	28	3	26	1	d	X187409		11.8		1E	179	14	252	84U	40	5	65	-0.5	+1.0	+0.3	+0.0	.498	30.3	0	16	45.7	0	58	28	355.3	997.8	
15	Sep	28	3	26	56	d	X 54977		11.8	11.4	2E	179	14	252	96U	67	32	92	-0.5	+1.0	+0.4	-0.8	.576	3.2	0	17	6.5	0	52	18	355.3	998.6	
15	Sep	28	3	27	33	r	X 54879		11.6	11.4	2E	179	14	252	36U	274	239	299	-0.5	+1.0	+0.5	-1.6	.531	156.6	0	14	58.7	0	46	58	355.4	1001.5	
15	Sep	28	3	28	55	d	X187418		11.9		4E	179	14	252	5S	89	54	113	-0.5	+1.0	+0.4	-1.4	.549	-18.3	0	17	16.0	0	46	34	355.3	1000.6	
15	Sep	28	3	29	36	d	X187411		12.1		5E	179	14	253	86U	35	360	60	-0.5	+1.0	+0.3	+0.2	.472	35.5	0	16	48.8	1	0	5	355.3	1001.5	
15	Sep	28	3	30	17	d	X 54992		11.9	11.5	5E	179	14	252	-7S	100	65	125	-0.5	+1.0	+0.5	-1.8	.502	-29.9	0	17	18.2	0	43	29	355.4	1002.2	
15	Sep	28	3	41	21	M	X187413		11.4		23E	179	12	255	-73N	160	125	185	-0.5	+1.0	+9.9	+9.9	.000	-90.0	0	17	1.6	0	30	41	355.6	1014.5	
15	Sep	28	3	43	10	D	109110 G5		9.0	8.6	26E	179	12	255	-57N	144	108	169	-0.5	+1.0	+0.7	-5.9	.168	-73.3	0	17	19.8	0	35	23	355.6	1016.0	
15	Sep	28	3	43	48	D	X 55018		11.2	11.1	27E	179	12	255	-10N	97	61	122	-0.5	+1.0	+0.4	-1.7	.526	-26.3	0	17	48.4	0	47	4	355.6	1016.0	
15	Sep	28	3	45	29	m	X187415		12.3		30E	179	11	256	-75N	161	125	185	-0.5	+1.0	+9.9	+9.9	.000	-90.0	0	17	10.1	0	31	57	355.6	1018.9	
15	Sep	28	3	49	18	r	X187397		12.4		38E	179	-12	11	257	55U	282	246	307	-0.5	+1.0	+0.4	-1.8	.507	148.9	0	15	48.1	0	53	36	355.7	1023.9
15	Sep	28	3	49	32	D	X 314 F5		10.5	10.3	38E	179	-12	11	256	1N	82	47	107	-0.5	+1.0	+0.3	-1.2	.578	-11.7	0	18	1.0	0	52	25	355.6	1021.8
15	Sep	28	3	52	20	D	X187426		11.3		44E	179	-11	11	257	0N	82	46	107	-0.5	+1.0	+0.3	-1.2	.581	-11.0	0	18	7.2	0	53	9	355.7	1024.8
15	Sep	28	3	55	6	D	X187424		11.4		49E	179	-11	10	258	25N	56	20	81	-0.5	+1.0	+0.3	-0.6	.574	15.0	0	18	2.6	1	0	43	355.7	1027.8
15	Sep	28	3	55	50	d	X 55034d		11.7	11.2	51E	179	-11	10	258	-41N	121	85	145	-0.5	+1.0	+0.4	-2.7	.384	-49.8	0	18	6.5	0	42	53	355.8	1028.9
X 55034 is double: AB 11.5 11.6 1.8" 351.0, dT = -3sec																																	
X 55034 is a close double. Observations are highly desired																																	
15	Sep	28	3	56	9	R	X 54935		11.5	11.1	52E	179	-11	10	258	65U	262	226	287	-0.5	+1.0	+0.3	-1.3	.584	168.6	0	16	2.8	0	49	15	355.8	1031.4
15	Sep	28	3	56	21	m	X187410		12.1		52E	179	-11	10	258	88U	341	305	6	-0.5	+1.0	+9.9	+9.9	.000	90.0	0	16	46.6	1	8	19	355.8	1030.3
15	Sep	28	3	59	30	R	109110 G5		9.0	8.6	58E	179	-10	9	258	-81S	178	141	202	-0.5	+1.0	+0.0	+4.0	.171	-106.7	0	17	19.8	0	35	23	355.8	1034.0
15	Sep	28	4	3	1	d	X187432		12.3		65E	179	-10	9	259	-9N	85	49	110	-0.5	+1.0	+0.3	-1.3	.582	-13.8	0	18	31.7	0	54	22	355.9	1036.1
15	Sep	28	4	7	18	d	X187435		12.3		73E	179	-9	9	260	-19N	92	56	117	-0.5	+1.0	+0.3	-1.5	.561	-21.2	0	18	41.8	0	53	2	355.9	1040.8
15	Sep	28	4	9	41	M	109126 G5		7.2	6.5	78E	179	-9	8	260	-89N	161	125	186	-0.5	+1.0	+9.9	+9.9	.000	-90.0	0	18	3.6	0	37	0	356.0	1044.5
15	Sep	28	4	12	50	R	X 54970		9.9	9.7	83E	179	-8	7	261	91U	240	203	265	-0.5	+1.0	+0.2	-0.7	.594	-168.5	0	16	49.6	0	46	18	356.1	1049.3
15	Sep	28	4	14	36	r	X187409		11.8		86E	179	-8	7	262	85U	282	245	306	-0.5	+1.0	+0.2	-1.8	.525	149.7	0	16	45.7	0	58	28	356.1	1051.1
15	Sep	28	4	15	19	r	X187411		12.1		87E	179	-8	7	262	87U	287	250	312	-0.5	+1.0	+0.2	-2.0	.495	144.5	0	16	48.8	1	0	5	356.1	1051.7
15	Sep	28	4	15	28	D	X 55059		10.3	9.8	87E	179	-8	8	262	9N	60	23	85	-0.5	+1.0	+0.2	-0.7	.594	11.7	0	18	51.2	1	3	47	356.0	1049.6
15	Sep	28	4	15	31	d	X187438		12.5		87E	179	-8	8	262	10N	59	22	84	-0.5	+1.0	+0.2	-0.6	.592	12.5	0	18	51.0	1	3	57	356.0	1049.6

# Ab 2h50 36 Sternbedeckungen

Prediction with „occult“ 68 occultation from 01h24 till 04h15

Totality 2h11 - 3h23

But in the partial phase we see a „dark limb“

Brightest star: 9<sup>m</sup>0

Smallest star: 12<sup>m</sup>5

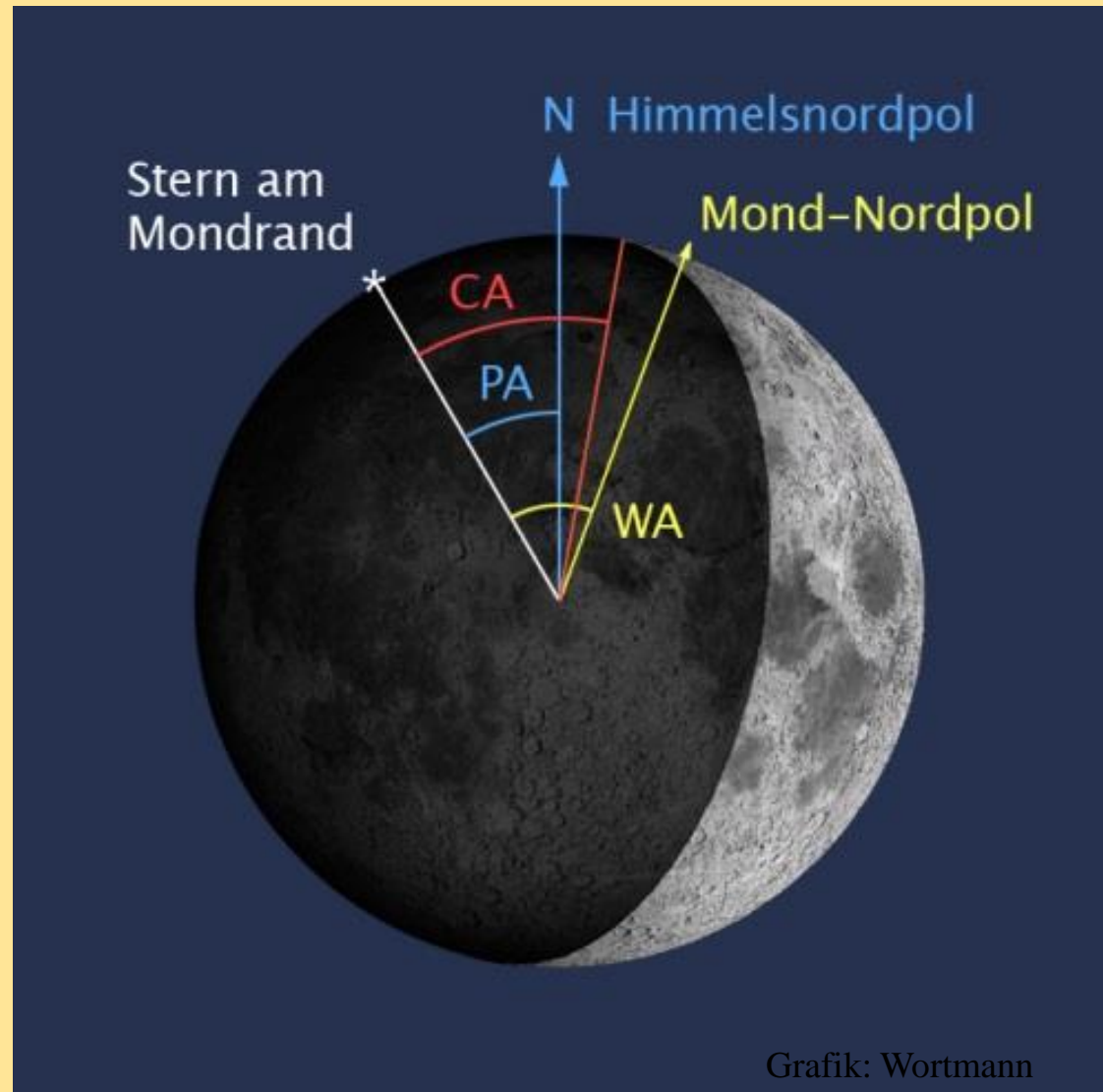
Dissapearence: 29

Reappearance 27

-----  
Sum 56 + 12 „m“ = close transit

Find the star  
for an total  
occultation  
CA helpful

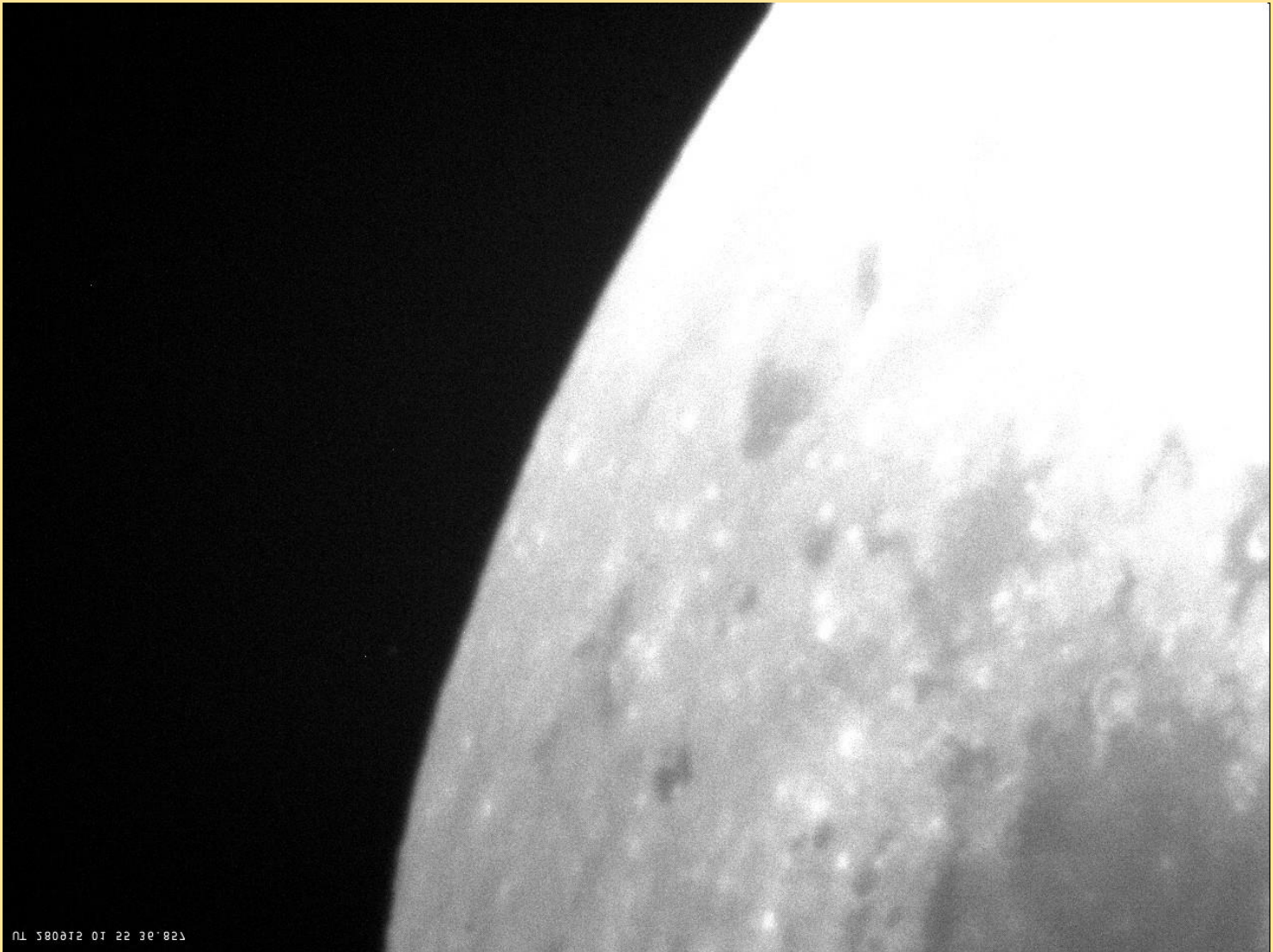
Ephemerides  
give  
-S,+S,-N+N  
But during  
totality „U“





CA Cusp Angle - the angle of the event around the limb of the moon, measured from the nearest cusp. -'ve values indicate a bright limb event. The cusps are usually N (north) or S (south), but near full moon can be E (East) or W (west).

The CA angle during a lunar eclipse is not actually an angle in the normal sense. That value is the distance from the centre of the umbra as a percentage of the umbral radius. So a value of 90U is 90% of the umbral radius from the centre of the shadow. The value is given up to a maximum of 103 . It is explained in the Help file topic for lunar occultations.



X187368 12m0 0,202 s exposition



X54867 11m1  
100ms exp.  
Disapperance: 2h19m19s

In Comthurey (E13°11'30,8" N 53°16'03.9") with an 180/1800 mm Meniscas + QHY 5 II Camera this events are observed:

B 6062: X187368 12m0 Ephemeride 01h59m54s

B 6063: X054867 11m1 Ephemeride 02h19m19s

B 6064: X054878 11m2 Ephemeride 02h24m34s

B 6065: X054879 11m6 Ephemeride 02h33m11s

B 6066: X054935 11m5 Ephemeride 02h59m35s

## Conclusion:

- the total occulted moon is bright !
- only stars above sky brightness are to see
- S/N-ratio star/sky
- only stars brighter as the (dark) moon give a light curve
- S/N-ratio star/moon

Next lunar eclipse 2018

27.07.2018:



Occultation prediction for Comthurey

E. Longitude 11 21 24.6, Latitude 53 15 57.8, Alt. 60m; Telescope dia 20cm; dMag 0.0

day	Time	P	Star	Sp	Mag	Mag	%	Elon	Sun	Moon	CA	PA	VA	AA	Libration	A	B	V	R	Ct	durn	R.A.	(J2000)	Dec	Mdist	SV
y	m	d	h	m	s	No	D	v	r	ill	Alt	Alt	Az	o	o	L	B	m	o	m	s	o	m	s	Mm	m/s
18 Jul 27	19 7 34	D	X	48369	M2	10.5	9.6	34E	179	-1	0 124	74U	37	68	52	-0.1	+0.7	+1.1	+2.6	276	49.1	20 27 17.9	-19 41 24 406.1	1831.2	X 48369 = ASAS J202718-1941.4, 10.36, range 0.18, V, Type MISC, Period 158.814194 days, Phase 17 %	
18 Jul 27	19 8 2	R	X	174375	11.4	10.9	33E	179	-1	0 124	28N	305	337	321	-0.1	+0.7	+0.4	+0.9	324	140.3	20 25 50.6	-19 44 38 406.1	829.2			
18 Jul 27	19 8 20	R	X	163560	G5	9.5	9.2	32E	179	-1	0 124	35N	312	344	328	-0.1	+0.7	+0.3	+0.7	289	133.3	20 25 55.9	-19 43 14 406.1	828.9		
18 Jul 27	19 9 10	R	X	174372	11.9	11.8	31E	179	-1	0 125	-32N	245	277	260	-0.1	+0.7	+0.8	+1.9	393	-159.2	20 25 46.6	-19 59 20 406.1	828.0			
18 Jul 27	19 16 24	R	X	238891	12.3	17E	179	-2	1 126	-3N	270	301	286	-0.2	+0.7	+0.7	+1.5	415	175.3	20 25 53.7	-19 52 50 406.0	820.5				
18 Jul 27	19 21 5	R	X	239003	12.3	10E	179	-2	2 127	102U	228	259	243	-0.2	+0.7	+1.0	+2.2	328	-142.4	20 26 18.1	-20 2 38 405.9	816.1				
18 Jul 27	19 21 31	d	X	239078	12.0	9E	179	-2	1 127	40U	117	148	133	-0.2	+0.7	+0.5	+1.1	353	-31.8	20 28 1.0	-19 59 32 406.0	817.3				
18 Jul 27	19 22 7	d	X	239085	12.0	8E	179	-2	2 127	35U	83	113	98	-0.2	+0.7	+0.8	+1.7	414	2.8	20 28 8.5	-19 50 53 405.9	816.9				
18 Jul 27	19 22 10	M	X	174483	11.4	11.1	8E	179	-2	1 127	75U	176	206	191	-0.2	+0.7	+0.9	+9.9	0.00	-90.0	20 27 11.3	-20 7 35 406.0	815.9			
18 Jul 27	19 22 42	m	X	239030	11.7	7E	179	-2	2 127	87U	355	26	11	-0.2	+0.7	+0.9	+9.9	0.00	90.0	20 27 2.1	-19 37 10 405.9	815.4				
18 Jul 27	19 24 14	r	X	239000	12.4	5E	179	-3	2 128	-22S	248	278	263	-0.2	+0.7	+0.9	+1.9	393	-162.3	20 26 12.2	-19 58 14 405.9	812.8				
18 Jul 27	19 24 43	d	X	239081	11.5	5E	179	-3	2 127	40U	125	156	141	-0.2	+0.7	+0.5	+0.9	317	-39.9	20 28 2.0	-20 1 10 405.9	814.1				
18 Jul 27	19 24 50	d	X	239050	12.5	4E	179	-3	2 128	66U	167	197	183	-0.2	+0.7	+1.5	+0.0	0.60	-81.7	20 27 25.9	-20 7 0 405.9	812.9				
18 Jul 27	19 24 56	r	X	239008	12.2	4E	179	-3	2 128	102U	308	339	324	-0.2	+0.7	+0.5	+0.8	3.02	137.0	20 26 22.4	-19 43 31 405.9	812.4				
18 Jul 27	19 25 27	d	X	239088	12.5	4E	179	-3	2 127	36U	73	103	88	-0.2	+0.7	+0.8	+1.8	404	12.2	20 28 12.2	-19 48 23 405.9	813.5				
18 Jul 27	19 25 40	r	X	238999	12.4	3E	179	-3	2 128	103U	256	286	271	-0.2	+0.7	+0.8	+1.7	406	-170.1	20 26 12.1	-19 56 17 405.9	811.3				
18 Jul 27	19 30 7	d	X	174610	11.7	11.3	0E	179	-3	3 128	28U	80	110	95	-0.2	+0.7	+0.8	+1.7	409	5.2	20 28 22.2	-19 49 58 405.8	809.0			
18 Jul 27	19 31 10	M	X	174492	11.0	11.0	0E	179	-3	3 129	81U	355	25	11	-0.2	+0.7	+0.9	+9.9	0.00	90.0	20 27 16.4	-19 57 405.8	807.1			
18 Jul 27	19 35 0	r	X	239018	12.4	0E	179	-4	3 130	86U	227	256	242	-0.2	+0.7	+1.1	+2.2	320	-141.7	20 26 43.1	-20 2 22 405.8	802.7				
18 Jul 27	19 35 15	m	X	239049	11.9	0E	179	-4	3 130	79U	355	24	10	-0.2	+0.7	+0.9	+9.9	0.00	90.0	20 27 23.2	-19 35 20 405.7	803.2				
18 Jul 27	19 35 38	r	X	239050	12.5	0E	179	-4	3 130	65U	183	213	199	-0.2	+0.7	+3.0	+7.1	059	-98.3	20 27 25.9	-20 7 0 405.8	802.8				
18 Jul 27	19 35 56	d	X	239101	12.3	0E	179	-4	3 130	25U	77	106	92	-0.2	+0.7	+0.9	+1.7	404	8.5	20 28 31.5	-19 48 53 405.8	803.6				
18 Jul 27	19 43 4	R	X	174666	10.6	9.9	0E	179	-5	4 131	78U	231	260	247	-0.2	+0.7	+1.1	+2.1	335	-146.2	20 26 53.9	-20 1 16 405.7	795.2			
18 Jul 27	19 45 10	d	X	239114	12.0	0E	179	-5	4 131	13U	88	117	104	-0.2	+0.7	+0.9	+1.5	403	-3.4	20 28 48.9	-19 51 32 405.6	795.0				
18 Jul 27	19 48 8	d	X	174633	11.5	11.0	0E	179	-5	4 132	19U	131	159	146	-0.2	+0.7	+0.6	+0.7	278	-46.2	20 28 38.7	-20 1 32 405.6	792.0			
18 Jul 27	19 49 56	D	X	163609	G3	9.2	8.8	0E	179	-6	5 132	39U	45	73	61	-0.2	+0.7	+1.1	+2.2	310	39.5	20 28 38.9	-19 41 25 405.6	790.5		
18 Jul 27	19 51 54	d	X	239123	11.9	0E	179	-6	5 133	18U	79	107	95	-0.2	+0.7	+0.9	+1.6	399	5.4	20 28 59.5	-19 49 0 405.6	788.8				
18 Jul 27	19 52 2	d	X	239115	12.1	0E	179	-6	5 133	11U	124	151	139	-0.2	+0.7	+0.7	+0.9	312	-38.9	20 28 50.3	-19 59 53 405.6	788.6				
18 Jul 27	19 52 13	d	X	239127	12.0	0E	179	-6	5 133	12U	88	116	104	-0.2	+0.7	+0.9	+1.5	400	-3.5	20 29 0.9	-19 51 15 405.6	788.6				
18 Jul 27	19 52 59	R	X	163583	M0	10.3	9.7	0E	179	-6	5 133	74U	302	330	318	-0.2	+0.7	+0.7	+0.9	317	142.5	20 27 6.7	-19 43 49 405.5	786.2		
18 Jul 27	19 53 30	d	X	239122	12.4	0E	179	-6	5 133	27U	66	94	81	-0.2	+0.7	+1.0	+1.8	379	18.7	20 28 57.8	-19 45 40 405.5	787.4				
18 Jul 27	19 53 41	r	X	239028	12.5	0E	179	-6	5 134	71U	253	281	269	-0.2	+0.7	+1.0	+1.7	391	-168.3	20 27 1.1	-19 55 40 405.5	785.4				
18 Jul 27	19 54 32	d	X	239129	12.3	0E	179	-6	5 133	9U	94	122	110	-0.2	+0.7	+0.9	+1.4	394	-9.9	20 29 4.7	-19 52 49 405.5	786.6				
18 Jul 27	19 54 53	R	X	48369	M2	10.5	9.6v	0E	179	-6	6 134	71U	314	341	329	-0.3	+0.7	+0.6	+0.6	261	130.8	20 27 17.9	-19 41 24 405.5	784.6	X 48369 = ASAS J202718-1941.4, 10.36, range 0.18, V, Type MISC, Period 158.814194 days, Phase 17 %	
18 Jul 27	19 58 9	R	X	189296	G5	9.4	9.1	0E	179	-6	6 135	69U	271	298	287	-0.3	+0.7	+0.9	+1.4	394	173.2	20 27 5.7	-19 51 7 405.5	781.5		
18 Jul 27	19 59 17	m	X	239082	11.7	0E	179	-7	6 134	60U	354	21	10	-0.3	+0.7	+0.9	+9.9	0.00	90.0	20 28 4.1	-19 36 15 405.4	781.4				
18 Jul 27	20 3 6	r	X	239042	11.8	0E	179	-7	6 136	59U	249	276	265	-0.3	+0.7	+1.1	+1.7	381	-164.7	20 27 18.2	-19 56 32 405.4	777.3				
18 Jul 27	20 3 7	D	X	48422	A2	9.9	9.5	0E	179	-7	6 135	34U	57	84	72	-0.3	+0.7	+1.1	+1.9	352	27.3	20 29 9.3	-19 43 18 405.4	779.0		
18 Jul 27	20 4 26	D	X	174681	11.0	10.7	0E	179	-7	6 135	34U	58	85	74	-0.3	+0.7	+1.1	+1.9	355	26.2	20 29 12.2	-19 43 29 405.4	777.8			
18 Jul 27	20 8 17	r	X	239048	12.3	0E	179	-7	7 137	58U	276	302	291	-0.3	+0.7	+1.0	+1.3	385	168.5	20 27 23.0	-19 49 36 405.4	773.0				
18 Jul 27	20 10 56	m	X	239150	12.1	0E	179	-8	7 137	21U	107	133	123	-0.3	+0.7	+0.9	+1.1	361	-23.2	20 29 29.6	-19 55 25 405.3	772.4				
18 Jul 27	20 12 26	R	X	174520	11.1	10.2	0E	179	-8	7 137	53U	269	294	284	-0.3	+0.7	+1.0	+1.4	390	175.4	20 27 29.7	-19 51 15 405.3	769.5			
18 Jul 27	20 14 38	r	X	239148	12.1	0E	179	-8	7 137	42U	55	81	71	-0.3	+0.7	+1.2	+1.9	342	28.9	20 29 24.1	-19 42 26 405.3	769.3				
18 Jul 27	20 15 0	d	X	239152	12.4	0E	179	-8	7 138	36U	74	99	89	-0.3	+0.7	+1.1	+1.6	384	10.3	20 29 36.8	-19 46 43 405.3	769.1				
18 Jul 27	20 17 12	d	X	239145	12.0	0E	179	-8	8 138	46U	44	70	60	-0.3	+0.7	+1.3	+2.1	301	39.4	20 29 24.1	-19 40 14 405.2	767.2				
18 Jul 27	20 18 53	d	X	239139	12.5	0E	179	-9	8 139	23U	143	168	159	-0.3	+0.7	+0.7	+0.2	1.99	-59.2	20 29 20.8	-20 2 29 405.3	765.5				
18 Jul 27	20 20 35	r	X	239081	11.5	0E	179	-9	8 139	32U	224	249	240	-0.3	+0.7	+1.3	+2.0	298	-144.2	20 28 2.0	-20 1 10 405.2	763.2				
18 Jul 27	20 20 37	r	X	174539	11.6																					

- Event close to horizon, SUMMER
- Altitude moon in totality 10 to 13° (delta moon -21°)
- Start TSE behind small cloudes close to horizon,  
So the fight give one event only....

21 18 39.8 D 163649 K0 9.4 8.8 4E 179 13 151



Let's wait for the next TLE.....