

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-10-05T21:25:06.420
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 4070223374106290304
 2Mass ID (if available) : 17522592-2236195

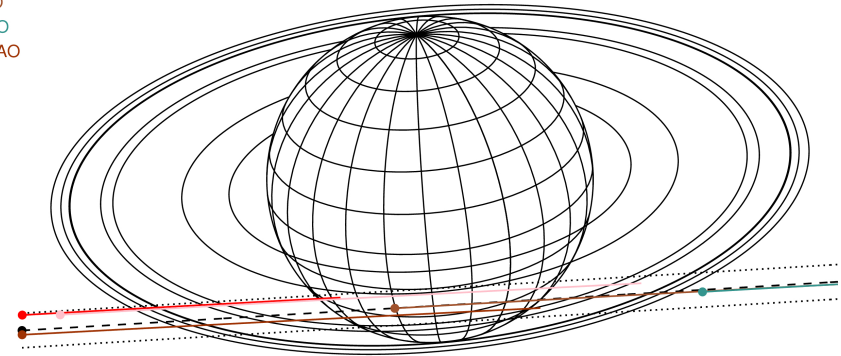
Saturn 2047-10-05T21:25:06 K9.41 G14.85 PgtRgt

ICRS Star Coord at Epoch: 17h 52m 25.93199s -22:36:19.58334s

RUWE (>1.4 is poor) : 0.98
 K magnitude : 9.414
 G magnitude : 14.849
 RP magnitude : 13.504
 BP magnitude : 17.019
 DUPflag : 0
 Distance (au) : 10.234
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.61
 Sun-Target sep (deg) : 76.35
 Sun-Moon sep (deg) : 124.49
 B (ring opening deg) : 26.91
 PA of pole (deg) : 5.37



Earth
 PIC
 TEN
 RIO
 ESO
 SAAO

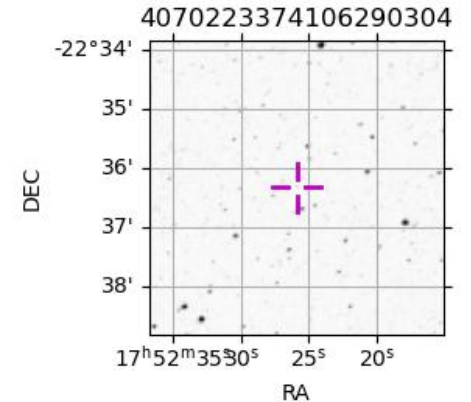


2047-10-05T21:25:06.4200 α: 17 52 25.9320 δ: -22 36 19.583 C/A 6.2877 PA 3.42 deg v_sky +16.61 km/s D 10.23 AU
 Credit: Styled after SORA/Lucky Star

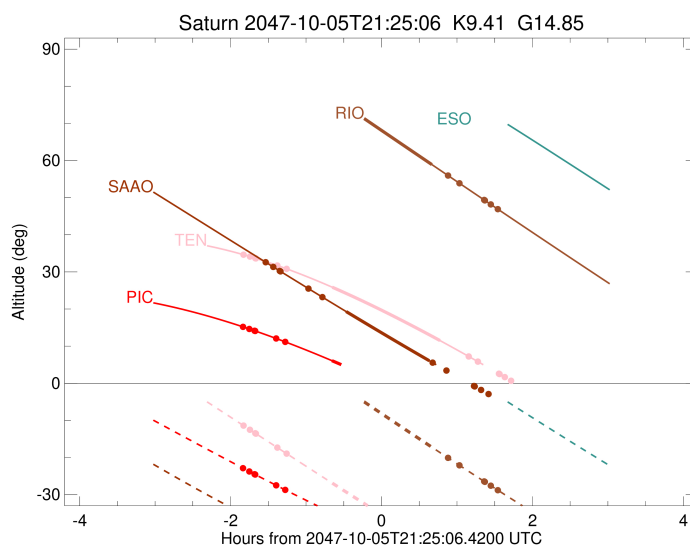
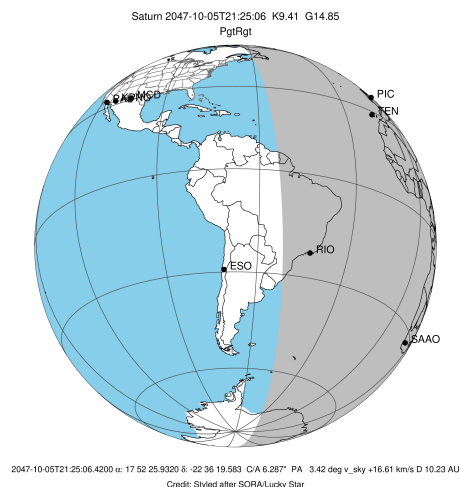
#	a(km)	ring
1	74490.6	C (IER)
2	91984.7	B (IER)
3	117571.2	B (OER)
4	122050.4	A (IER)
5	133423.3	Encke (IEG)
6	133744.9	Encke (OEG)
7	136774.4	A (OER)
8	140461.0	F ring

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	+ + + + +	+		OCT 05 19:34 - OCT 05 20:45	PinRin
PAL	Palomar Mt (20	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs	32.1	118.8					PnnRnn
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	+ + + + +	+ +	+ +	OCT 05 19:35 - OCT 05 22:41	PieRie
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observ	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8		+	+ + + + +	OCT 05 22:05 - OCT 05 22:57	PneRne
ESO	European South	-29.3	289.3					PnnRnn
AAT	Siding Spring	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro	-32.4	20.8	+ + + + +	+ +	+	OCT 05 19:52 - OCT 05 22:05	PieRie
MSO	Mt. Stromlo Ob	-35.3	149.0					PnnRnn



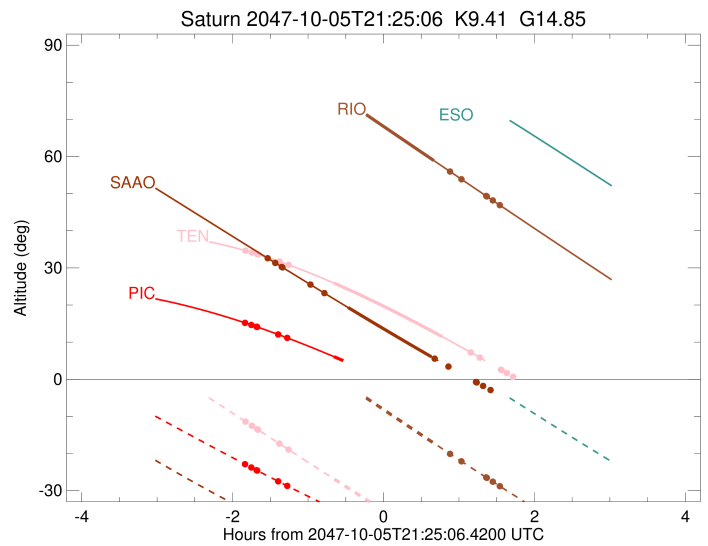
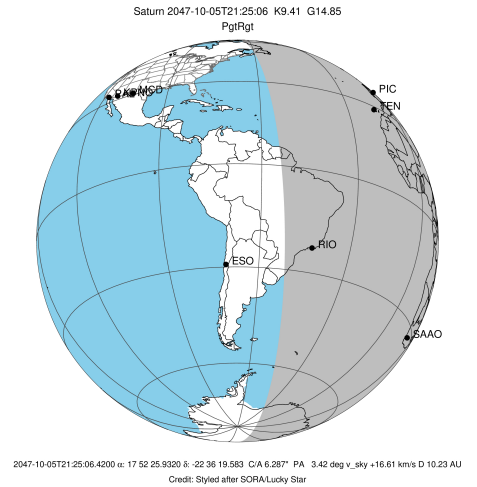
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-10-05T21:28:54.490
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 4070223374106290304
 2Mass ID (if available) : 17522592-2236195
 ICRS Star Coord at Epoch: 17h 52m 25.93199s -22:36:19.58334s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 9.414
 G magnitude : 14.849
 RP magnitude : 13.504
 BP magnitude : 17.019
 DUPflag : 0
 Distance (au) : 10.235
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.61
 Sun-Target sep (deg) : 76.35
 Sun-Moon sep (deg) : 124.88
 B (ring opening deg) : 26.91
 PA of pole (deg) : 5.37
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 5.628
 C/A sky separation (km) : 41776.9
 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_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

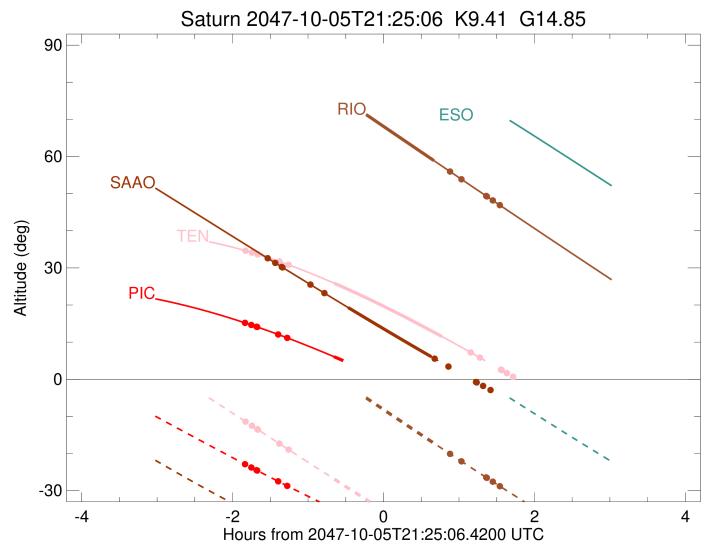
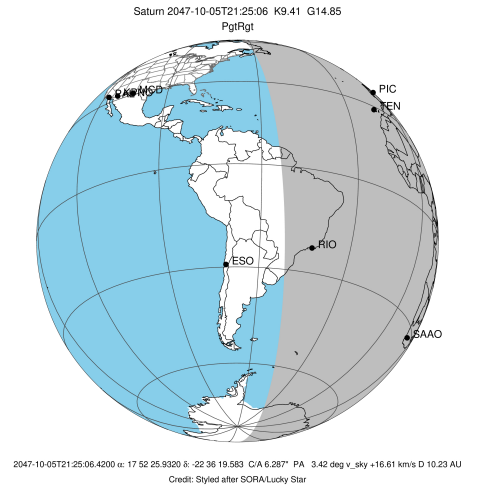
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-10-05T19:34:52.910		15.21	-22.86	140461.00	-12.38		
A (OER)	I	2047-10-05T19:39:53.705		14.64	-23.74	136774.40	-12.13		
Encke (OEG)	I	2047-10-05T19:44:05.857		14.16	-24.48	133744.89	-11.90		
Encke (IEG)	I	2047-10-05T19:44:32.911		14.10	-24.56	133423.31	-11.87		
A (IER)	I	2047-10-05T20:01:14.737		12.08	-27.47	122050.38	-10.78		
B (OER)	I	2047-10-05T20:08:21.138		11.18	-28.69	117571.16	-10.22		
Saturn	I	2047-10-05T20:45:38.263		6.10	-34.85	59739.40		-36.70	-42.26
Saturn	E	2047-10-05T22:11:51.233		-7.44x	-46.68	59643.74		-40.56	-46.18
B (OER)	E	2047-10-05T22:35:33.864		-11.48x	-49.00	117571.16	10.36		
A (IER)	E	2047-10-05T22:42:34.265		-12.69x	-49.58	122050.38	10.94		
Encke (IEG)	E	2047-10-05T22:58:59.691		-15.57x	-50.74	133423.31	12.09		
Encke (OEG)	E	2047-10-05T22:59:26.260		-15.65x	-50.77	133744.89	12.12		
A (OER)	E	2047-10-05T23:03:33.776		-16.38x	-51.01	136774.40	12.36		
F ring	E	2047-10-05T23:08:28.792		-17.25x	-51.27	140461.00	12.63		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-10-05T21:29:00.150
 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 : 4070223374106290304
 2Mass ID (if available) : 17522592-2236195
 ICRS Star Coord at Epoch: 17h 52m 25.93199s -22:36:19.58334s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 9.414
 G magnitude : 14.849
 RP magnitude : 13.504
 BP magnitude : 17.019
 DUPflag : 0
 Distance (au) : 10.235
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.61
 Sun-Target sep (deg) : 76.35
 Sun-Moon sep (deg) : 125.12
 B (ring opening deg) : 26.91
 PA of pole (deg) : 5.37
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 5.701
 C/A sky separation (km) : 42314.5
 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	2047-10-05T19:35:17.098		34.64	-11.38	140461.00	-12.19		
A (OER)	I	2047-10-05T19:40:22.820		34.14	-12.50	136774.40	-11.93		
Encke (OEG)	I	2047-10-05T19:44:39.366		33.70	-13.44	133744.89	-11.69		
Encke (IEG)	I	2047-10-05T19:45:06.908		33.65	-13.54	133423.31	-11.66		
A (IER)	I	2047-10-05T20:02:09.461		31.74	-17.30	122050.38	-10.53		
B (OER)	I	2047-10-05T20:09:26.791		30.85	-18.90	117571.16	-9.94		
Saturn	I	2047-10-05T20:45:58.437		25.87	-26.90	59723.79		-37.34	-42.92
Saturn	E	2047-10-05T22:11:42.256		11.49	-45.06	59628.78		-41.16	-46.78
B (OER)	E	2047-10-05T22:34:30.614		7.21	-49.59	117571.16	10.08		
A (IER)	E	2047-10-05T22:41:41.743		5.84	-50.97	122050.38	10.69		
Encke (IEG)	E	2047-10-05T22:58:27.341		2.58x	-54.09	133423.31	11.88		
Encke (OEG)	E	2047-10-05T22:58:54.380		2.49x	-54.17	133744.89	11.91		
A (OER)	E	2047-10-05T23:03:06.134		1.67x	-54.93	136774.40	12.16		
F ring	E	2047-10-05T23:08:05.884		0.68x	-55.81	140461.00	12.44		

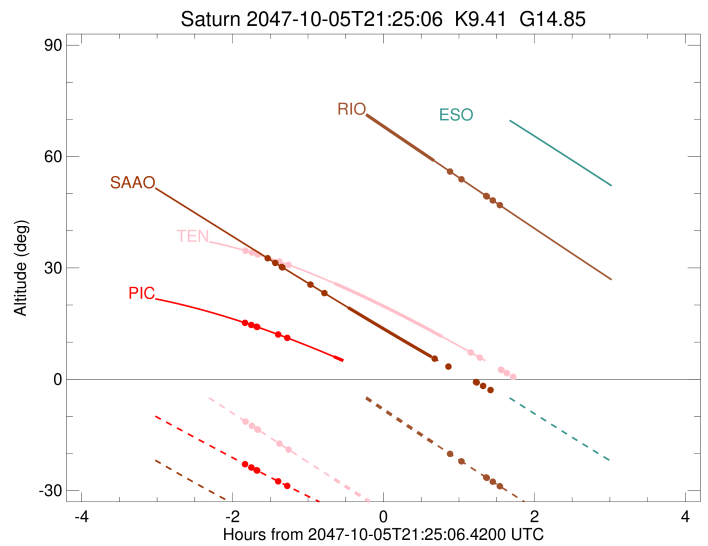
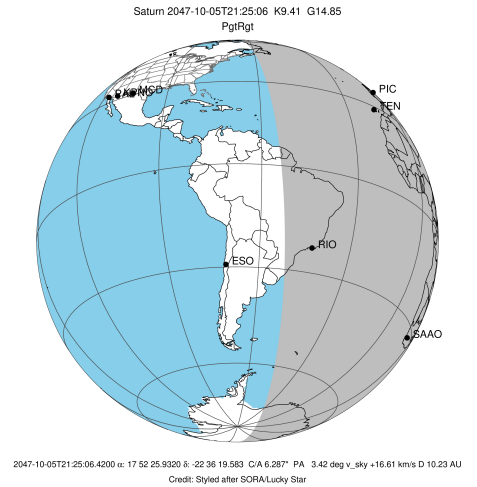
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-10-05T21:27:24.540
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 4070223374106290304
 2Mass ID (if available) : 17522592-2236195
 ICRS Star Coord at Epoch: 17h 52m 25.93199s -22:36:19.58334s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 9.414
 G magnitude : 14.849
 RP magnitude : 13.504
 BP magnitude : 17.019
 DUPflag : 0
 Distance (au) : 10.234
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.61
 Sun-Target sep (deg) : 76.35
 Sun-Moon sep (deg) : 125.36
 B (ring opening deg) : 26.91
 PA of pole (deg) : 5.37
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.299
 C/A sky separation (km) : 46754.3
 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_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	2047-10-05T19:43:01.533		88.28	15.29x	140461.00	-11.04		
A (OER)	I	2047-10-05T19:48:40.759		89.57	13.98x	136774.40	-10.69		
Encke (OEG)	I	2047-10-05T19:53:28.600		89.28	12.88x	133744.89	-10.36		
Encke (IEG)	I	2047-10-05T19:53:59.695		89.16	12.76x	133423.31	-10.32		
A (IER)	I	2047-10-05T20:13:50.586		84.58	8.18x	122050.38	-8.70		
B (OER)	I	2047-10-05T20:22:52.358		82.49	6.10x	117571.16	-7.81		
Saturn	I	2047-10-05T20:49:26.373		76.36	-0.00x	59586.93		-42.82	-48.43
Saturn	E	2047-10-05T22:05:08.779		58.91	-17.21	59503.43		-46.13	-51.66
B (OER)	E	2047-10-05T22:18:05.069		55.94	-20.11	117571.16	7.86		
A (IER)	E	2047-10-05T22:27:03.016		53.89	-22.10	122050.38	8.77		
Encke (IEG)	E	2047-10-05T22:46:42.934		49.39	-26.43	133423.31	10.43		
Encke (OEG)	E	2047-10-05T22:47:13.699		49.27	-26.55	133744.89	10.47		
A (OER)	E	2047-10-05T22:51:58.378		48.19	-27.58	136774.40	10.81		
F ring	E	2047-10-05T22:57:33.648		46.91	-28.80	140461.00	11.18		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-10-05T21:30:13.720
 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 : 4070223374106290304
 2Mass ID (if available) : 17522592-2236195
 ICRS Star Coord at Epoch: 17h 52m 25.93199s -22:36:19.58334s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 9.414
 G magnitude : 14.849
 RP magnitude : 13.504
 BP magnitude : 17.019
 DUPflag : 0
 Distance (au) : 10.235
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.61
 Sun-Target sep (deg) : 76.35
 Sun-Moon sep (deg) : 125.07
 B (ring opening deg) : 26.91
 PA of pole (deg) : 5.37
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.665
 C/A sky separation (km) : 49474.8
 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	2047-10-05T19:52:50.928		32.64	-38.18	140461.00	-10.40		
A (OER)	I	2047-10-05T19:58:52.815		31.38	-39.16	136774.40	-9.97		
Encke (OEG)	I	2047-10-05T20:04:02.933		30.29	-39.99	133744.89	-9.57		
Encke (IEG)	I	2047-10-05T20:04:36.630		30.18	-40.08	133423.31	-9.52		
A (IER)	I	2047-10-05T20:26:50.317		25.54	-43.43	122050.38	-7.44		
B (OER)	I	2047-10-05T20:37:46.226		23.28	-44.95	117571.16	-6.20		
Saturn	I	2047-10-05T20:56:57.906		19.33	-47.35	59505.71		-46.04	-51.57
Saturn	E	2047-10-05T22:03:11.503		6.06	-52.46	59413.12		-49.75	-55.11
B (OER)	E	2047-10-05T22:05:52.226		5.53	-52.54	117571.16	6.25		
A (IER)	E	2047-10-05T22:16:42.032		3.43x	-52.76	122050.38	7.52		
Encke (IEG)	E	2047-10-05T22:38:37.725		-0.74x	-52.67	133423.31	9.68		
Encke (OEG)	E	2047-10-05T22:39:10.876		-0.85x	-52.66	133744.89	9.72		
A (OER)	E	2047-10-05T22:44:15.771		-1.80x	-52.53	136774.40	10.14		
F ring	E	2047-10-05T22:50:11.113		-2.90x	-52.33	140461.00	10.60		