

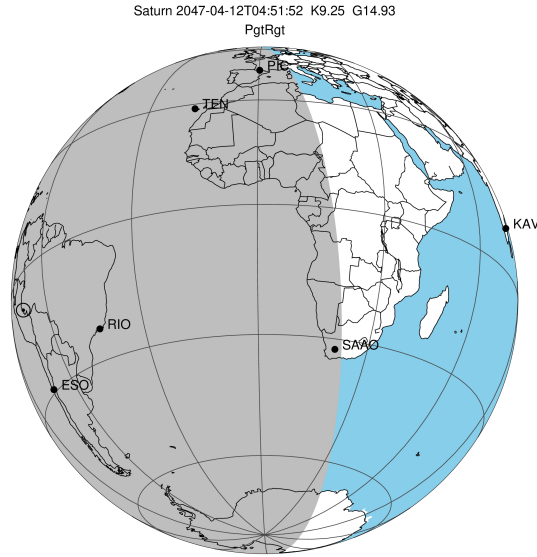
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-04-12T04:51:52.820
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 4090526857094420352
 2Mass ID (if available) : 18170357-2217255

Saturn 2047-04-12T04:51:52 K9.25 G14.93 PgtRgt

ICRS Star Coord at Epoch: 18h 17m 03.55217s -22:17:25.88742s

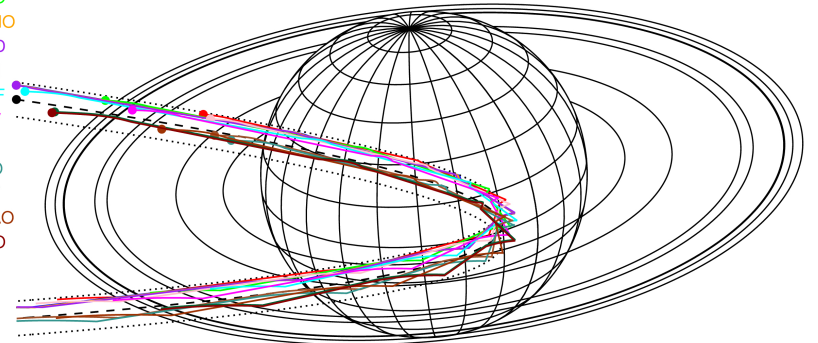
RUWE (>1.4 is poor) : 1.19
 K magnitude : 9.252
 G magnitude : 14.933
 RP magnitude : 13.543
 BP magnitude : 17.171
 DUPflag : 0
 Distance (au) : 9.697
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 0.60
 Sun-Target sep (deg) : 107.61
 Sun-Moon sep (deg) : 47.47
 B (ring opening deg) : 26.04
 PA of pole (deg) : 5.83

#	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



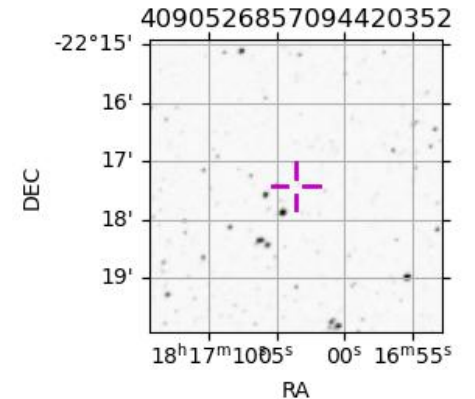
2047-04-12T04:51:52.8200 α: 18 17 03.5522 δ: -22 17 25.887 C/A 0.256° PA 342.48 deg v_sky + 0.60 km/s D 09.70 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PAL
 PMO
 KPNO
 MCD
 TEN
 IRTF
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO

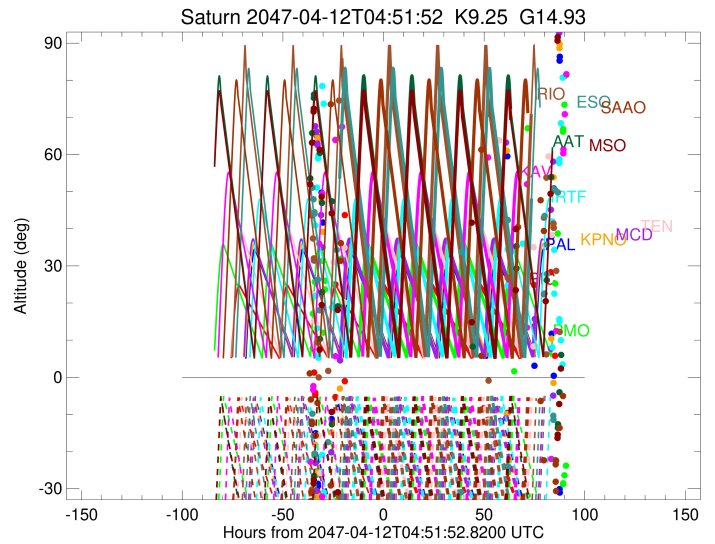
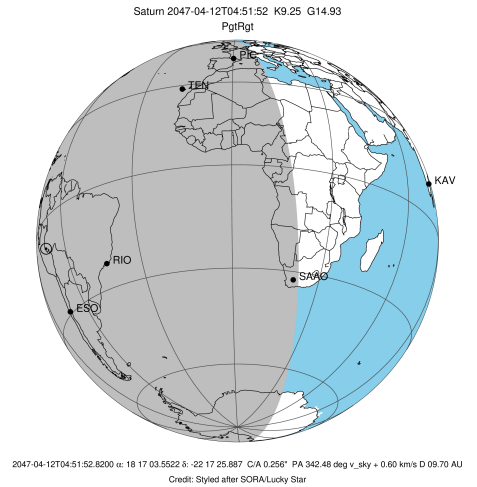


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEncode
PIC	Pic du Midi	42.9	0.1	+		+	APR 11 05:00 - APR 16 01:04	PnnRie
PAL	Palomar Mt (20	33.4	243.1		+		APR 15 08:07 - APR 15 08:07	PneRnn
PMO	Purple Mtn Obs	32.1	118.8	+		+	APR 10 17:45 - APR 15 19:28	PnnRie
KPNO	Kitt Peak Natl	32.0	248.4		+		APR 15 08:06 - APR 15 08:06	PneRnn
MCD	McDonald Obs.	30.7	256.0		+	+	APR 15 08:03 - APR 15 08:05	PneRne
TEN	Teide Obs./Ten	28.3	343.5	+			APR 11 04:02 - APR 11 04:02	PnnRin
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observ	12.6	78.8	+		+	APR 10 21:00 - APR 15 23:45	PnnRie
RIO	Rio de Janeiro	-22.9	316.8	+	+		APR 11 06:49 - APR 15 06:17	PieRin
ESO	European South	-29.3	289.3	+	+		APR 11 05:38 - APR 15 06:27	PieRin
AAT	Siding Spring	-31.3	149.1	+		+	APR 10 16:29 - APR 15 19:37	PnnRie
SAAO	So. Afr. Astro	-32.4	20.8	+		+	APR 11 02:41 - APR 15 22:05	PnnRie
MSO	Mt. Stromlo Ob	-35.3	149.0	+		+	APR 10 16:24 - APR 15 19:27	PnnRie



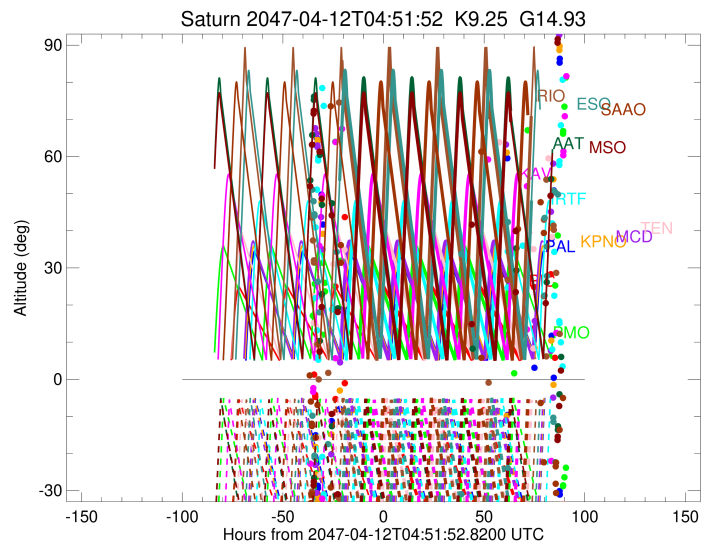
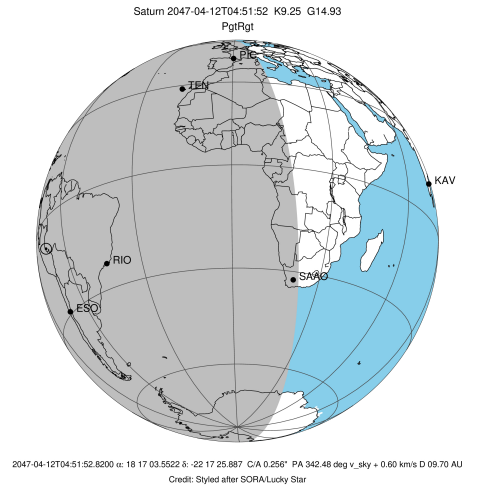
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-04-12T07:40:49.740
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 4090526857094420352
 2Mass ID (if available) : 18170357-2217255
 ICRS Star Coord at Epoch: 18h 17m 03.55217s -22:17:25.88743s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 9.252
 G magnitude : 14.933
 RP magnitude : 13.543
 BP magnitude : 17.171
 DUPflag : 0
 Distance (au) : 9.695
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 0.60
 Sun-Target sep (deg) : 107.61
 Sun-Moon sep (deg) : 47.88
 B (ring opening deg) : 26.04
 PA of pole (deg) : 5.83
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.372
 C/A sky separation (km) : 2618.0
 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



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

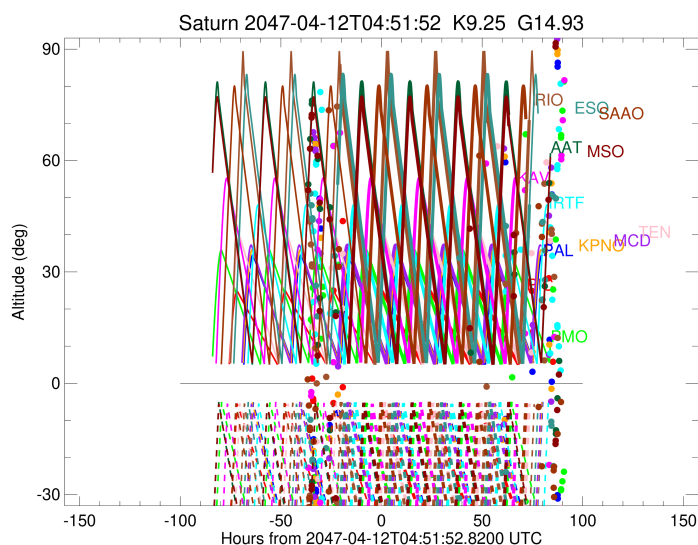
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-04-10T17:48:35.613		-67.49x	7.69x	140461.00	-1.74		
A (OER)	I	2047-04-10T18:24:28.279		-63.50x	1.16x	136774.40	-1.69		
Encke (OEG)	I	2047-04-10T18:54:51.261		-59.11x	-4.28x	133744.89	-1.64		
Encke (IEG)	I	2047-04-10T18:58:08.042		-58.60x	-4.86x	133423.31	-1.63		
A (IER)	I	2047-04-10T21:03:06.255		-36.66x	-25.05	122050.38	-1.40		
B (OER)	I	2047-04-10T21:58:46.442		-26.43x	-32.02	117571.16	-1.29		
B (IER)	I	2047-04-11T05:00:36.822		24.98	-5.15	91984.69	-0.92		
C (IER)	I	2047-04-11T09:39:34.824	b	-1.18x	43.81x	74490.58	-1.20		
Saturn	I	2047-04-11T09:35:17.586		-0.50x	43.19x	60123.04		18.90	22.76
Saturn	E	2047-04-15T06:34:25.225		20.33	13.01x	59954.01		-28.53	-33.61
C (IER)	E	2047-04-14T15:55:41.853	b	-66.79x	29.02x	74490.58	0.34		
B (IER)	E	2047-04-15T07:39:53.555		13.60	24.99x	91984.69	0.89		
B (OER)	E	2047-04-15T16:04:18.510		-67.90x	27.69x	117571.16	0.65		
A (IER)	E	2047-04-15T18:06:44.300		-63.24x	5.37x	122050.38	0.58		
Encke (IEG)	E	2047-04-15T22:58:37.518		-12.19x	-35.46	133423.31	0.81		
Encke (OEG)	E	2047-04-15T23:05:10.741		-11.06x	-35.82	133744.89	0.82		
A (OER)	E	2047-04-16T00:02:51.025		-1.43x	-37.23	136774.40	0.93		
F ring	E	2047-04-16T01:04:53.397		7.92	-35.13	140461.00	1.05		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-04-12T03:30:00.090
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 4090526857094420352
 2Mass ID (if available) : 18170357-2217255
 ICRS Star Coord at Epoch: 18h 17m 03.55217s -22:17:25.88742s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 9.252
 G magnitude : 14.933
 RP magnitude : 13.543
 BP magnitude : 17.171
 DUPflag : 0
 Distance (au) : 9.698
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 0.60
 Sun-Target sep (deg) : 107.61
 Sun-Moon sep (deg) : 46.58
 B (ring opening deg) : 26.04
 PA of pole (deg) : 5.83
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.131
 C/A sky separation (km) : 919.0
 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



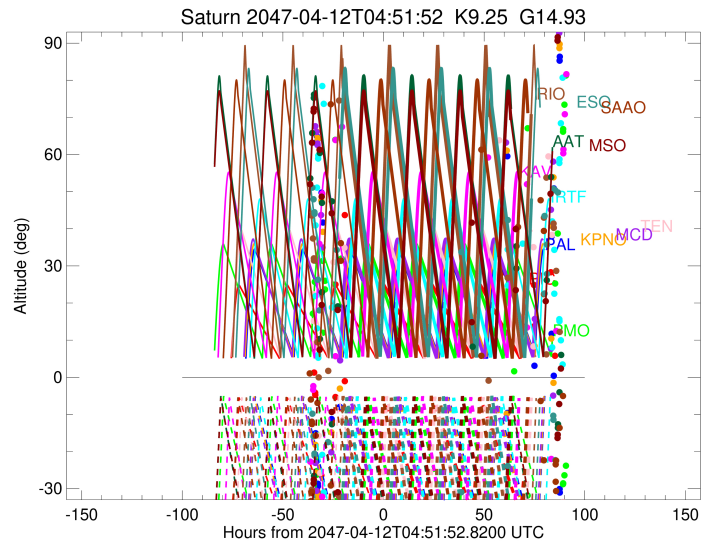
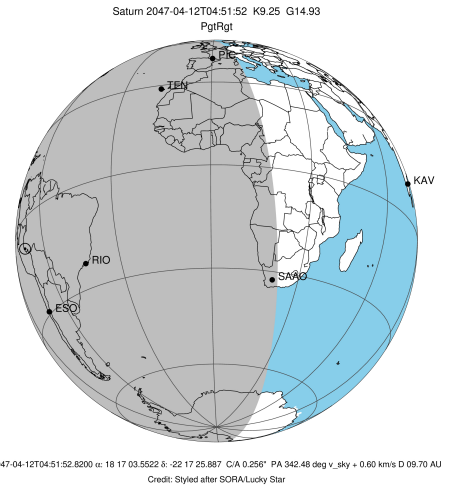
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-04-10T19:07:37.255	-15.19x	63.22x	140461.00	-1.64			
A (OER)	I	2047-04-10T19:44:33.035	-22.68x	64.95x	136774.40	-1.68			
Encke (OEG)	I	2047-04-10T20:14:17.046	-28.80x	64.28x	133744.89	-1.71			
Encke (IEG)	I	2047-04-10T20:17:24.757	-29.45x	64.10x	133423.31	-1.71			
A (IER)	I	2047-04-10T22:05:50.913	-52.13x	49.65x	122050.38	-1.77			
B (OER)	I	2047-04-10T22:48:03.912	-60.85x	41.68x	117571.16	-1.77			
B (IER)	I	2047-04-11T03:06:18.752	-58.13x	-11.38	91984.69	-1.46			
C (IER)	I	2047-04-11T07:10:52.748	b	-7.77x	-47.55	74490.58	-0.93		
Saturn	I	2047-04-11T06:54:12.163	-11.05x	-46.54	60115.98			19.38	23.32
Saturn	E	2047-04-15T08:07:55.448	5.89	-46.76	59904.96			-30.93	-36.20
C (IER)	E	2047-04-14T18:22:22.245	b	-9.32x	59.31x	74490.58	0.65		
B (IER)	E	2047-04-15T07:54:13.579	b	3.41x	-47.01	91984.69	0.32		
B (OER)	E	2047-04-15T16:25:57.717	11.42	38.33x	117571.16	1.17			
A (IER)	E	2047-04-15T17:30:05.232	-0.03x	50.83x	122050.38	1.16			
Encke (IEG)	E	2047-04-15T20:23:59.216	-34.91x	65.30x	133423.31	1.00			
Encke (OEG)	E	2047-04-15T20:29:20.840	-36.03x	64.85x	133744.89	1.00			
A (OER)	E	2047-04-15T21:21:39.044	-47.00x	58.24x	136774.40	0.93			
F ring	E	2047-04-15T22:30:28.089	-61.27x	45.97x	140461.00	0.85			

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-04-12T06:34:08.300
 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 : 4090526857094420352
 2Mass ID (if available) : 18170357-2217255
 ICRS Star Coord at Epoch: 18h 17m 03.55217s -22:17:25.88742s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 9.252
 G magnitude : 14.933
 RP magnitude : 13.543
 BP magnitude : 17.171
 DUPflag : 0
 Distance (au) : 9.696
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 0.60
 Sun-Target sep (deg) : 107.61
 Sun-Moon sep (deg) : 47.60
 B (ring opening deg) : 26.04
 PA of pole (deg) : 5.83
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.198
 C/A sky separation (km) : 1389.1
 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	2047-04-10T17:45:57.032		17.27	-43.40	140461.00	-1.07		
A (OER)	I	2047-04-10T18:44:49.535		25.81	-34.86	136774.40	-1.02		
Encke (OEG)	I	2047-04-10T19:34:43.051		31.36	-26.11	133744.89	-1.00		
Encke (IEG)	I	2047-04-10T19:40:03.152		31.84	-25.12	133423.31	-1.00		
A (IER)	I	2047-04-10T22:42:54.855		31.28	12.16x	122050.38	-1.11		
B (OER)	I	2047-04-10T23:48:05.591		23.66	25.98x	117571.16	-1.19		
B (IER)	I	2047-04-11T04:53:30.509		-33.50x	63.91x	91984.69	-1.57		
C (IER)	I	2047-04-11T07:55:53.889		-71.59x	31.83x	74490.58	-1.58		
Saturn	I	2047-04-11T08:24:52.123		-76.65x	25.75x	60156.16		16.52	19.99
Saturn	E	2047-04-15T05:02:55.493		-38.83x	64.07x	59889.11		-31.68	-36.99
C (IER)	E	2047-04-14T21:46:44.317	b	34.31	1.29x	74490.58	0.48		
B (IER)	E	2047-04-15T04:30:40.758	b	-32.00x	67.04x	91984.69	0.74		
B (OER)	E	2047-04-15T18:12:53.056		24.19	-38.14	117571.16	0.90		
A (IER)	E	2047-04-15T19:28:48.402		32.54	-25.74	122050.38	1.07		
Encke (IEG)	E	2047-04-15T22:05:51.547		32.76	5.53x	133423.31	1.32		
Encke (OEG)	E	2047-04-15T22:09:55.036		32.44	6.38x	133744.89	1.32		
A (OER)	E	2047-04-15T22:47:37.334		28.79	14.36x	136774.40	1.35		
F ring	E	2047-04-15T23:32:37.288		23.08	23.91x	140461.00	1.37		

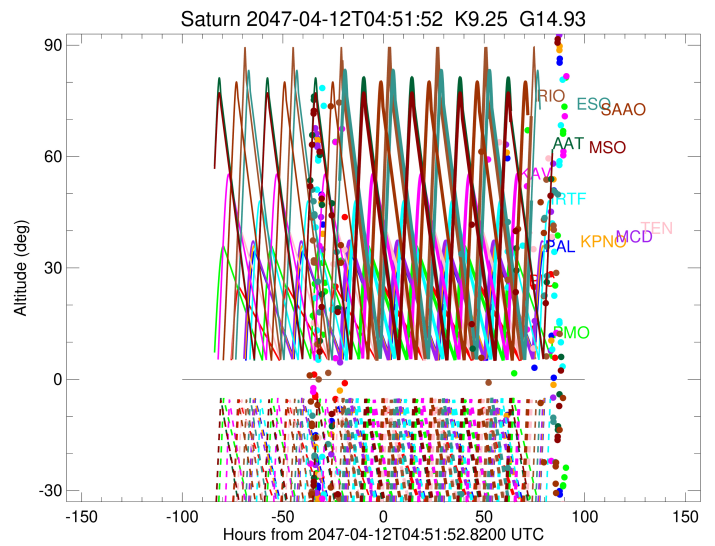
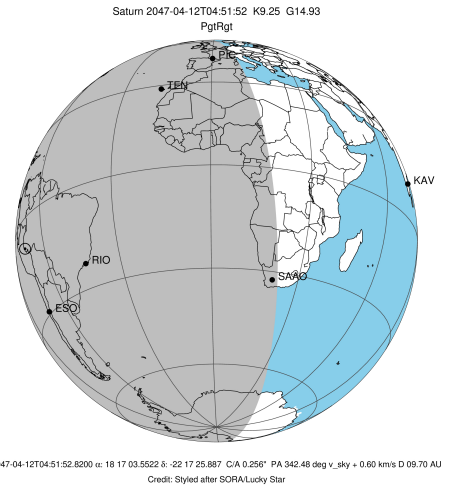
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-04-12T03:22:00.600
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 4090526857094420352
 2Mass ID (if available) : 18170357-2217255
 ICRS Star Coord at Epoch: 18h 17m 03.55217s -22:17:25.88742s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 9.252
 G magnitude : 14.933
 RP magnitude : 13.543
 BP magnitude : 17.171
 DUPflag : 0
 Distance (au) : 9.698
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 0.60
 Sun-Target sep (deg) : 107.61
 Sun-Moon sep (deg) : 46.60
 B (ring opening deg) : 26.04
 PA of pole (deg) : 5.83
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.134
 C/A sky separation (km) : 940.8
 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



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-04-10T19:03:59.428	-18.33x	65.72x	140461.00	-1.67			
A (OER)	I	2047-04-10T19:40:17.364	-25.85x	66.17x	136774.40	-1.71			
Encke (OEG)	I	2047-04-10T20:09:34.171	-32.00x	64.42x	133744.89	-1.74			
Encke (IEG)	I	2047-04-10T20:12:39.192	-32.66x	64.14x	133423.31	-1.74			
A (IER)	I	2047-04-10T21:59:52.851	-55.44x	47.48x	122050.38	-1.78			
B (OER)	I	2047-04-10T22:41:48.826	-64.22x	39.17x	117571.16	-1.78			
B (IER)	I	2047-04-11T03:01:01.082	-55.05x	-14.97	91984.69	-1.44			
C (IER)	I	2047-04-11T07:12:31.866	b	-2.82x	-49.73	74490.58	-0.90		
Saturn	I	2047-04-11T06:53:41.936	-6.51x	-49.09	60114.88			19.44	23.39
Saturn	E	2047-04-15T08:06:35.841	10.13	-47.33	59906.41			-30.86	-36.13
C (IER)	E	2047-04-14T18:04:54.247	b	-9.53x	60.83x	74490.58	0.65		
B (IER)	E	2047-04-15T07:58:32.688	b	8.70	-47.72	91984.69	0.35		
B (OER)	E	2047-04-15T16:17:15.416	10.10	41.21x	117571.16	1.16			
A (IER)	E	2047-04-15T17:21:47.024	-1.84x	53.85x	122050.38	1.15			
Encke (IEG)	E	2047-04-15T20:18:34.463	-38.07x	65.04x	133423.31	0.98			
Encke (OEG)	E	2047-04-15T20:24:04.292	-39.24x	64.40x	133744.89	0.97			
A (OER)	E	2047-04-15T21:17:52.189	-50.70x	56.21x	136774.40	0.91			
F ring	E	2047-04-15T22:29:04.127	-65.64x	42.53x	140461.00	0.82			

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-04-12T03:11:32.400
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 4090526857094420352
 2Mass ID (if available) : 18170357-2217255
 ICRS Star Coord at Epoch: 18h 17m 03.55217s -22:17:25.88742s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 9.252
 G magnitude : 14.933
 RP magnitude : 13.543
 BP magnitude : 17.171
 DUPflag : 0
 Distance (au) : 9.698
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 0.60
 Sun-Target sep (deg) : 107.61
 Sun-Moon sep (deg) : 46.64
 B (ring opening deg) : 26.04
 PA of pole (deg) : 5.83
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.150
 C/A sky separation (km) : 1053.4
 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

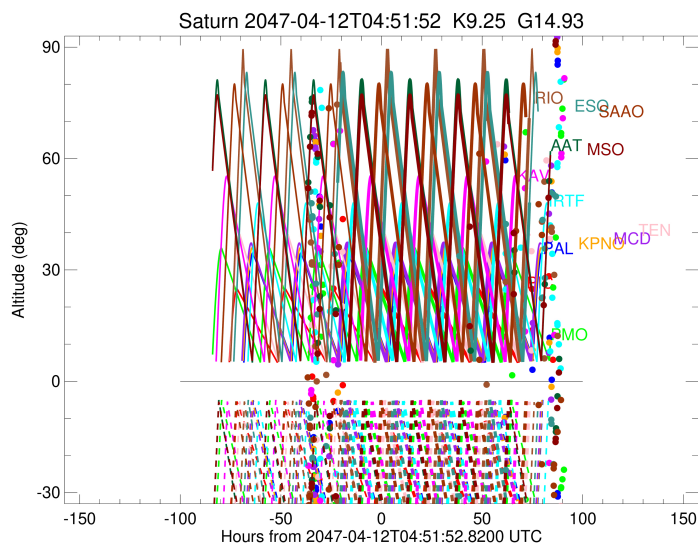


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-04-10T18:58:35.222		-23.18x	67.63x	140461.00	-1.71		
A (OER)	I	2047-04-10T19:34:05.449		-30.70x	66.03x	136774.40	-1.75		
Encke (OEG)	I	2047-04-10T20:02:48.770		-36.84x	62.89x	133744.89	-1.77		
Encke (IEG)	I	2047-04-10T20:05:50.526		-37.49x	62.49x	133423.31	-1.77		
A (IER)	I	2047-04-10T21:51:42.208		-60.30x	43.59x	122050.38	-1.80		
B (OER)	I	2047-04-10T22:33:23.230		-69.07x	34.96x	117571.16	-1.78		
B (IER)	I	2047-04-11T02:55:18.960		-49.88x	-20.34	91984.69	-1.40		
C (IER)	I	2047-04-11T07:19:01.263	b	4.78x	-50.82	74490.58	-0.84		
Saturn	I	2047-04-11T06:55:31.763		0.29x	-51.18	60113.02		19.57	23.55
Saturn	E	2047-04-15T08:03:38.889		15.61	-46.57	59909.42		-30.72	-35.97
C (IER)	E	2047-04-14T17:42:51.729	b	-10.74x	62.98x	74490.58	0.65		
B (IER)	E	2047-04-15T08:05:36.301		15.94	-46.39	91984.69	0.40		
B (OER)	E	2047-04-15T16:06:07.255		7.36	45.51x	117571.16	1.15		
A (IER)	E	2047-04-15T17:11:29.882		-5.22x	58.15x	122050.38	1.13		
Encke (IEG)	E	2047-04-15T20:13:31.229		-43.38x	62.66x	133423.31	0.94		
Encke (OEG)	E	2047-04-15T20:19:15.386		-44.62x	61.76x	133744.89	0.93		
A (OER)	E	2047-04-15T21:15:38.269		-56.78x	51.60x	136774.40	0.86		
F ring	E	2047-04-15T22:30:49.849		-72.52x	36.17x	140461.00	0.78		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-04-12T07:24:30.240
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 4090526857094420352
 2Mass ID (if available) : 18170357-2217255
 ICRS Star Coord at Epoch: 18h 17m 03.55217s -22:17:25.88743s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 9.252
 G magnitude : 14.933
 RP magnitude : 13.543
 BP magnitude : 17.171
 DUPflag : 0
 Distance (au) : 9.695
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 0.60
 Sun-Target sep (deg) : 107.61
 Sun-Moon sep (deg) : 47.82
 B (ring opening deg) : 26.04
 PA of pole (deg) : 5.83
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.411
 C/A sky separation (km) : 2887.6
 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

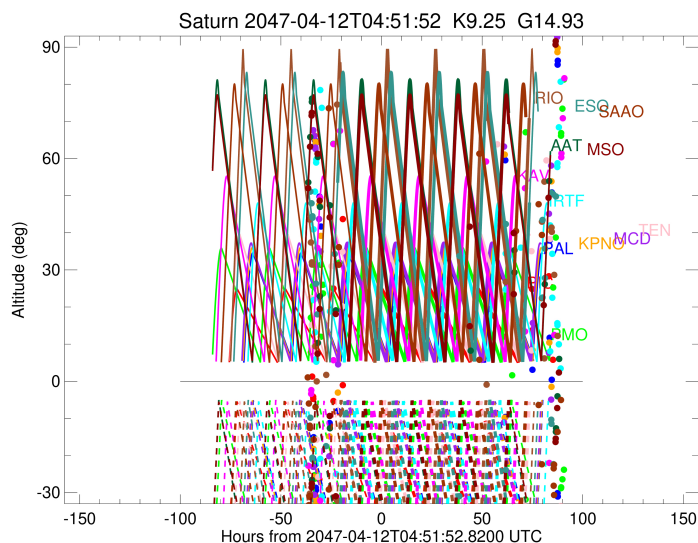


2047-04-12T04:51:52.8200 u: 18 17 03.5522 s: -22 17 25.887 C/A 0.256' PA 342.48 deg v_sky + 0.60 km/s D 09.70 AU
 Credit: Styled after SORA/Lucky Star



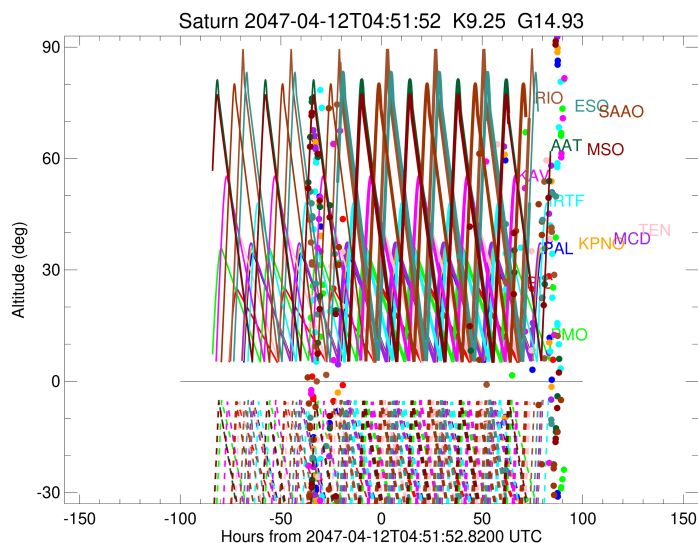
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-04-10T17:42:55.275	-81.49x	22.34x	140461.00	-1.87			
A (OER)	I	2047-04-10T18:16:06.661	-83.98x	15.03x	136774.40	-1.83			
Encke (OEG)	I	2047-04-10T18:43:56.794	-80.36x	8.91x	133744.89	-1.79			
Encke (IEG)	I	2047-04-10T18:46:56.190	-79.81x	8.25x	133423.31	-1.79			
A (IER)	I	2047-04-10T20:38:48.108	-55.91x	-15.85	122050.38	-1.59			
B (OER)	I	2047-04-10T21:27:29.123	-45.16x	-25.78	117571.16	-1.48			
B (IER)	I	2047-04-11T04:02:43.869	31.16	-34.11	91984.69	-0.82			
C (IER)	I	2047-04-11T09:28:55.795	20.02	35.10x	74490.58	-1.07			
Saturn	I	2047-04-11T09:33:25.940	19.26	36.08x	60129.71			18.44	22.23
Saturn	E	2047-04-15T06:40:42.335	38.27	-0.90x	59937.72			-29.34	-34.49
C (IER)	E	2047-04-14T14:21:45.422	b	-41.77x	64.26x	74490.58	0.56		
B (IER)	E	2047-04-15T07:23:48.227		34.97	8.48x	91984.69	0.87		
B (OER)	E	2047-04-15T14:52:47.804		-49.49x	58.97x	117571.16	0.80		
A (IER)	E	2047-04-15T16:34:26.791		-71.81x	37.90x	122050.38	0.67		
Encke (IEG)	E	2047-04-15T22:04:26.611		-32.74x	-31.91	133423.31	0.61		
Encke (OEG)	E	2047-04-15T22:13:13.298		-30.83x	-33.49	133744.89	0.62		
A (OER)	E	2047-04-15T23:28:53.625		-14.61x	-45.23	136774.40	0.73		
F ring	E	2047-04-16T00:45:47.370		1.16x	-51.53	140461.00	0.88		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-04-12T07:18:48.940
 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 : 4090526857094420352
 2Mass ID (if available) : 18170357-2217255
 ICRS Star Coord at Epoch: 18h 17m 03.55217s -22:17:25.88743s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 9.252
 G magnitude : 14.933
 RP magnitude : 13.543
 BP magnitude : 17.171
 DUPflag : 0
 Distance (au) : 9.695
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 0.60
 Sun-Target sep (deg) : 107.61
 Sun-Moon sep (deg) : 48.23
 B (ring opening deg) : 26.04
 PA of pole (deg) : 5.83
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.469
 C/A sky separation (km) : 3296.9
 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	2047-04-10T16:30:55.805	-22.60x	-50.66	140461.00	-1.43			
A (OER)	I	2047-04-10T17:15:44.031	-12.28x	-59.58	136774.40	-1.32			
Encke (OEG)	I	2047-04-10T17:55:29.909	-3.21x	-65.89	133744.89	-1.22			
Encke (IEG)	I	2047-04-10T17:59:53.697	-2.21x	-66.44	133423.31	-1.21			
A (IER)	I	2047-04-10T21:00:32.308	36.15	-50.66	122050.38	-0.93			
B (OER)	I	2047-04-10T22:23:09.034	49.47	-32.18	117571.16	-0.89			
B (IER)	I	2047-04-11T05:01:32.912	5.52	64.06x	91984.69	-1.36			
C (IER)	I	2047-04-11T08:16:26.451	-39.18x	67.31x	74490.58	-1.59			
Saturn	I	2047-04-11T09:07:52.686	-51.06x	54.81x	60179.49			14.65	17.79
Saturn	E	2047-04-15T04:35:09.218	7.90	58.12x	59890.40			-31.62	-36.93
C (IER)	E	2047-04-14T08:46:31.689	b	-48.86x	60.01x	74490.58	0.55		
B (IER)	E	2047-04-15T04:10:43.017	b	13.28	52.16x	91984.69	0.90		
B (OER)	E	2047-04-15T16:19:29.927	-20.70x	-47.58	117571.16	0.39			
A (IER)	E	2047-04-15T18:45:48.106	12.42	-67.56	122050.38	0.65			
Encke (IEG)	E	2047-04-15T22:13:12.135	50.65	-33.52	133423.31	1.17			
Encke (OEG)	E	2047-04-15T22:17:45.507	51.16	-32.48	133744.89	1.18			
A (OER)	E	2047-04-15T22:58:56.847	54.50	-22.94	136774.40	1.27			
F ring	E	2047-04-15T23:45:47.786	54.97	-11.89	140461.00	1.35			

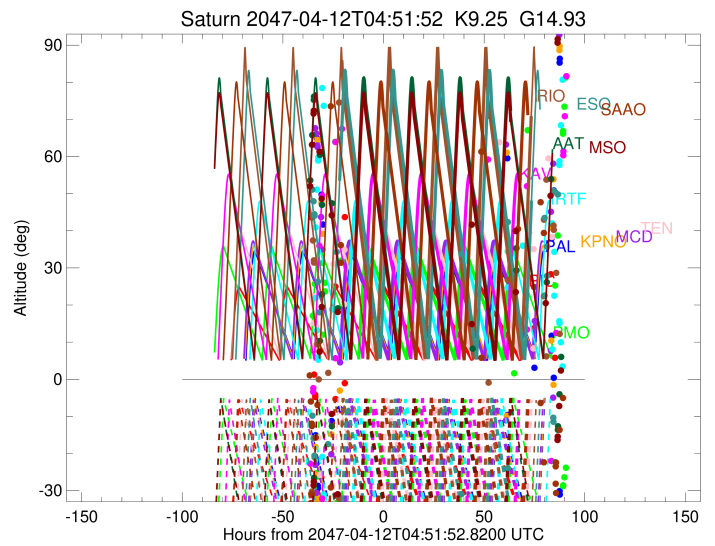
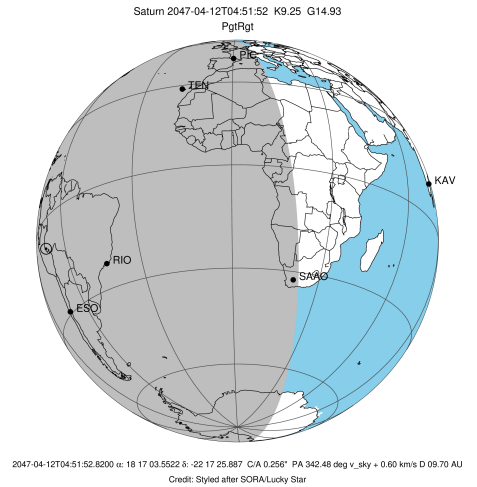
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-04-12T02:21:20.340
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 4090526857094420352
 2Mass ID (if available) : 18170357-2217255
 ICRS Star Coord at Epoch: 18h 17m 03.55217s -22:17:25.88742s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 9.252
 G magnitude : 14.933
 RP magnitude : 13.543
 BP magnitude : 17.171
 DUPflag : 0
 Distance (au) : 9.698
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 0.60
 Sun-Target sep (deg) : 107.61
 Sun-Moon sep (deg) : 47.58
 B (ring opening deg) : 26.04
 PA of pole (deg) : 5.83
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.288
 C/A sky separation (km) : 2025.8
 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



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-04-10T17:16:25.469		-30.35x	43.46x	140461.00	-1.90		
A (OER)	I	2047-04-10T17:48:39.094		-35.18x	37.29x	136774.40	-1.91		
Encke (OEG)	I	2047-04-10T18:15:08.245		-38.59x	31.92x	133744.89	-1.90		
Encke (IEG)	I	2047-04-10T18:17:57.162		-38.92x	31.34x	133423.31	-1.90		
A (IER)	I	2047-04-10T19:59:02.312		-44.97x	9.32x	122050.38	-1.83		
B (OER)	I	2047-04-10T20:40:21.401		-43.73x	-0.03x	117571.16	-1.78		
B (IER)	I	2047-04-11T01:25:14.144		1.88x	-64.22	91984.69	-1.17		
C (IER)	I	2047-04-11T06:49:23.907		74.85	-31.85	74490.58	-0.76		
Saturn	I	2047-04-11T08:11:41.269		86.06	-12.90	60167.32		15.65	18.97
Saturn	E	2047-04-15T06:17:07.980		71.03	-39.55	59821.53		-34.79	-40.28
C (IER)	E	2047-04-14T08:56:25.220	b	73.01	-2.89x	74490.59	0.20		
B (IER)	E	2047-04-14T18:33:38.596	b	-42.06x	27.07x	91984.69	0.39		
B (OER)	E	2047-04-15T12:36:43.542		21.90	43.38x	117571.16	1.03		
A (IER)	E	2047-04-15T13:49:59.592		5.87	53.93x	122050.38	1.00		
Encke (IEG)	E	2047-04-15T17:24:09.993		-34.50x	40.59x	133423.31	0.75		
Encke (OEG)	E	2047-04-15T17:31:22.196		-35.51x	39.25x	133744.89	0.74		
A (OER)	E	2047-04-15T18:44:21.521		-43.17x	24.57x	136774.40	0.65		
F ring	E	2047-04-15T20:27:49.539		-43.30x	1.81x	140461.00	0.55		

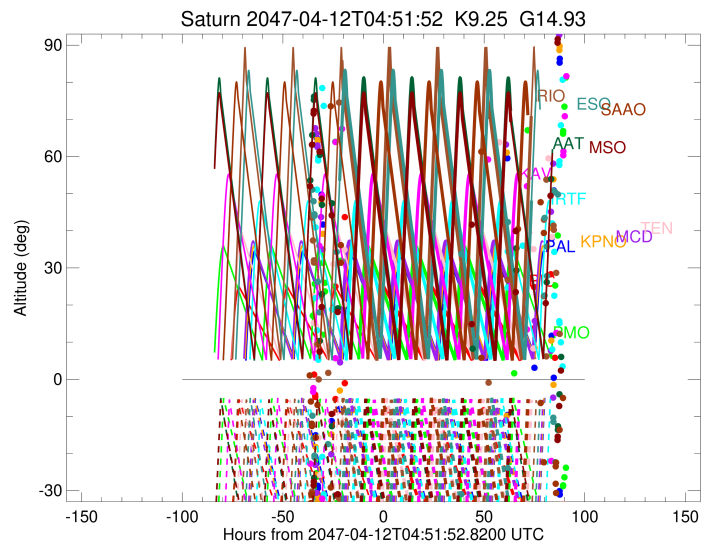
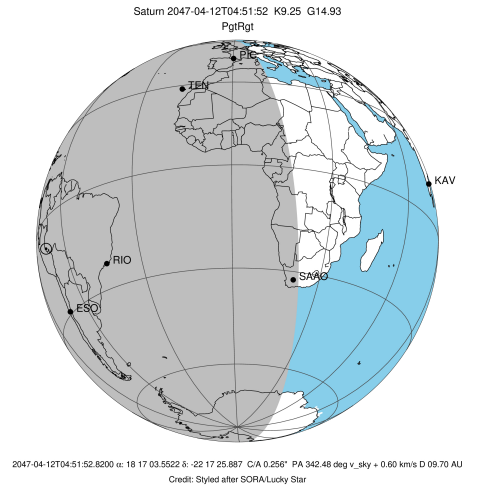
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-04-12T02:32:24.830
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : ESO
 Location : European Southern Obs. (3.6m)
 Latitude (deg) : -29.26097
 E. Longitude (deg) : 289.26831
 Altitude (km) : 2.400
 Gaia source ID : 4090526857094420352
 2Mass ID (if available) : 18170357-2217255
 ICRS Star Coord at Epoch: 18h 17m 03.55217s -22:17:25.88742s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 9.252
 G magnitude : 14.933
 RP magnitude : 13.543
 BP magnitude : 17.171
 DUPflag : 0
 Distance (au) : 9.698
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 0.60
 Sun-Target sep (deg) : 107.61
 Sun-Moon sep (deg) : 47.18
 B (ring opening deg) : 26.04
 PA of pole (deg) : 5.83
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.520
 C/A sky separation (km) : 3654.3
 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



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-04-10T17:31:52.429	-9.92x	51.05x	140461.00	-1.79			
A (OER)	I	2047-04-10T18:05:55.616	-16.03x	47.88x	136774.40	-1.82			
Encke (OEG)	I	2047-04-10T18:33:35.881	-20.67x	44.37x	133744.89	-1.83			
Encke (IEG)	I	2047-04-10T18:36:31.356	-21.14x	43.96x	133423.31	-1.83			
A (IER)	I	2047-04-10T20:19:23.715	-34.49x	26.19x	122050.38	-1.84			
B (OER)	I	2047-04-10T21:00:13.172	-37.43x	18.03x	117571.16	-1.82			
B (IER)	I	2047-04-11T01:19:16.551	-17.37x	-37.72	91984.69	-1.41			
C (IER)	I	2047-04-11T05:38:09.931	34.53	-65.61	74490.58	-0.88			
Saturn	I	2047-04-11T07:02:30.649	52.95	-51.42	60171.41			15.32	18.58
Saturn	E	2047-04-15T06:27:25.368	48.70	-58.83	59788.00			-36.29	-41.83
C (IER)	E	2047-04-13T19:31:08.486	b	-30.60x	34.28x	74490.58	0.57		
B (IER)	E	2047-04-14T18:37:38.285	b	-23.78x	42.46x	91984.69	0.53		
B (OER)	E	2047-04-15T12:56:22.363		42.98	22.98x	117571.16	1.04		
A (IER)	E	2047-04-15T14:07:34.011		27.55	35.96x	122050.38	1.05		
Encke (IEG)	E	2047-04-15T17:15:47.976		-10.58x	50.18x	133423.31	0.93		
Encke (OEG)	E	2047-04-15T17:21:36.455		-11.64x	49.87x	133744.89	0.92		
A (OER)	E	2047-04-15T18:18:38.297		-21.43x	44.64x	136774.40	0.85		
F ring	E	2047-04-15T19:35:14.994		-32.00x	32.97x	140461.00	0.75		

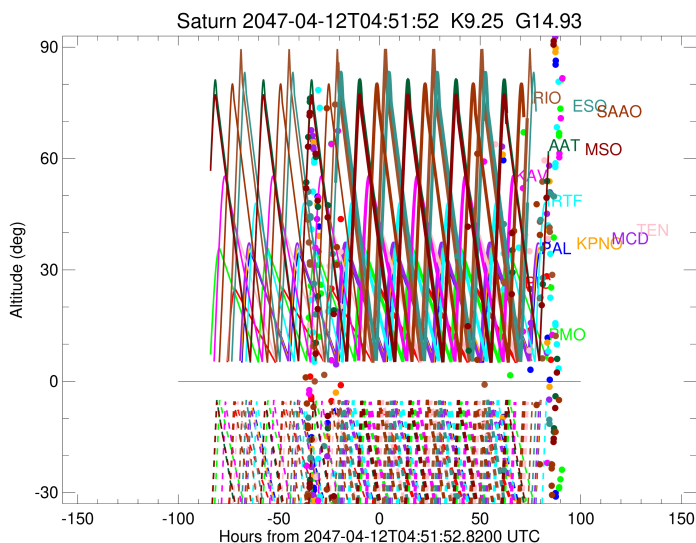
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-04-12T05:21:31.240
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 4090526857094420352
 2Mass ID (if available) : 18170357-2217255
 ICRS Star Coord at Epoch: 18h 17m 03.55217s -22:17:25.88742s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 9.252
 G magnitude : 14.933
 RP magnitude : 13.543
 BP magnitude : 17.171
 DUPflag : 0
 Distance (au) : 9.696
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 0.60
 Sun-Target sep (deg) : 107.61
 Sun-Moon sep (deg) : 47.35
 B (ring opening deg) : 26.04
 PA of pole (deg) : 5.83
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 1.020
 C/A sky separation (km) : 7175.7
 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_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



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-04-10T16:29:58.782		53.78	-49.13	140461.00	-1.08		
A (OER)	I	2047-04-10T17:27:37.973		65.97	-37.59	136774.40	-1.05		
Encke (OEG)	I	2047-04-10T18:15:52.353		75.42	-27.46	133744.89	-1.04		
Encke (IEG)	I	2047-04-10T18:21:00.075		76.32	-26.37	133423.31	-1.05		
A (IER)	I	2047-04-10T21:15:06.399		60.26	10.50x	122050.38	-1.16		
B (OER)	I	2047-04-10T22:17:13.764		46.98	22.90x	117571.16	-1.24		
B (IER)	I	2047-04-11T03:13:17.851		-12.75x	47.35x	91984.69	-1.61		
C (IER)	I	2047-04-11T06:12:02.885		-35.08x	18.99x	74490.58	-1.62		
Saturn	I	2047-04-11T07:37:37.545		-36.08x	1.44x	60211.50		11.66	14.21
Saturn	E	2047-04-15T03:15:07.460		-15.74x	45.74x	59747.91		-38.05	-43.64
C (IER)	E	2047-04-14T01:06:51.015	b	8.90	47.31x	74490.58	0.55		
B (IER)	E	2047-04-14T22:56:08.911	b	35.28	29.34x	91984.69	0.69		
B (OER)	E	2047-04-15T14:05:48.836		27.18	-68.76	117571.16	0.45		
A (IER)	E	2047-04-15T16:12:56.674		54.34	-53.28	122050.38	0.73		
Encke (IEG)	E	2047-04-15T19:32:48.895		76.65	-11.67	133423.31	1.14		
Encke (OEG)	E	2047-04-15T19:37:30.171		75.85	-10.67	133744.89	1.15		
A (OER)	E	2047-04-15T20:20:26.186		67.57	-1.58x	136774.40	1.20		
F ring	E	2047-04-15T21:10:29.148		57.06	8.81x	140461.00	1.25		

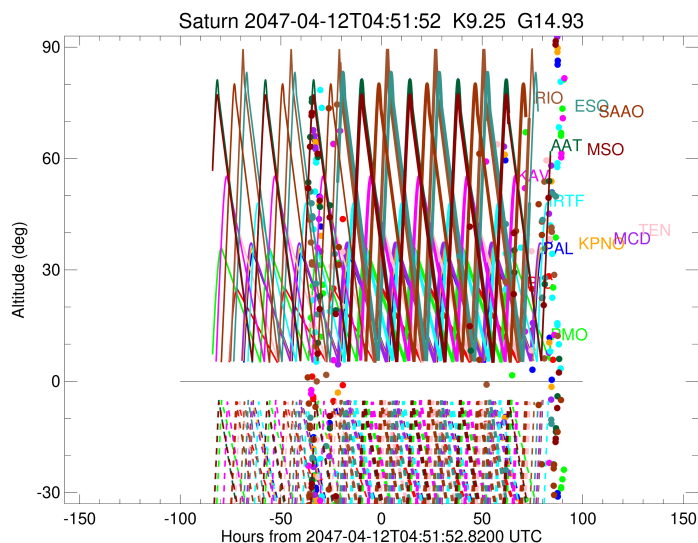
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-04-12T04:19:30.920
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : SAAO
 Location : So. Afr. Astro. Obs. (Sutherland)
 Latitude (deg) : -32.37953
 E. Longitude (deg) : 20.81070
 Altitude (km) : 1.768
 Gaia source ID : 4090526857094420352
 2Mass ID (if available) : 18170357-2217255
 ICRS Star Coord at Epoch: 18h 17m 03.55217s -22:17:25.88742s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 9.252
 G magnitude : 14.933
 RP magnitude : 13.543
 BP magnitude : 17.171
 DUPflag : 0
 Distance (au) : 9.697
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 0.60
 Sun-Target sep (deg) : 107.61
 Sun-Moon sep (deg) : 48.35
 B (ring opening deg) : 26.04
 PA of pole (deg) : 5.83
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.519
 C/A sky separation (km) : 3652.8
 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



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-04-10T16:12:54.777	-35.00x	0.93x	140461.00	-1.85			
A (OER)	I	2047-04-10T16:46:29.408	-33.33x	-6.11	136774.40	-1.81			
Encke (OEG)	I	2047-04-10T17:14:47.437	-31.10x	-12.09	133744.89	-1.76			
Encke (IEG)	I	2047-04-10T17:17:50.274	-30.81x	-12.73	133423.31	-1.76			
A (IER)	I	2047-04-10T19:12:48.588	-15.61x	-36.83	122050.38	-1.53			
B (OER)	I	2047-04-10T20:03:20.633	-6.92x	-46.87	117571.16	-1.42			
B (IER)	I	2047-04-11T02:41:22.993	73.73	-28.94	91984.69	-0.88			
C (IER)	I	2047-04-11T07:40:57.584	35.93	31.53x	74490.58	-1.14			
Saturn	I	2047-04-11T09:24:03.106	14.54	45.79x	60204.60			12.35	15.04
Saturn	E	2047-04-15T04:51:42.809	68.06	-2.06x	59810.49			-35.29	-40.80
C (IER)	E	2047-04-14T05:21:19.650	b	62.88	4.21x	74490.58	0.23		
B (IER)	E	2047-04-14T23:39:15.807	b	39.57	-63.23	91984.69	0.05		
B (OER)	E	2047-04-15T10:59:28.653	-6.89x	47.61x	117571.16	0.82			
A (IER)	E	2047-04-15T12:36:20.026	-22.64x	39.15x	122050.38	0.72			
Encke (IEG)	E	2047-04-15T18:29:12.414	-19.39x	-29.02	133423.31	0.45			
Encke (OEG)	E	2047-04-15T18:41:06.568	-17.54x	-31.52	133744.89	0.45			
A (OER)	E	2047-04-15T20:24:53.565	0.73x	-52.35	136774.40	0.54			
F ring	E	2047-04-15T22:05:35.665	20.78	-66.66	140461.00	0.70			

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-04-12T05:18:02.660
 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 : 4090526857094420352
 2Mass ID (if available) : 18170357-2217255
 ICRS Star Coord at Epoch: 18h 17m 03.55217s -22:17:25.88742s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 9.252
 G magnitude : 14.933
 RP magnitude : 13.543
 BP magnitude : 17.171
 DUPflag : 0
 Distance (au) : 9.696
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 0.60
 Sun-Target sep (deg) : 107.61
 Sun-Moon sep (deg) : 47.38
 B (ring opening deg) : 26.04
 PA of pole (deg) : 5.83
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 1.052
 C/A sky separation (km) : 7401.6
 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	2047-04-10T16:24:46.009		52.19	-48.16	140461.00	-1.11		
A (OER)	I	2047-04-10T17:21:13.024		63.36	-37.74	136774.40	-1.07		
Encke (OEG)	I	2047-04-10T18:08:32.988		71.70	-28.40	133744.89	-1.06		
Encke (IEG)	I	2047-04-10T18:13:35.478		72.47	-27.38	133423.31	-1.06		
A (IER)	I	2047-04-10T21:06:16.691		61.13	7.57x	122050.38	-1.16		
B (OER)	I	2047-04-10T22:08:36.880		48.64	19.48x	117571.16	-1.23		
B (IER)	I	2047-04-11T03:07:59.602		-9.44x	44.12x	91984.69	-1.58		
C (IER)	I	2047-04-11T06:08:55.741		-31.01x	18.02x	74490.58	-1.60		
Saturn	I	2047-04-11T07:37:40.736		-32.10x	0.73x	60213.57		11.44	13.95
Saturn	E	2047-04-15T03:12:21.653		-12.70x	42.32x	59740.82		-38.36	-43.96
C (IER)	E	2047-04-14T00:40:16.931	b	15.52	41.31x	74490.58	0.52		
B (IER)	E	2047-04-14T22:35:27.573	b	39.93	23.47x	91984.69	0.65		
B (OER)	E	2047-04-15T13:34:53.921		21.60	-63.88	117571.16	0.41		
A (IER)	E	2047-04-15T15:53:36.077		49.85	-54.49	122050.38	0.68		
Encke (IEG)	E	2047-04-15T19:22:48.554		75.08	-14.06	133423.31	1.11		
Encke (OEG)	E	2047-04-15T19:27:38.322		74.51	-13.07	133744.89	1.11		
A (OER)	E	2047-04-15T20:11:45.584		67.67	-4.12x	136774.40	1.17		
F ring	E	2047-04-15T21:02:58.552		57.92	6.07x	140461.00	1.22		