

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2034-04-23T11:26:48.500
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3368201937227096448
 2Mass ID (if available) : 07055793+2228370

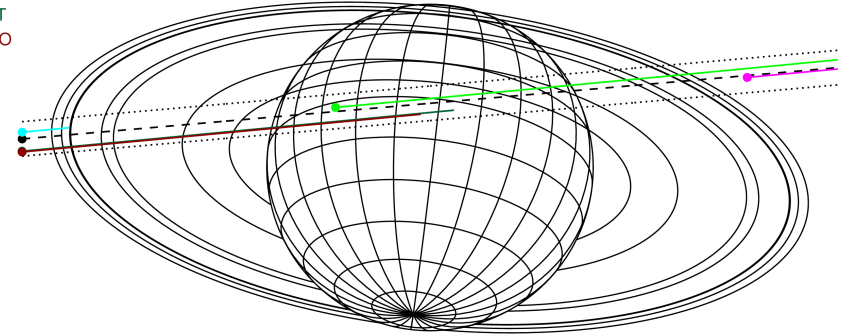
Saturn 2034-04-23T11:26:48 K9.52 G10.86 PgtRgt

ICRS Star Coord at Epoch: 07h 05m 57.90621s +22:28:36.77892s

RUWE (>1.4 is poor) : 0.88
 K magnitude : 9.520
 G magnitude : 10.859
 RP magnitude : 10.391
 BP magnitude : 11.160
 DUPflag : 0
 Distance (au) : 9.296
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 18.69
 Sun-Target sep (deg) : 72.29
 Sun-Moon sep (deg) : 9.12
 B (ring opening deg) : -25.00
 PA of pole (deg) : -6.55



Earth
 PMO
 IRTF
 KAV
 AAT
 MSO

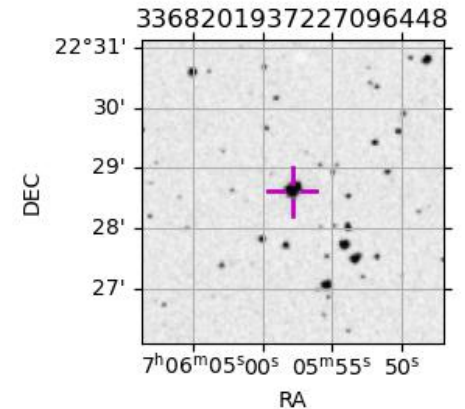


2034-04-23T11:26:48.5000 cc: 07 05 57.9062 s : +22 28 36.779 C/A 3.503° PA 185.00 deg v_sky +18.69 km/s D 09.30 AU
 Credit: Styled after SORA/Lucky Star

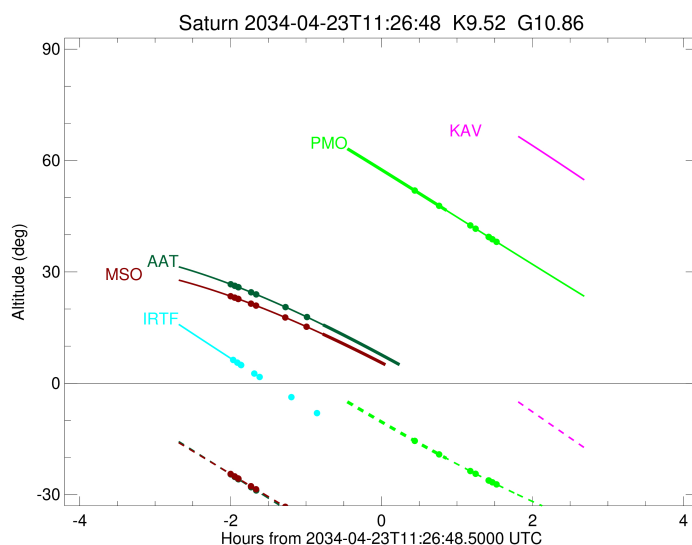
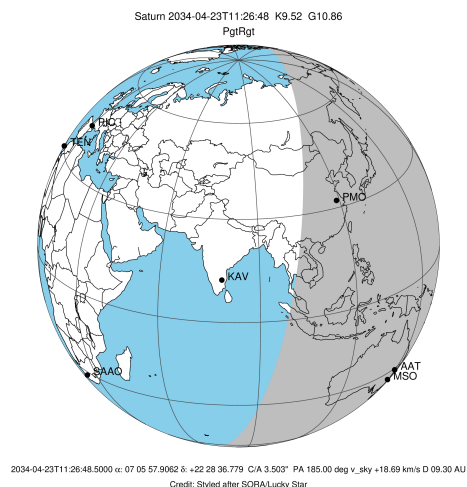
| # | a(km) | ring |
|---|----------|-------------|
| 1 | 74490.6 | C (IER) |
| 2 | 91984.7 | B (IER) |
| 3 | 117571.2 | B (OER) |
| 4 | 122050.4 | A (IER) |
| 5 | 133423.3 | Encke (IEG) |
| 6 | 133744.9 | Encke (OEG) |
| 7 | 136774.4 | A (OER) |
| 8 | 140461.0 | F ring |

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 | 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 | | + | + | APR 23 12:18 - APR 23 12:58 | PneRne |
| 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 | + | | | APR 23 09:28 - APR 23 09:32 | PnnRin |
| KAV | Kavalur Observ | 12.6 | 78.8 | | | | | PnnRnn |
| RIO | Rio de Janeiro | -22.9 | 316.8 | | | | | PnnRnn |
| ESO | European South | -29.3 | 289.3 | | | | | PnnRnn |
| AAT | Siding Spring | -31.3 | 149.1 | + | + | | APR 23 09:26 - APR 23 10:40 | PinRin |
| SAAO | So. Afr. Astro | -32.4 | 20.8 | | | | | PnnRnn |
| MSO | Mt. Stromlo Ob | -35.3 | 149.0 | + | + | | APR 23 09:26 - APR 23 10:40 | PinRin |



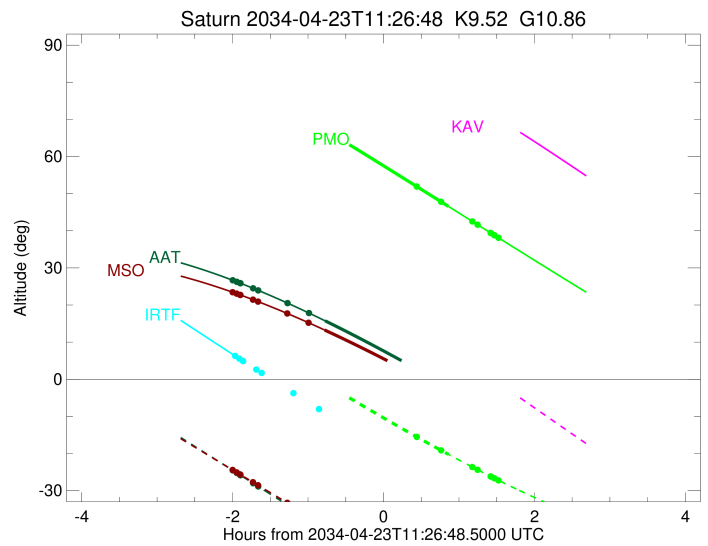
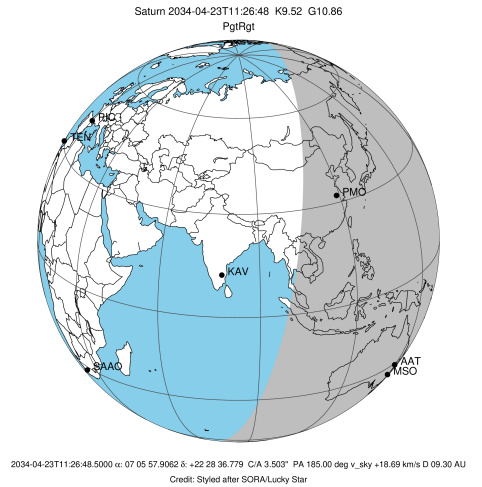
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2034-04-23T11:29:21.330
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 3368201937227096448
 2Mass ID (if available) : 07055793+2228370
 ICRS Star Coord at Epoch: 07h 05m 57.90621s +22:28:36.77892s
 RUWE (>1.4 is poor) : 0.88
 K magnitude : 9.520
 G magnitude : 10.859
 RP magnitude : 10.391
 BP magnitude : 11.160
 DUPflag : 0
 Distance (au) : 9.296
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 18.69
 Sun-Target sep (deg) : 72.29
 Sun-Moon sep (deg) : 9.78
 B (ring opening deg) : -25.00
 PA of pole (deg) : -6.55
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 3.758
 C/A sky separation (km) : 25337.8
 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 | 2034-04-23T09:23:51.273 | | 79.79 | 14.85x | 140461.00 | -18.36 | | |
| A (OER) | I | 2034-04-23T09:27:12.586 | | 79.49 | 14.14x | 136774.40 | -18.27 | | |
| Encke (OEG) | I | 2034-04-23T09:29:58.767 | | 79.20 | 13.56x | 133744.89 | -18.19 | | |
| Encke (IEG) | I | 2034-04-23T09:30:16.449 | | 79.17 | 13.50x | 133423.31 | -18.18 | | |
| A (IER) | I | 2034-04-23T09:40:47.813 | | 77.86 | 11.28x | 122050.38 | -17.83 | | |
| B (OER) | I | 2034-04-23T09:45:00.251 | | 77.26 | 10.40x | 117571.16 | -17.66 | | |
| B (IER) | I | 2034-04-23T10:10:09.629 | | 73.00 | 5.15x | 91984.69 | -16.05 | | |
| C (IER) | I | 2034-04-23T10:29:41.883 | | 69.26 | 1.11x | 74490.58 | -13.53 | | |
| Saturn | I | 2034-04-23T10:39:45.711 | | 67.26 | -0.96x | 60215.26 | | 11.81 | 14.40 |
| Saturn | E | 2034-04-23T12:18:27.034 | | 46.56 | -20.23 | 59897.52 | | 33.00 | 38.40 |
| C (IER) | E | 2034-04-23T11:53:05.629 | b | 51.95 | -15.49 | 74490.58 | 13.55 | | |
| B (IER) | E | 2034-04-23T12:12:31.626 | b | 47.82 | -19.14 | 91984.69 | 16.18 | | |
| B (OER) | E | 2034-04-23T12:37:23.850 | | 42.53 | -23.64 | 117571.16 | 17.90 | | |
| A (IER) | E | 2034-04-23T12:41:32.687 | | 41.65 | -24.37 | 122050.38 | 18.09 | | |
| Encke (IEG) | E | 2034-04-23T12:51:54.231 | | 39.45 | -26.16 | 133423.31 | 18.49 | | |
| Encke (OEG) | E | 2034-04-23T12:52:11.622 | | 39.39 | -26.21 | 133744.89 | 18.50 | | |
| A (OER) | E | 2034-04-23T12:54:55.025 | | 38.81 | -26.67 | 136774.40 | 18.58 | | |
| F ring | E | 2034-04-23T12:58:12.871 | | 38.11 | -27.23 | 140461.00 | 18.66 | | |

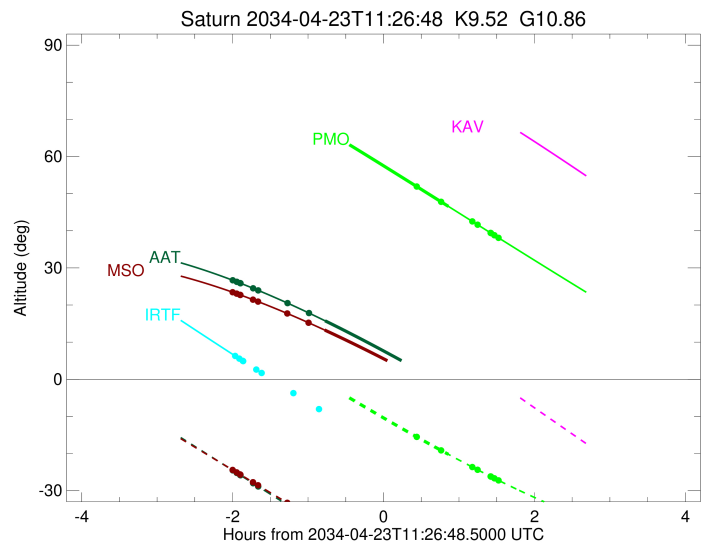
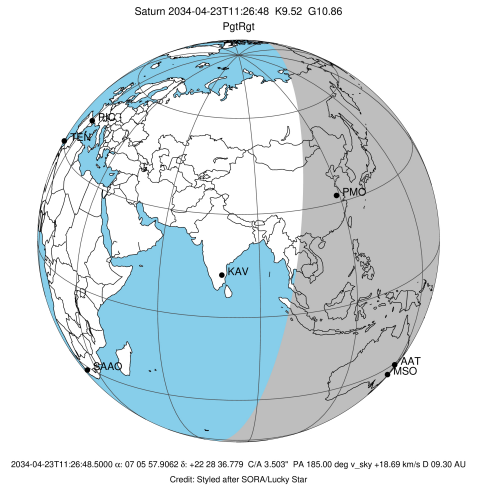
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2034-04-23T11:30:55.540
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : IRTF
 Location : Mauna Kea/IRTF
 Latitude (deg) : 19.82622
 E. Longitude (deg) : 204.52800
 Altitude (km) : 4.168
 Gaia source ID : 3368201937227096448
 2Mass ID (if available) : 07055793+2228370
 ICRS Star Coord at Epoch: 07h 05m 57.90621s +22:28:36.77892s
 RUWE (>1.4 is poor) : 0.88
 K magnitude : 9.520
 G magnitude : 10.859
 RP magnitude : 10.391
 BP magnitude : 11.160
 DUPflag : 0
 Distance (au) : 9.296
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 18.69
 Sun-Target sep (deg) : 72.29
 Sun-Moon sep (deg) : 9.98
 B (ring opening deg) : -25.00
 PA of pole (deg) : -6.55
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 4.044
 C/A sky separation (km) : 27265.8
 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 | 2034-04-23T09:28:53.096 | | 6.28 | -55.30 | 140461.00 | -18.56 | | |
| A (OER) | I | 2034-04-23T09:32:12.301 | | 5.55 | -55.59 | 136774.40 | -18.45 | | |
| Encke (OEG) | I | 2034-04-23T09:34:56.867 | | 4.95x | -55.81 | 133744.89 | -18.36 | | |
| Encke (IEG) | I | 2034-04-23T09:35:14.384 | | 4.89x | -55.84 | 133423.31 | -18.35 | | |
| A (IER) | I | 2034-04-23T09:45:40.932 | | 2.61x | -56.58 | 122050.38 | -17.93 | | |
| B (OER) | I | 2034-04-23T09:49:52.153 | | 1.70x | -56.82 | 117571.16 | -17.72 | | |
| B (IER) | I | 2034-04-23T10:15:09.343 | | -3.73x | -57.65 | 91984.69 | -15.76 | | |
| C (IER) | I | 2034-04-23T10:35:30.805 | | -8.04x | -57.45 | 74490.58 | -12.54 | | |
| Saturn | I | 2034-04-23T10:43:33.678 | | -9.72x | -57.16 | 60198.52 | | 13.59 | 16.52 |
| Saturn | E | 2034-04-23T12:17:44.190 | | -28.13x | -46.60 | 59863.14 | | 34.72 | 40.21 |
| C (IER) | E | 2034-04-23T11:48:39.727 | b | -22.74x | -51.00 | 74490.58 | 12.54 | | |
| B (IER) | E | 2034-04-23T12:08:57.202 | b | -26.54x | -48.01 | 91984.69 | 15.86 | | |
| B (OER) | E | 2034-04-23T12:33:59.511 | | -30.98x | -43.83 | 117571.17 | 17.95 | | |
| A (IER) | E | 2034-04-23T12:38:07.519 | | -31.68x | -43.10 | 122050.38 | 18.17 | | |
| Encke (IEG) | E | 2034-04-23T12:48:25.260 | | -33.39x | -41.23 | 133423.31 | 18.63 | | |
| Encke (OEG) | E | 2034-04-23T12:48:42.515 | | -33.44x | -41.18 | 133744.89 | 18.64 | | |
| A (OER) | E | 2034-04-23T12:51:24.579 | | -33.88x | -40.68 | 136774.40 | 18.74 | | |
| F ring | E | 2034-04-23T12:54:40.658 | | -34.40x | -40.07 | 140461.00 | 18.86 | | |

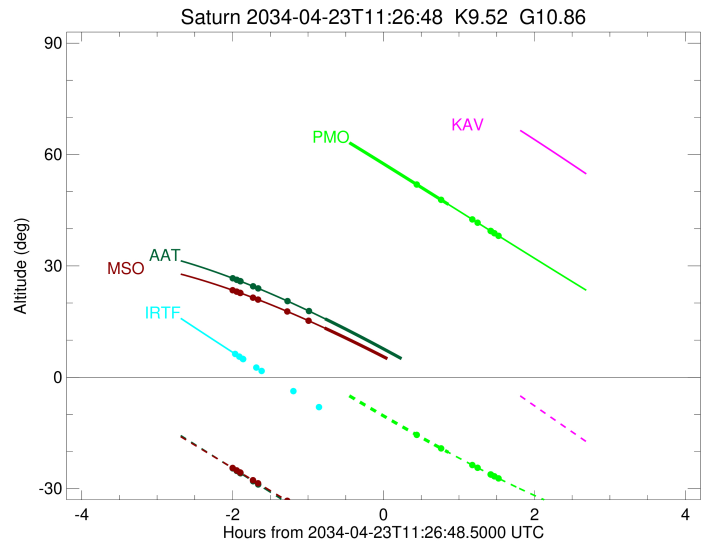
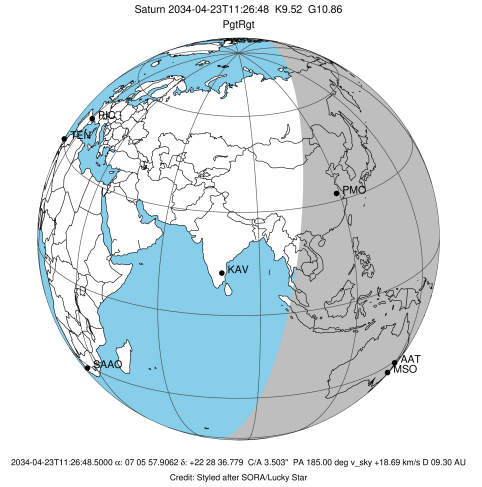
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2034-04-23T11:31:24.970
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 3368201937227096448
 2Mass ID (if available) : 07055793+2228370
 ICRS Star Coord at Epoch: 07h 05m 57.90621s +22:28:36.77892s
 RUWE (>1.4 is poor) : 0.88
 K magnitude : 9.520
 G magnitude : 10.859
 RP magnitude : 10.391
 BP magnitude : 11.160
 DUPflag : 0
 Distance (au) : 9.296
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 18.69
 Sun-Target sep (deg) : 72.29
 Sun-Moon sep (deg) : 9.58
 B (ring opening deg) : -25.00
 PA of pole (deg) : -6.55
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 2.998
 C/A sky separation (km) : 20215.5
 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



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 | 2034-04-23T09:26:57.742 | | 26.67 | -24.54 | 140461.00 | -19.07 | | |
| A (OER) | I | 2034-04-23T09:30:11.311 | | 26.25 | -25.23 | 136774.40 | -19.02 | | |
| Encke (OEG) | I | 2034-04-23T09:32:50.780 | | 25.90 | -25.80 | 133744.89 | -18.97 | | |
| Encke (IEG) | I | 2034-04-23T09:33:07.730 | | 25.86 | -25.86 | 133423.31 | -18.97 | | |
| A (IER) | I | 2034-04-23T09:43:10.382 | | 24.50 | -28.01 | 122050.38 | -18.76 | | |
| B (OER) | I | 2034-04-23T09:47:09.734 | | 23.95 | -28.87 | 117571.16 | -18.66 | | |
| B (IER) | I | 2034-04-23T10:10:31.358 | | 20.51 | -33.86 | 91984.69 | -17.73 | | |
| C (IER) | I | 2034-04-23T10:27:33.975 | | 17.84 | -37.48 | 74490.58 | -16.34 | | |
| Saturn | I | 2034-04-23T10:40:17.584 | | 15.76 | -40.18 | 60249.72 | | 6.92 | 8.48 |
| Saturn | E | 2034-04-23T12:22:01.046 | | -2.79x | -60.49 | 59984.29 | | 28.43 | 33.49 |
| C (IER) | E | 2034-04-23T12:06:32.898 | b | 0.21x | -57.64 | 74490.58 | 16.46 | | |
| B (IER) | E | 2034-04-23T12:23:24.976 | | -3.06x | -60.74 | 91984.69 | 17.96 | | |
| B (OER) | E | 2034-04-23T12:46:24.940 | | -7.60x | -64.63 | 117571.16 | 19.00 | | |
| A (IER) | E | 2034-04-23T12:50:19.888 | | -8.38x | -65.24 | 122050.38 | 19.12 | | |
| Encke (IEG) | E | 2034-04-23T13:00:10.603 | | -10.36x | -66.70 | 133423.31 | 19.37 | | |
| Encke (OEG) | E | 2034-04-23T13:00:27.200 | | -10.42x | -66.73 | 133744.89 | 19.38 | | |
| A (OER) | E | 2034-04-23T13:03:03.302 | | -10.94x | -67.09 | 136774.40 | 19.43 | | |
| F ring | E | 2034-04-23T13:06:12.677 | | -11.58x | -67.52 | 140461.00 | 19.50 | | |

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2034-04-23T11:31:14.790
 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 : 3368201937227096448
 2Mass ID (if available) : 07055793+2228370
 ICRS Star Coord at Epoch: 07h 05m 57.90621s +22:28:36.77892s
 RUWE (>1.4 is poor) : 0.88
 K magnitude : 9.520
 G magnitude : 10.859
 RP magnitude : 10.391
 BP magnitude : 11.160
 DUPflag : 0
 Distance (au) : 9.296
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 18.69
 Sun-Target sep (deg) : 72.29
 Sun-Moon sep (deg) : 9.52
 B (ring opening deg) : -25.00
 PA of pole (deg) : -6.55
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 2.949
 C/A sky separation (km) : 19884.0
 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



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 | 2034-04-23T09:26:53.353 | | 23.45 | -24.44 | 140461.00 | -19.11 | | |
| A (OER) | I | 2034-04-23T09:30:06.490 | | 23.06 | -25.09 | 136774.40 | -19.06 | | |
| Encke (OEG) | I | 2034-04-23T09:32:45.589 | | 22.74 | -25.64 | 133744.89 | -19.02 | | |
| Encke (IEG) | I | 2034-04-23T09:33:02.498 | | 22.70 | -25.69 | 133423.31 | -19.01 | | |
| A (IER) | I | 2034-04-23T09:43:03.607 | | 21.44 | -27.74 | 122050.38 | -18.82 | | |
| B (OER) | I | 2034-04-23T09:47:02.274 | | 20.92 | -28.55 | 117571.16 | -18.72 | | |
| B (IER) | I | 2034-04-23T10:10:18.571 | | 17.72 | -33.28 | 91984.69 | -17.82 | | |
| C (IER) | I | 2034-04-23T10:27:14.566 | | 15.23 | -36.70 | 74490.58 | -16.48 | | |
| Saturn | I | 2034-04-23T10:40:02.249 | | 13.26 | -39.26 | 60251.18 | | 6.63 | 8.13 |
| Saturn | E | 2034-04-23T12:21:56.860 | | -4.40x | -58.08 | 59990.01 | | 28.11 | 33.15 |
| C (IER) | E | 2034-04-23T12:07:02.769 | b | -1.65x | -55.61 | 74490.58 | 16.60 | | |
| B (IER) | E | 2034-04-23T12:23:48.592 | | -4.75x | -58.38 | 91984.69 | 18.04 | | |
| B (OER) | E | 2034-04-23T12:46:44.033 | | -9.09x | -61.78 | 117571.16 | 19.05 | | |
| A (IER) | E | 2034-04-23T12:50:38.460 | | -9.84x | -62.30 | 122050.38 | 19.16 | | |
| Encke (IEG) | E | 2034-04-23T13:00:28.075 | | -11.73x | -63.54 | 133423.31 | 19.40 | | |
| Encke (OEG) | E | 2034-04-23T13:00:44.645 | | -11.78x | -63.57 | 133744.89 | 19.41 | | |
| A (OER) | E | 2034-04-23T13:03:20.502 | | -12.29x | -63.88 | 136774.40 | 19.46 | | |
| F ring | E | 2034-04-23T13:06:29.599 | | -12.90x | -64.23 | 140461.00 | 19.53 | | |