

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-11-13T13:30:06.950
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 2544086498687329408
 2Mass ID (if available) : 00342081+0049089

Saturn 2026-11-13T13:30:06 K9.95 G11.72 PgtRgt

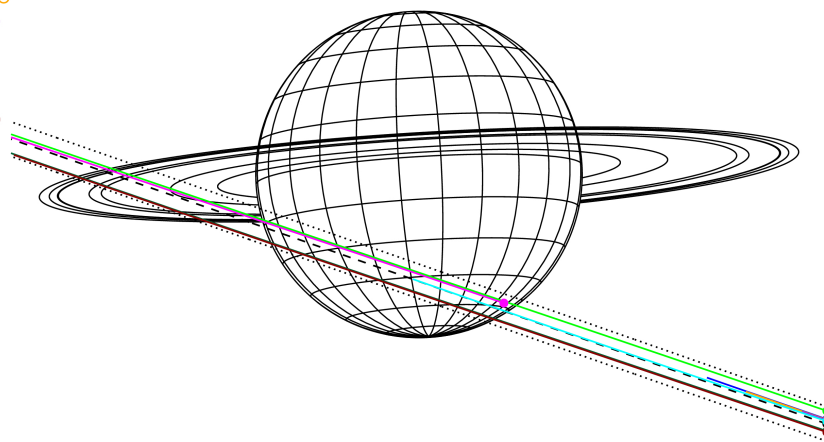
ICRS Star Coord at Epoch: 00h 34m 20.90151s +00:49:07.78620s

RUWE (>1.4 is poor) : 1.31
 K magnitude : 9.952
 G magnitude : 11.715
 RP magnitude : 11.110
 BP magnitude : 12.165
 DUPflag : 0
 Distance (au) : 8.670
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.23
 Sun-Target sep (deg) : 137.33
 Sun-Moon sep (deg) : 90.00
 B (ring opening deg) : -6.33
 PA of pole (deg) : 3.46



2026-11-13T13:30:06.9500 α: 00 34 20.9015 s: +00 49 07.786 C/A 5.929° PA 340.76 deg v_sky -12.23 km/s D 08.67 AU
 Credit: Styled after SORA/Lucky Star

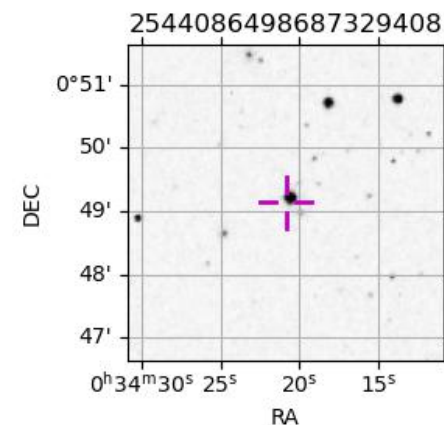
Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 KAV
 AAT
 MSO



#	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

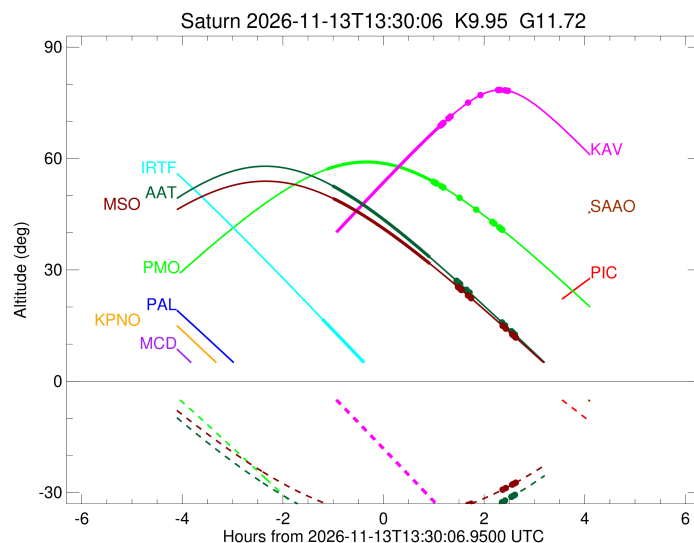
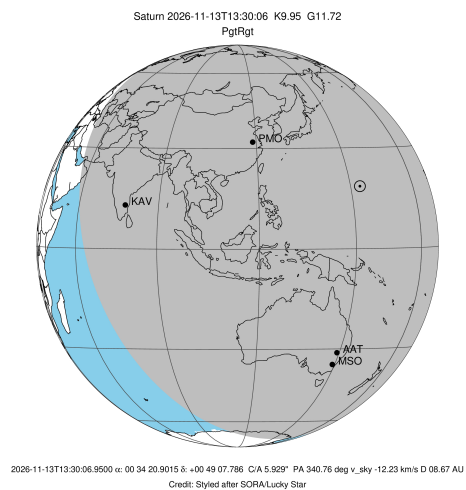
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
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	+	+	+	NOV 13 12:22 - NOV 13 15:51	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		+		NOV 13 12:17 - NOV 13 12:17	PinRnn
KAV	Kavalur Observ	12.6	78.8	+	+	+	NOV 13 14:38 - NOV 13 15:58	PneRie
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European South	-29.3	289.3					PnnRnn
AAT	Siding Spring	-31.3	149.1	+	+	+	NOV 13 12:29 - NOV 13 16:06	PieRie
SAAO	So. Afr. Astro	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Ob	-35.3	149.0	+	+	+	NOV 13 12:29 - NOV 13 16:07	PieRie



```

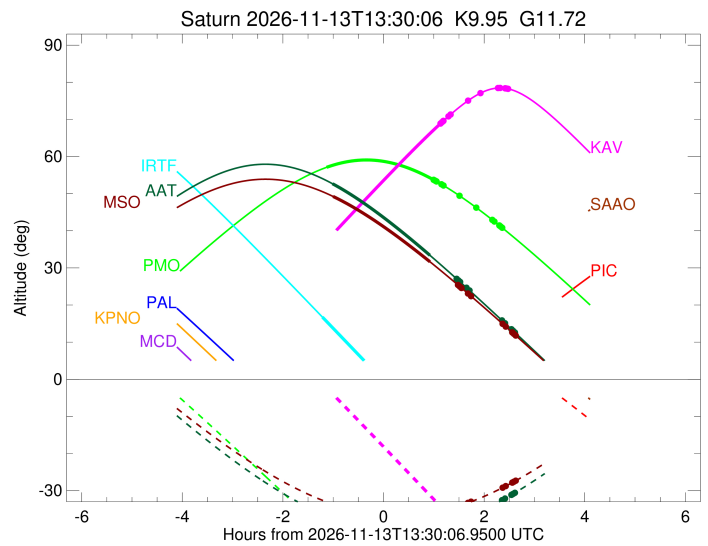
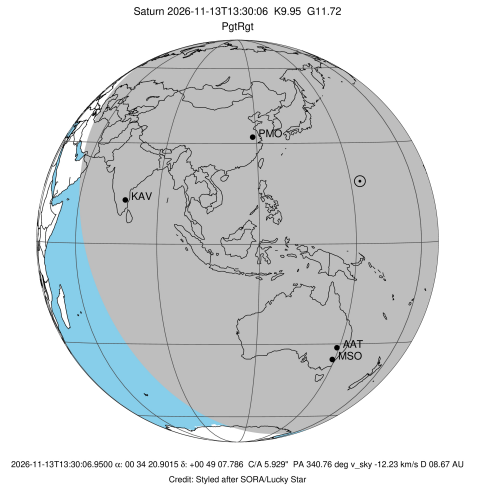
target                : Saturn
target radius (km)   : 60268.00
C/A epoch            : 2026-11-13T13:27:37.470
Event type           : PgtRgt
: Saturn occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : PMO
Location              : Purple Mtn Obs. Nanking
Latitude (deg)       : 32.06667
E. Longitude (deg)   : 118.82089
Altitude (km)        : 0.364
Gaia source ID       : 2544086498687329408
2Mass ID (if available) : 00342081+0049089
ICRS Star Coord at Epoch: 00h 34m 20.90151s +00:49:07.78620s
RUWE (>1.4 is poor) : 1.31
K magnitude           : 9.952
G magnitude           : 11.715
RP magnitude          : 11.110
BP magnitude          : 12.165
DUPflag              : 0
Distance (au)        : 8.670
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -12.23
Sun-Target sep (deg) : 137.33
Sun-Moon sep (deg)   : 90.77
B (ring opening deg) : -6.33
PA of pole (deg)     : 3.46
Pole direction: RA (deg): 40.60000
Dec (deg): 83.50000
C/A sky separation (") : 5.460
C/A sky separation (km) : 34329.6
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_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	2026-11-13T14:29:36.808	b	53.76	-67.38	140461.00	-34.76		
A (OER)	I	2026-11-13T14:31:23.797	b	53.54	-67.69	136774.40	-34.14		
Encke (OEG)	I	2026-11-13T14:32:53.254	b	53.35	-67.96	133744.89	-33.58		
Encke (IEG)	I	2026-11-13T14:33:02.838	b	53.33	-67.98	133423.31	-33.52		
A (IER)	I	2026-11-13T14:38:55.314		52.57	-69.00	122050.38	-30.90		
B (OER)	I	2026-11-13T14:41:23.418		52.24	-69.41	117571.16	-29.57		
B (IER)	I	2026-11-13T15:00:30.116		49.48	-72.37	91984.69	-13.05		
Saturn	I	2026-11-13T12:22:13.330		57.09	-41.61	60220.59		-56.33	-61.20
Saturn	E	2026-11-13T14:33:14.035		53.31	-68.02	60264.77		-12.54	-15.27
B (IER)	E	2026-11-13T15:20:43.902		46.24	-74.78	91984.69	13.04		
B (OER)	E	2026-11-13T15:39:52.859		42.94	-76.03	117571.16	29.48		
A (IER)	E	2026-11-13T15:42:21.425		42.50	-76.10	122050.38	30.80		
Encke (IEG)	E	2026-11-13T15:48:15.172		41.43	-76.19	133423.31	33.39		
Encke (OEG)	E	2026-11-13T15:48:24.794		41.41	-76.19	133744.89	33.45		
A (OER)	E	2026-11-13T15:49:54.614		41.13	-76.19	136774.40	34.00		
F ring	E	2026-11-13T15:51:42.060		40.81	-76.18	140461.00	34.61		

```

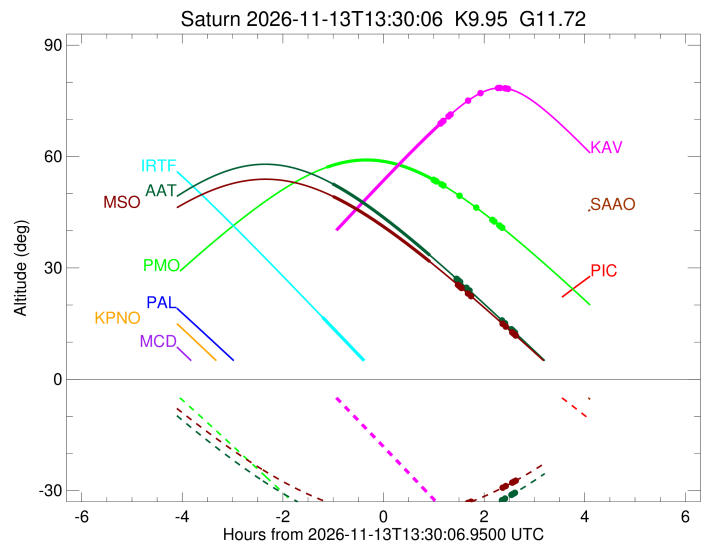
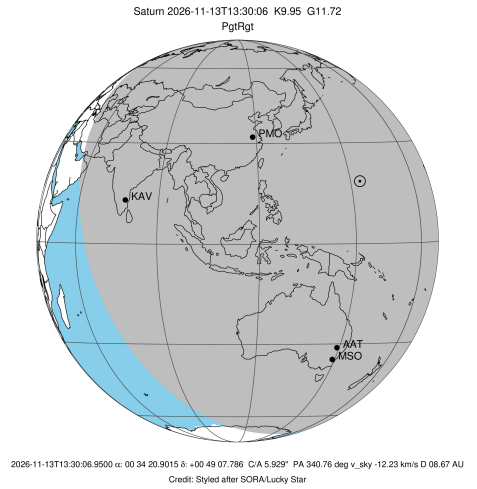
target                : Saturn
target radius (km)   : 60268.00
C/A epoch            : 2026-11-13T13:21:26.440
Event type           : PgtRgt
: Saturn occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : IRTF
Location             : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)   : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 2544086498687329408
2Mass ID (if available) : 00342081+0049089
ICRS Star Coord at Epoch: 00h 34m 20.90151s +00:49:07.78620s
RUWE (>1.4 is poor) : 1.31
K magnitude          : 9.952
G magnitude          : 11.715
RP magnitude         : 11.110
BP magnitude         : 12.165
DUPflag             : 0
Distance (au)        : 8.670
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -12.23
Sun-Target sep (deg) : 137.33
Sun-Moon sep (deg)   : 90.00
B (ring opening deg) : -6.33
PA of pole (deg)     : 3.46
Pole direction: RA (deg): 40.60000
Dec (deg): 83.50000
C/A sky separation (") : 5.921
C/A sky separation (km) : 37229.9
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
    
```



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2026-11-13T14:33:54.646	-15.45x	-27.09	140461.00	-33.21			
A (OER)	I	2026-11-13T14:35:46.853	-15.89x	-26.66	136774.40	-32.49			
Encke (OEG)	I	2026-11-13T14:37:21.006	-16.26x	-26.29	133744.89	-31.85			
Encke (IEG)	I	2026-11-13T14:37:31.113	-16.30x	-26.25	133423.31	-31.78			
A (IER)	I	2026-11-13T14:43:46.190	-17.76x	-24.81	122050.38	-28.73			
B (OER)	I	2026-11-13T14:46:26.394	-18.38x	-24.20	117571.16	-27.16			
Saturn	I	2026-11-13T12:17:16.489	16.74	-58.99	60216.45			-60.19	-64.67
Saturn	E	2026-11-13T14:26:23.050	-13.68x	-28.83	60263.26			-15.27	-18.52
B (OER)	E	2026-11-13T15:41:09.680	-31.07x	-11.67	117571.16	27.06			
A (IER)	E	2026-11-13T15:43:50.515	-31.68x	-11.06	122050.38	28.61			
Encke (IEG)	E	2026-11-13T15:50:07.313	-33.12x	-9.64	133423.31	31.62			
Encke (OEG)	E	2026-11-13T15:50:17.472	-33.16x	-9.60	133744.89	31.69			
A (OER)	E	2026-11-13T15:51:52.113	-33.52x	-9.24	136774.40	32.32			
F ring	E	2026-11-13T15:53:44.930	-33.95x	-8.82	140461.00	33.02			

```

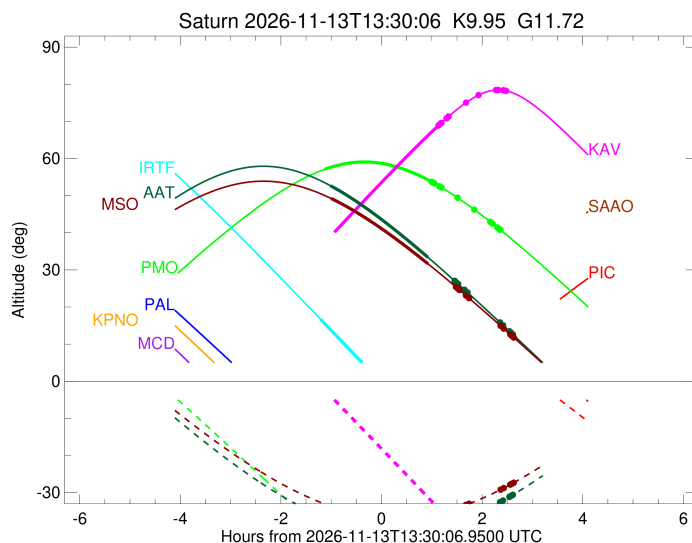
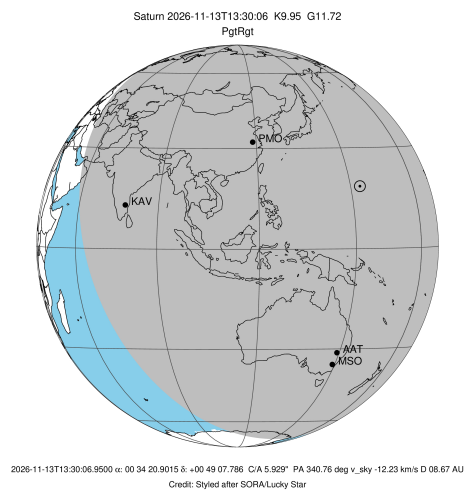
target                : Saturn
target radius (km)   : 60268.00
C/A epoch            : 2026-11-13T13:33:32.210
Event type           : PgtRgt
: Saturn occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : KAV
Location             : Kavalur Observatory
Latitude (deg)       : 12.57556
E. Longitude (deg)   : 78.83167
Altitude (km)        : 0.722
Gaia source ID       : 2544086498687329408
2Mass ID (if available) : 00342081+0049089
ICRS Star Coord at Epoch: 00h 34m 20.90151s +00:49:07.78620s
RUWE (>1.4 is poor) : 1.31
K magnitude           : 9.952
G magnitude           : 11.715
RP magnitude          : 11.110
BP magnitude          : 12.165
DUPflag              : 0
Distance (au)         : 8.670
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -12.23
Sun-Target sep (deg) : 137.33
Sun-Moon sep (deg)   : 90.73
B (ring opening deg) : -6.33
PA of pole (deg)     : 3.46
Pole direction: RA (deg): 40.60000
Dec (deg): 83.50000
C/A sky separation (") : 5.553
C/A sky separation (km) : 34915.7
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	2026-11-13T14:37:49.022	b	68.83	-34.18	140461.00	-34.30		
A (OER)	I	2026-11-13T14:39:37.523		69.20	-34.61	136774.40	-33.65		
Encke (OEG)	I	2026-11-13T14:41:08.353		69.52	-34.97	133744.89	-33.05		
Encke (IEG)	I	2026-11-13T14:41:18.092		69.55	-35.01	133423.31	-32.99		
A (IER)	I	2026-11-13T14:47:17.331		70.76	-36.43	122050.38	-30.20		
B (OER)	I	2026-11-13T14:49:49.121		71.26	-37.03	117571.17	-28.79		
B (IER)	I	2026-11-13T15:10:41.754		75.01	-41.99	91984.69	-9.75		
Saturn	I	2026-11-13T12:28:25.979		38.79	-3.72x	60219.79		-57.06	-61.86
Saturn	E	2026-11-13T14:38:27.211		68.96	-34.33	60264.39		-13.27	-16.14
B (IER)	E	2026-11-13T15:25:46.223		77.08	-45.57	91984.69	9.75		
B (OER)	E	2026-11-13T15:46:40.108		78.46	-50.54	117571.17	28.74		
A (IER)	E	2026-11-13T15:49:12.159		78.47	-51.14	122050.38	30.15		
Encke (IEG)	E	2026-11-13T15:55:12.121		78.38	-52.56	133423.31	32.92		
Encke (OEG)	E	2026-11-13T15:55:21.881		78.37	-52.60	133744.89	32.98		
A (OER)	E	2026-11-13T15:56:52.921		78.32	-52.96	136774.40	33.57		
F ring	E	2026-11-13T15:58:41.685		78.24	-53.39	140461.00	34.22		

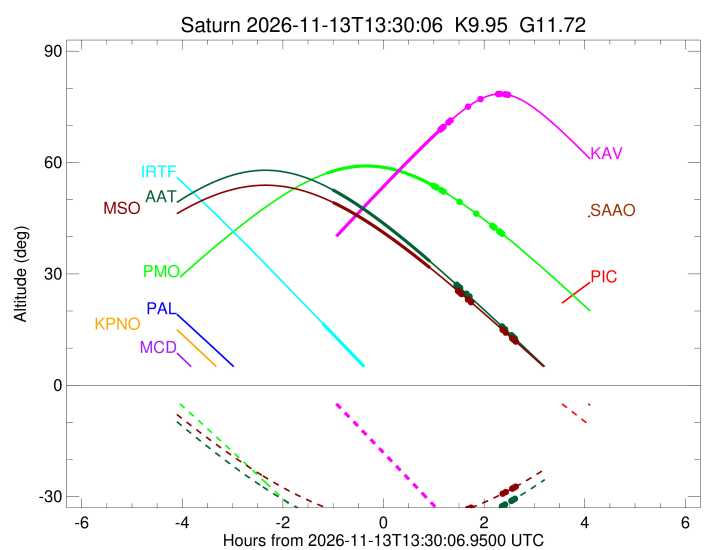
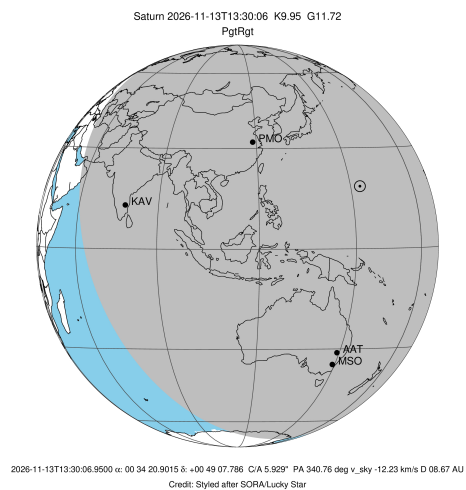
```

target                : Saturn
target radius (km)   : 60268.00
C/A epoch            : 2026-11-13T13:27:10.160
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       : 2544086498687329408
2Mass ID (if available) : 00342081+0049089
ICRS Star Coord at Epoch: 00h 34m 20.90151s +00:49:07.78620s
RUWE (>1.4 is poor) : 1.31
K magnitude           : 9.952
G magnitude           : 11.715
RP magnitude          : 11.110
BP magnitude          : 12.165
DUPflag              : 0
Distance (au)         : 8.670
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -12.23
Sun-Target sep (deg) : 137.33
Sun-Moon sep (deg)   : 90.62
B (ring opening deg) : -6.33
PA of pole (deg)     : 3.46
Pole direction: RA (deg): 40.60000
Dec (deg): 83.50000
C/A sky separation (") : 6.597
C/A sky separation (km) : 41483.7
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	2026-11-13T14:57:00.685		27.12	-38.11	140461.00	-29.33		
A (OER)	I	2026-11-13T14:59:08.633		26.69	-37.94	136774.40	-28.28		
Encke (OEG)	I	2026-11-13T15:00:57.616		26.32	-37.80	133744.89	-27.31		
Encke (IEG)	I	2026-11-13T15:01:09.415		26.28	-37.78	133423.31	-27.20		
A (IER)	I	2026-11-13T15:08:46.566		24.72	-37.14	122050.38	-22.34		
B (OER)	I	2026-11-13T15:12:19.810		24.00	-36.82	117571.16	-19.62		
Saturn	I	2026-11-13T12:29:16.438		52.68	-37.34	60211.81		-64.96	-68.88
Saturn	E	2026-11-13T14:25:28.584		33.39	-40.01	60259.10		-21.12	-25.32
B (OER)	E	2026-11-13T15:51:26.192		15.85	-32.58	117571.16	19.57		
A (IER)	E	2026-11-13T15:54:59.973		15.10	-32.13	122050.38	22.28		
Encke (IEG)	E	2026-11-13T16:02:38.584		13.48	-31.15	133423.31	27.10		
Encke (OEG)	E	2026-11-13T16:02:50.426		13.44	-31.12	133744.89	27.21		
A (OER)	E	2026-11-13T16:04:39.822		13.06	-30.88	136774.40	28.17		
F ring	E	2026-11-13T16:06:48.286		12.60	-30.59	140461.00	29.21		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-11-13T13:27:31.820
 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 : 2544086498687329408
 2Mass ID (if available) : 00342081+0049089
 ICRS Star Coord at Epoch: 00h 34m 20.90151s +00:49:07.78620s
 RUWE (>1.4 is poor) : 1.31
 K magnitude : 9.952
 G magnitude : 11.715
 RP magnitude : 11.110
 BP magnitude : 12.165
 DUPflag : 0
 Distance (au) : 8.670
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.23
 Sun-Target sep (deg) : 137.33
 Sun-Moon sep (deg) : 90.59
 B (ring opening deg) : -6.33
 PA of pole (deg) : 3.46
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.646
 C/A sky separation (km) : 41788.7
 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



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	2026-11-13T14:58:36.224		25.46	-34.24	140461.00	-29.07		
A (OER)	I	2026-11-13T15:00:45.405		25.05	-34.08	136774.40	-27.99		
Encke (OEG)	I	2026-11-13T15:02:35.571		24.70	-33.94	133744.89	-27.00		
Encke (IEG)	I	2026-11-13T15:02:47.506		24.66	-33.93	133423.31	-26.89		
A (IER)	I	2026-11-13T15:10:31.730		23.16	-33.32	122050.38	-21.89		
B (OER)	I	2026-11-13T15:14:10.193		22.46	-33.02	117571.16	-19.06		
Saturn	I	2026-11-13T12:29:57.209		49.25	-33.66	60211.44		-65.37	-69.24
Saturn	E	2026-11-13T14:25:30.310		31.66	-36.07	60258.81		-21.50	-25.76
B (OER)	E	2026-11-13T15:52:11.496		14.93	-29.20	117571.16	19.02		
A (IER)	E	2026-11-13T15:55:50.484		14.20	-28.78	122050.38	21.83		
Encke (IEG)	E	2026-11-13T16:03:36.135		12.64	-27.85	133423.31	26.79		
Encke (OEG)	E	2026-11-13T16:03:48.113		12.60	-27.82	133744.89	26.90		
A (OER)	E	2026-11-13T16:05:38.684		12.23	-27.60	136774.40	27.89		
F ring	E	2026-11-13T16:07:48.370		11.79	-27.33	140461.00	28.96		