

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-08-06T12:37:52.030
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 4070428467350426752
 2Mass ID (if available) : 17504449-2226201

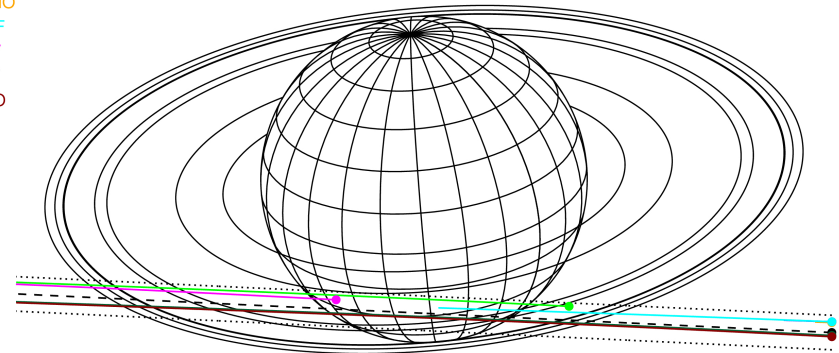
Saturn 2047-08-06T12:37:52 K7.94 G14.58 PgtRgt

ICRS Star Coord at Epoch: 17h 50m 44.48354s -22:26:20.45231s

RUWE (>1.4 is poor) : 0.93
 K magnitude : 7.939
 G magnitude : 14.583
 RP magnitude : 13.026
 BP magnitude : 18.154
 DUPflag : 0
 Distance (au) : 9.309
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.31
 Sun-Target sep (deg) : 134.51
 Sun-Moon sep (deg) : 53.65
 B (ring opening deg) : 26.78
 PA of pole (deg) : 5.33



Earth
 PAL
 PMO
 KPNO
 IRTF
 KAV
 AAT
 MSO

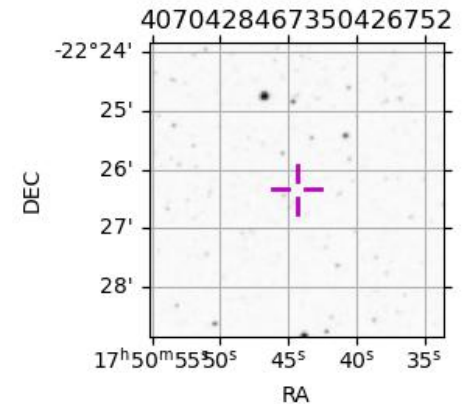


2047-08-06T12:37:52.0300 at: 17 50 44.4835 s -22 26 20.452 C/A 7.311° PA 357.29 deg v_sky -11.31 km/s D 09.31 AU
 Credit: Styled after SORA/Lucky Star

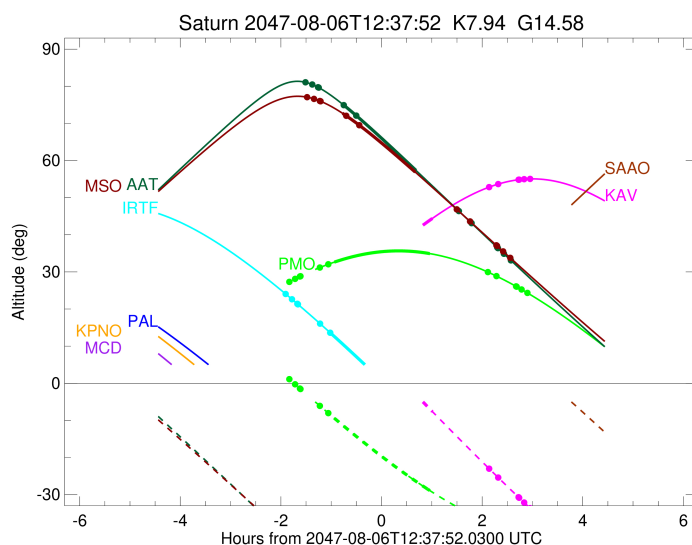
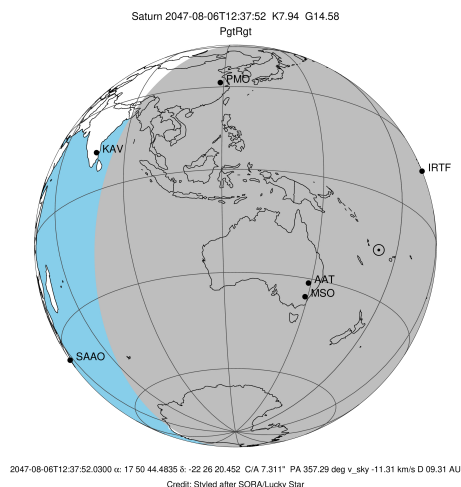
#	a(km)	ring
1	74490.6	C (IER)
2	91984.7	B (IER)
3	117571.2	B (OER)
4	122050.4	A (IER)
5	133423.3	Encke (IEG)
6	133744.9	Encke (OEG)
7	136774.4	A (OER)
8	140461.0	F ring

Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEncode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (20	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs	32.1	118.8	+	+	+	AUG 06 11:24 - AUG 06 15:32	PieRie
KPNO	Kitt Peak Natl	32.0	248.4					PnnRnn
MCD	McDonald Obs.	30.7	256.0					PnnRnn
TEN	Teide Obs./Ten	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	+		AUG 06 10:43 - AUG 06 11:35	PinRin
KAV	Kavalur Observ	12.6	78.8		+	+	AUG 06 13:38 - AUG 06 15:35	PneRne
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European South	-29.3	289.3					PnnRnn
AAT	Siding Spring	-31.3	149.1	+	+	+	AUG 06 11:07 - AUG 06 15:12	PieRie
SAAO	So. Afr. Astro	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Ob	-35.3	149.0	+	+	+	AUG 06 11:09 - AUG 06 15:11	PieRie



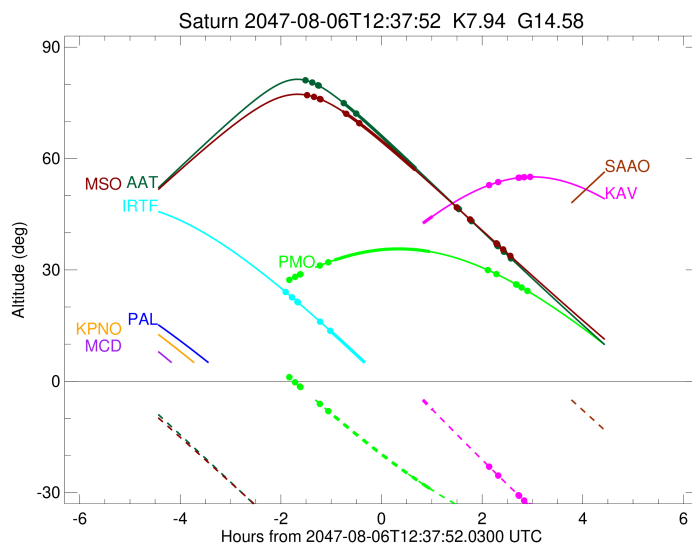
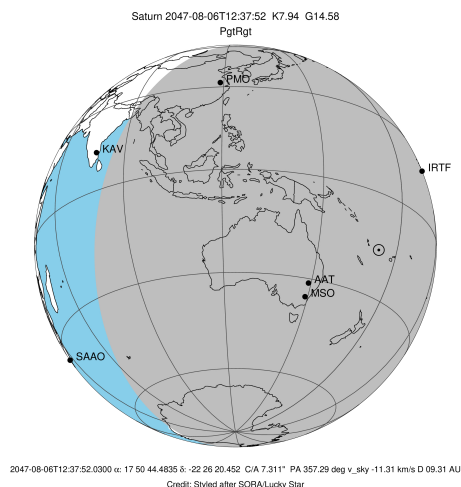
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-08-06T12:38:07.630
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 4070428467350426752
 2Mass ID (if available) : 17504449-2226201
 ICRS Star Coord at Epoch: 17h 50m 44.48354s -22:26:20.45231s
 RUWE (>1.4 is poor) : 0.93
 K magnitude : 7.939
 G magnitude : 14.583
 RP magnitude : 13.026
 BP magnitude : 18.154
 DUPflag : 0
 Distance (au) : 9.309
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.31
 Sun-Target sep (deg) : 134.51
 Sun-Moon sep (deg) : 54.12
 B (ring opening deg) : 26.78
 PA of pole (deg) : 5.33
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.541
 C/A sky separation (km) : 44164.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 Saturn_ring_plane.tf
 sat378.bsp
 sat286.bsp
 vgr1.sat286.bsp
 vgr2.sat286.bsp
 HST1081HSPephemUTC.bsp
 pfb10000r.bsp
 cassini.bsp
 earthstns_itrf93_040916.bsp
 earth_200101_990628_predict.bpc
 earth_720101_070426.bpc
 cpck28Mar2008.tpc
 pck.sat440.tpc
 IAU_SATURN_for_RINGFIT.tpc
 naif0012.tls
 earth_flat_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-08-06T10:47:57.606		27.32	1.10x	140461.00	-9.04		
A (OER)	I	2047-08-06T10:54:50.104		28.12	-0.28x	136774.40	-8.83		
Encke (OEG)	I	2047-08-06T11:00:36.721		28.77	-1.43x	133744.89	-8.65		
Encke (IEG)	I	2047-08-06T11:01:13.961		28.84	-1.55x	133423.31	-8.62		
A (IER)	I	2047-08-06T11:24:21.615		31.18	-6.10	122050.38	-7.73		
B (OER)	I	2047-08-06T11:34:19.144		32.05	-8.02	117571.16	-7.26		
Saturn	I	2047-08-06T11:41:30.825		32.63	-9.39	59471.32		-47.78	-53.23
Saturn	E	2047-08-06T13:35:27.195		34.93	-28.90	59790.89		-34.80	-40.29
B (OER)	E	2047-08-06T14:45:02.405		29.92	-37.36	117571.16	7.19		
A (IER)	E	2047-08-06T14:55:06.127		28.85	-38.25	122050.38	7.64		
Encke (IEG)	E	2047-08-06T15:18:31.675		26.08	-39.94	133423.31	8.50		
Encke (OEG)	E	2047-08-06T15:19:09.459		26.00	-39.98	133744.89	8.52		
A (OER)	E	2047-08-06T15:25:01.286		25.25	-40.31	136774.40	8.70		
F ring	E	2047-08-06T15:32:00.332		24.33	-40.65	140461.00	8.89		

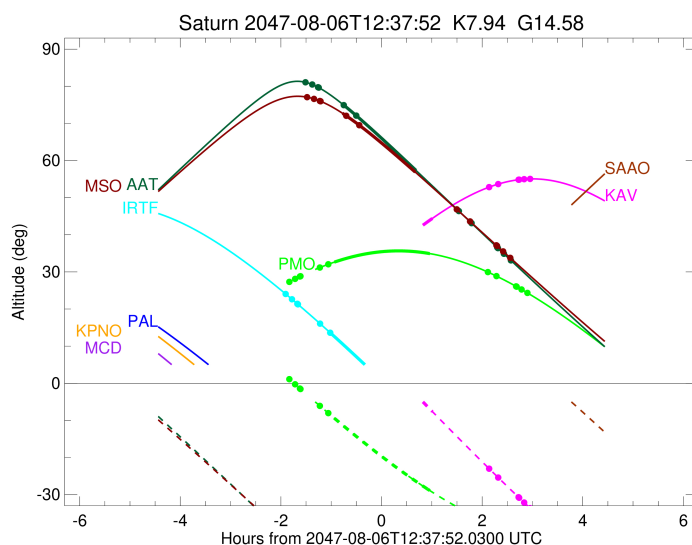
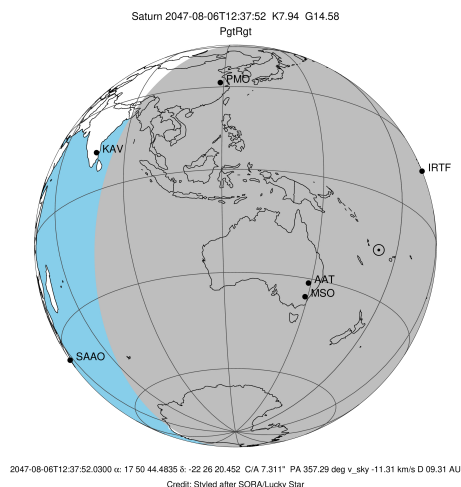
```

target                : Saturn
target radius (km)   : 60268.00
C/A epoch            : 2047-08-06T12:28:00.190
Event type           : PgtRgt
: Saturn occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code       : IRTF
Location            : Mauna Kea/IRTF
Latitude (deg)      : 19.82622
E. Longitude (deg)  : 204.52800
Altitude (km)       : 4.168
Gaia source ID      : 4070428467350426752
2Mass ID (if available) : 17504449-2226201
ICRS Star Coord at Epoch: 17h 50m 44.48354s -22:26:20.45231s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 7.939
G magnitude          : 14.583
RP magnitude         : 13.026
BP magnitude         : 18.154
DUPflag             : 0
Distance (au)       : 9.309
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -11.31
Sun-Target sep (deg) : 134.51
Sun-Moon sep (deg)  : 53.13
B (ring opening deg) : 26.78
PA of pole (deg)    : 5.33
Pole direction: RA (deg): 40.60000
Dec (deg): 83.50000
C/A sky separation (") : 6.992
C/A sky separation (km) : 47208.4
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl.spk
Saturn_ring_plane.tf
sat378.bsp
sat286.bsp
vgr1.sat286.bsp
vgr2.sat286.bsp
HST1081HSPephemUTC.bsp
pfb10000r.bsp
cassini.bsp
earthstns_itr93_040916.bsp
earth_200101_990628_predict.bpc
earth_720101_070426.bpc
cpck28Mar2008.tpc
pck.sat440.tpc
IAU_SATURN_for_RINGFIT.tpc
naif0012.tls
earth_flat_IAU.spk
    
```



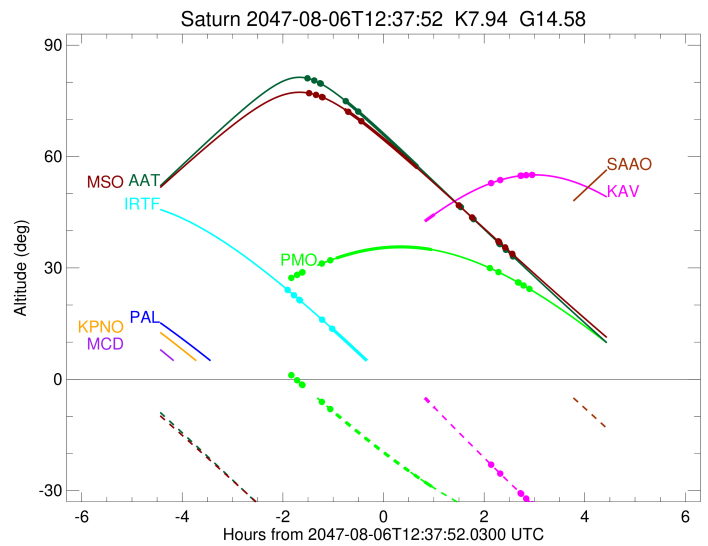
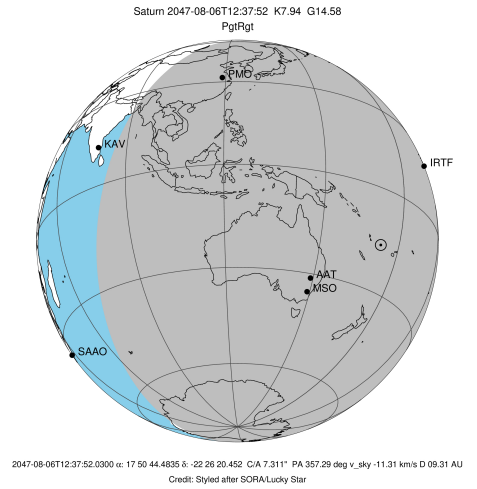
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-08-06T10:43:33.232		24.06	-53.45	140461.00	-8.27		
A (OER)	I	2047-08-06T10:51:06.242		22.63	-53.21	136774.40	-8.00		
Encke (OEG)	I	2047-08-06T10:57:30.521		21.40	-52.93	133744.89	-7.76		
Encke (IEG)	I	2047-08-06T10:58:12.024		21.27	-52.90	133423.31	-7.73		
A (IER)	I	2047-08-06T11:24:37.867		16.05	-51.07	122050.38	-6.56		
B (OER)	I	2047-08-06T11:36:34.315	b	13.64	-49.93	117571.16	-5.93		
Saturn	I	2047-08-06T11:35:32.760		13.85	-50.03	59403.89		-50.52	-55.84
Saturn	E	2047-08-06T13:21:40.286		-8.79x	-33.94	59683.36		-39.25	-44.86
B (OER)	E	2047-08-06T14:24:45.995		-22.89x	-21.40	117571.16	5.74		
A (IER)	E	2047-08-06T14:37:08.755		-25.69x	-18.81	122050.38	6.31		
Encke (IEG)	E	2047-08-06T15:04:47.045		-31.98x	-12.90	133423.31	7.35		
Encke (OEG)	E	2047-08-06T15:05:30.698		-32.15x	-12.74	133744.89	7.38		
A (OER)	E	2047-08-06T15:12:15.471		-33.69x	-11.28	136774.40	7.59		
F ring	E	2047-08-06T15:20:13.998		-35.51x	-9.54	140461.00	7.82		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-08-06T12:44:31.720
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KAV
 Location : Kavalur Observatory
 Latitude (deg) : 12.57556
 E. Longitude (deg) : 78.83167
 Altitude (km) : 0.722
 Gaia source ID : 4070428467350426752
 2Mass ID (if available) : 17504449-2226201
 ICRS Star Coord at Epoch: 17h 50m 44.48354s -22:26:20.45231s
 RUWE (>1.4 is poor) : 0.93
 K magnitude : 7.939
 G magnitude : 14.583
 RP magnitude : 13.026
 BP magnitude : 18.154
 DUPflag : 0
 Distance (au) : 9.309
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.31
 Sun-Target sep (deg) : 134.51
 Sun-Moon sep (deg) : 54.45
 B (ring opening deg) : 26.78
 PA of pole (deg) : 5.33
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.833
 C/A sky separation (km) : 46131.7
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 Saturn_ring_plane.tf
 sat378.bsp
 sat286.bsp
 vgr1.sat286.bsp
 vgr2.sat286.bsp
 HST1081HSPephemUTC.bsp
 pfb10000r.bsp
 cassini.bsp
 earthstns_itrf93_040916.bsp
 earth_200101_990628_predict.bpc
 earth_720101_070426.bpc
 cpck28Mar2008.tpc
 pck.sat440.tpc
 IAU_SATURN_for_RINGFIT.tpc
 naif0012.tls
 earth_flat_IAU.spk



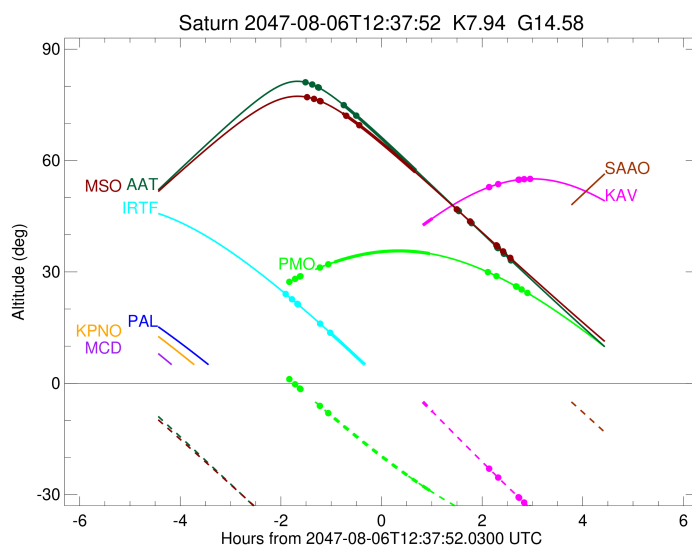
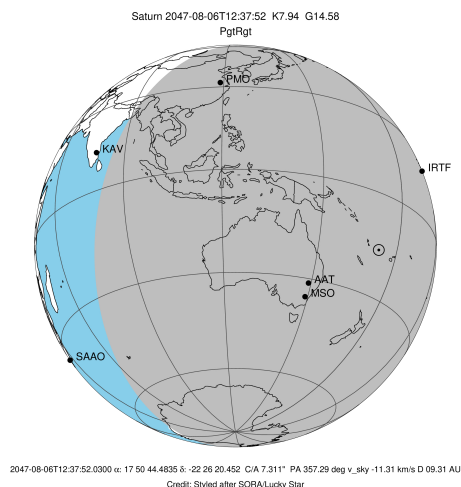
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-08-06T11:01:54.164		13.80	29.27x	140461.00	-8.63		
A (OER)	I	2047-08-06T11:09:06.893		15.36	27.55x	136774.40	-8.41		
Encke (OEG)	I	2047-08-06T11:15:11.618		16.68	26.10x	133744.89	-8.20		
Encke (IEG)	I	2047-08-06T11:15:50.873		16.82	25.94x	133423.31	-8.18		
A (IER)	I	2047-08-06T11:40:26.579		22.05	20.09x	122050.38	-7.19		
B (OER)	I	2047-08-06T11:51:13.408	b	24.31	17.53x	117571.16	-6.65		
Saturn	I	2047-08-06T11:50:54.088		24.24	17.61x	59408.67		-50.33	-55.65
Saturn	E	2047-08-06T13:38:37.984		44.42	-7.65	59743.29		-36.79	-42.35
B (OER)	E	2047-08-06T14:46:33.895		52.87	-23.08	117571.16	6.73		
A (IER)	E	2047-08-06T14:57:13.097		53.67	-25.44	122050.38	7.27		
Encke (IEG)	E	2047-08-06T15:21:29.950		54.83	-30.73	133423.31	8.29		
Encke (OEG)	E	2047-08-06T15:22:08.672		54.85	-30.87	133744.89	8.32		
A (OER)	E	2047-08-06T15:28:08.373		54.98	-32.16	136774.40	8.53		
F ring	E	2047-08-06T15:35:14.946		55.05	-33.67	140461.00	8.76		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-08-06T12:34:08.660
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 4070428467350426752
 2Mass ID (if available) : 17504449-2226201
 ICRS Star Coord at Epoch: 17h 50m 44.48354s -22:26:20.45231s
 RUWE (>1.4 is poor) : 0.93
 K magnitude : 7.939
 G magnitude : 14.583
 RP magnitude : 13.026
 BP magnitude : 18.154
 DUPflag : 0
 Distance (au) : 9.309
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.31
 Sun-Target sep (deg) : 134.51
 Sun-Moon sep (deg) : 54.16
 B (ring opening deg) : 26.78
 PA of pole (deg) : 5.33
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 7.496
 C/A sky separation (km) : 50611.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 Saturn_ring_plane.tf
 sat378.bsp
 sat286.bsp
 vgr1.sat286.bsp
 vgr2.sat286.bsp
 HST1081HSPephemUTC.bsp
 pfb10000r.bsp
 cassini.bsp
 earthstns_itr93_040916.bsp
 earth_200101_990628_predict.bpc
 earth_720101_070426.bpc
 cpck28Mar2008.tpc
 pck.sat440.tpc
 IAU_SATURN_for_RINGFIT.tpc
 naif0012.tls
 earth_flat_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-08-06T11:07:09.761		81.08	-46.20	140461.00	-7.75		
A (OER)	I	2047-08-06T11:15:15.565		80.48	-47.91	136774.40	-7.42		
Encke (OEG)	I	2047-08-06T11:22:12.161		79.74	-49.38	133744.89	-7.12		
Encke (IEG)	I	2047-08-06T11:22:57.442		79.65	-49.53	133423.31	-7.08		
A (IER)	I	2047-08-06T11:52:51.016	b	74.92	-55.74	122050.38	-5.53		
B (OER)	I	2047-08-06T12:07:32.095	b	72.14	-58.72	117571.16	-4.62		
Saturn	I	2047-08-06T11:50:10.142		75.41	-55.19	59301.30		-54.83	-59.83
Saturn	E	2047-08-06T13:19:02.045		57.33	-71.49	59574.27		-43.64	-49.23
B (OER)	E	2047-08-06T14:10:37.862		46.28	-75.49	117571.16	4.56		
A (IER)	E	2047-08-06T14:25:33.174		43.08	-75.04	122050.38	5.43		
Encke (IEG)	E	2047-08-06T14:56:08.389		36.53	-72.03	133423.31	6.89		
Encke (OEG)	E	2047-08-06T14:56:54.938		36.36	-71.92	133744.89	6.92		
A (OER)	E	2047-08-06T15:04:03.693		34.84	-70.91	136774.40	7.20		
F ring	E	2047-08-06T15:12:24.770		33.06	-69.62	140461.00	7.51		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-08-06T12:34:20.760
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MSO
 Location : Mt. Stromlo Observatory
 Latitude (deg) : -35.32000
 E. Longitude (deg) : 149.00833
 Altitude (km) : 0.770
 Gaia source ID : 4070428467350426752
 2Mass ID (if available) : 17504449-2226201
 ICRS Star Coord at Epoch: 17h 50m 44.48354s -22:26:20.45231s
 RUWE (>1.4 is poor) : 0.93
 K magnitude : 7.939
 G magnitude : 14.583
 RP magnitude : 13.026
 BP magnitude : 18.154
 DUPflag : 0
 Distance (au) : 9.309
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.31
 Sun-Target sep (deg) : 134.51
 Sun-Moon sep (deg) : 54.16
 B (ring opening deg) : 26.78
 PA of pole (deg) : 5.33
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 7.559
 C/A sky separation (km) : 51037.4
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 Saturn_ring_plane.tf
 sat378.bsp
 sat286.bsp
 vgr1.sat286.bsp
 vgr2.sat286.bsp
 HST1081HSPephemUTC.bsp
 pfb10000r.bsp
 cassini.bsp
 earthstns_itr93_040916.bsp
 earth_200101_990628_predict.bpc
 earth_720101_070426.bpc
 cpck28Mar2008.tpc
 pck.sat440.tpc
 IAU_SATURN_for_RINGFIT.tpc
 naif0012.tls
 earth_flat_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-08-06T11:09:06.109		77.07	-45.81	140461.00	-7.64		
A (OER)	I	2047-08-06T11:17:19.442		76.61	-47.45	136774.40	-7.30		
Encke (OEG)	I	2047-08-06T11:24:23.320		76.04	-48.84	133744.89	-6.99		
Encke (IEG)	I	2047-08-06T11:25:09.445		75.97	-48.99	133423.31	-6.95		
A (IER)	I	2047-08-06T11:55:49.170	b	72.06	-54.89	122050.38	-5.34		
B (OER)	I	2047-08-06T12:11:09.189	b	69.55	-57.73	117571.16	-4.38		
Saturn	I	2047-08-06T11:51:20.738		72.73	-54.05	59289.43		-55.35	-60.30
Saturn	E	2047-08-06T13:18:15.407		56.86	-68.19	59558.91		-44.26	-49.83
B (OER)	E	2047-08-06T14:08:12.557		46.73	-71.46	117571.16	4.33		
A (IER)	E	2047-08-06T14:23:46.116		43.54	-71.20	122050.38	5.25		
Encke (IEG)	E	2047-08-06T14:55:05.824		37.12	-68.88	133423.31	6.78		
Encke (OEG)	E	2047-08-06T14:55:53.172		36.96	-68.79	133744.89	6.81		
A (OER)	E	2047-08-06T15:03:08.776		35.47	-67.96	136774.40	7.10		
F ring	E	2047-08-06T15:11:36.855		33.74	-66.89	140461.00	7.41		