

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-11-23T18:04:10.480
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3379757387821109504
 2Mass ID (if available) : 06411629+2325224

Uranus 2034-11-23T18:04:10 K14.77 G16.86 PgtRgt

ICRS Star Coord at Epoch: 06h 41m 16.29595s +23:25:22.23704s

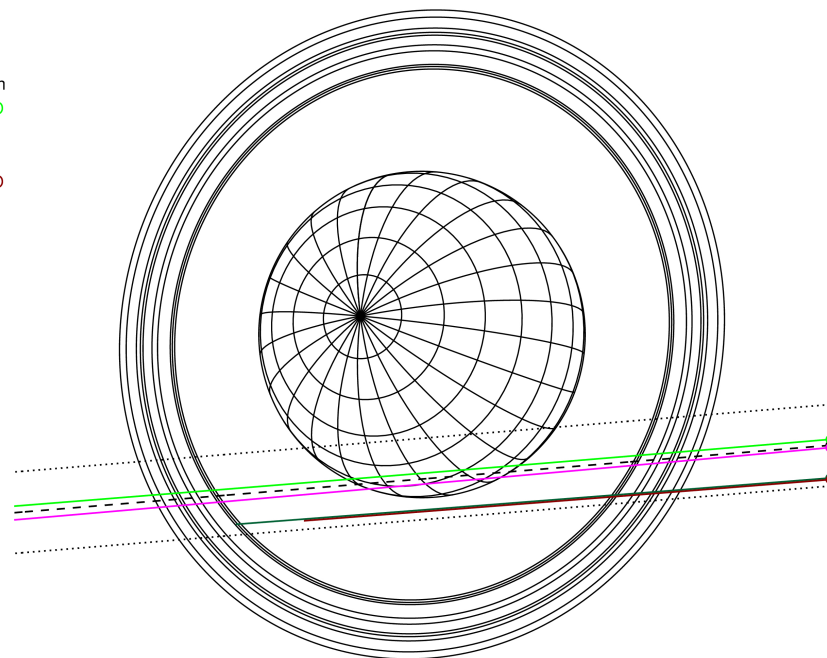
RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.774
 G magnitude : 16.865
 RP magnitude : 16.188
 BP magnitude : 17.384
 DUPflag : 0
 Distance (au) : 18.112
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -16.92
 Sun-Target sep (deg) : 141.57
 Sun-Moon sep (deg) : 69.54
 B (ring opening deg) : 66.81
 PA of pole (deg) : 73.33

Uranus 2034-11-23T18:04:10 K14.77 G16.86
 PgtRgt



2034-11-23T18:04:10.4800 α: 06 41 16.2959 δ: +23 25 22.237 C/A 1.708° PA 4.72 deg v_sky -16.92 km/s D 18.11 AU
 Credit: Styled after SORA/Lucky Star

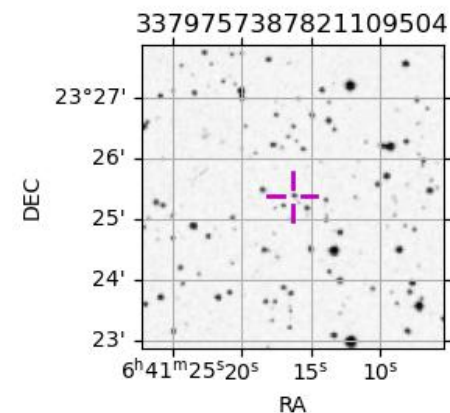
Earth
 PMO
 KAV
 AAT
 MSO



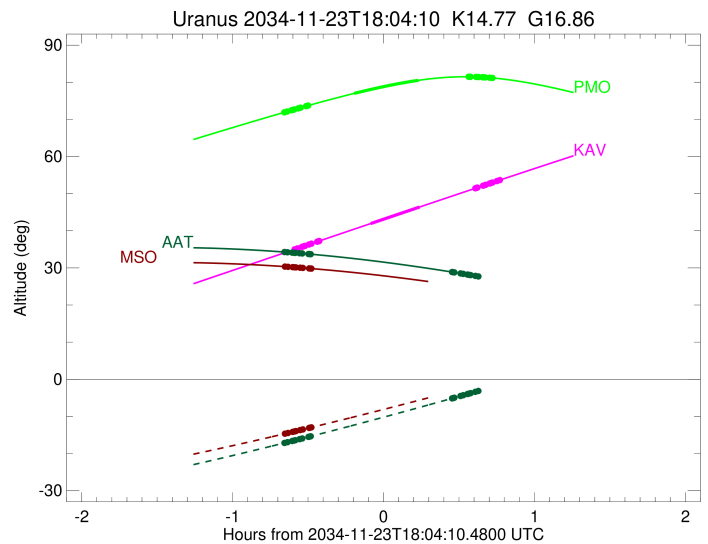
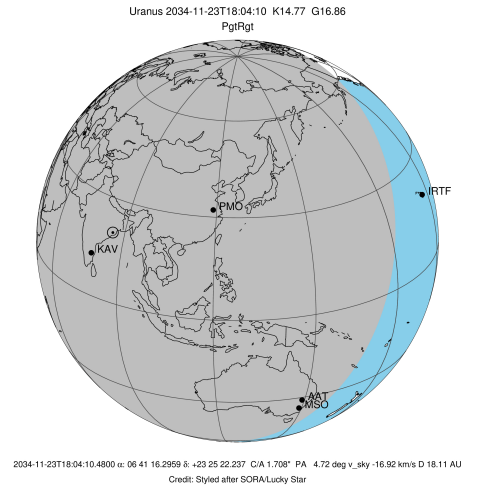
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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 (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++	+ +	+++++	NOV 23 17:24 - NOV 23 18:47	PieRie
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8	+++++	+ +	+++++	NOV 23 17:28 - NOV 23 18:50	PieRie
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European Southern Obs	-29.3	289.3					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1	+++++		++	NOV 23 17:24 - NOV 23 18:31	PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++			NOV 23 17:24 - NOV 23 17:35	PnnRin

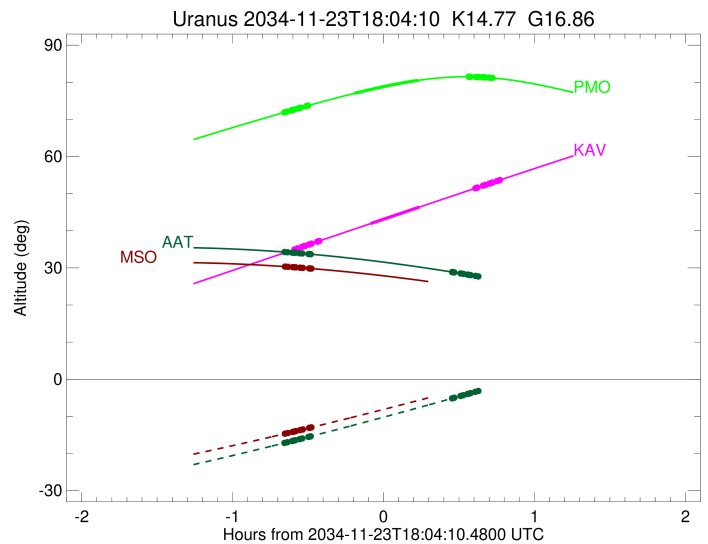
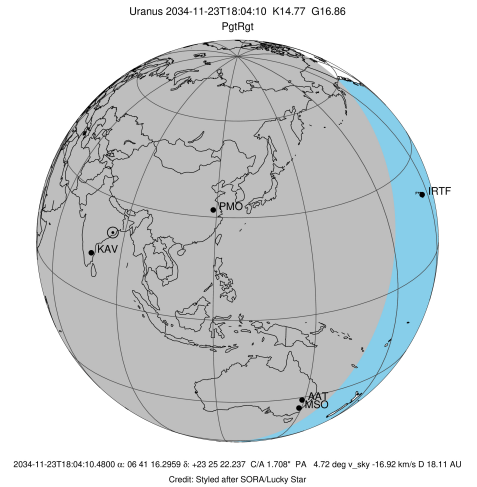


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-11-23T18:05:00.490
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 3379757387821109504
 2Mass ID (if available) : 06411629+2325224
 ICRS Star Coord at Epoch: 06h 41m 16.29595s +23:25:22.23704s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.774
 G magnitude : 16.865
 RP magnitude : 16.188
 BP magnitude : 17.384
 DUPflag : 0
 Distance (au) : 18.112
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -16.92
 Sun-Target sep (deg) : 141.57
 Sun-Moon sep (deg) : 70.44
 B (ring opening deg) : 66.81
 PA of pole (deg) : 73.33
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.649
 C/A sky separation (km) : 21662.7
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-11-23T17:24:21.155		71.83	-66.24	51555.29	-16.83		
lambda	I	2034-11-23T17:25:52.259		72.13	-65.95	50026.71	-16.72		
delta	I	2034-11-23T17:27:35.949		72.46	-65.61	48300.35	-16.58		
gamma	I	2034-11-23T17:28:17.009		72.59	-65.47	47620.98	-16.51		
eta	I	2034-11-23T17:28:43.980		72.68	-65.38	47176.12	-16.47		
beta	I	2034-11-23T17:30:15.336		72.97	-65.08	45676.33	-16.32		
alpha	I	2034-11-23T17:31:16.449		73.17	-64.88	44685.64	-16.21		
4	I	2034-11-23T17:33:25.256		73.57	-64.46	42613.37	-15.95		
5	I	2034-11-23T17:33:54.974		73.67	-64.36	42155.25	-15.90		
6	I	2034-11-23T17:34:12.489		73.72	-64.30	41879.35	-15.86		
Uranus	I	2034-11-23T17:52:30.886		77.00	-60.60	25246.48		-18.14	-18.94
Uranus	E	2034-11-23T18:18:02.574		80.53	-55.32	25541.62		4.17	4.37
6	E	2034-11-23T18:37:58.873		81.49	-51.13	41823.20	15.89		
5	E	2034-11-23T18:38:26.500		81.48	-51.04	42264.61	15.92		
4	E	2034-11-23T18:38:44.315		81.48	-50.97	42536.57	15.98		
alpha	E	2034-11-23T18:41:00.169		81.44	-50.50	44728.63	16.24		
beta	E	2034-11-23T18:41:56.112		81.42	-50.30	45641.86	16.35		
eta	E	2034-11-23T18:43:29.465		81.36	-49.97	47176.12	16.50		
gamma	E	2034-11-23T18:43:56.913		81.35	-49.88	47629.75	16.55		
delta	E	2034-11-23T18:44:37.363		81.32	-49.73	48300.35	16.61		
lambda	E	2034-11-23T18:46:20.841		81.23	-49.37	50026.71	16.75		
epsilon	E	2034-11-23T18:47:12.072		81.19	-49.19	50886.80	16.87		

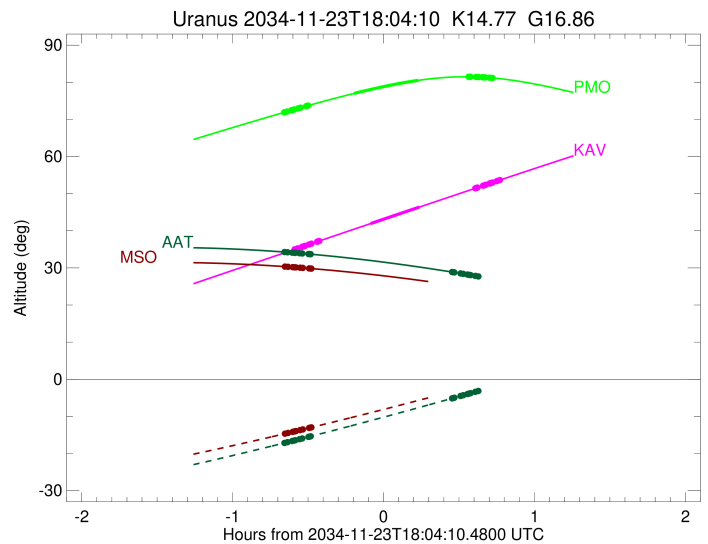
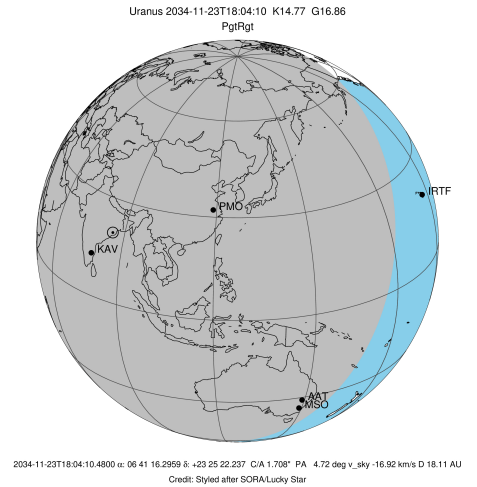
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-11-23T18:08:28.600
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KAV
 Location : Kavalur Observatory
 Latitude (deg) : 12.57556
 E. Longitude (deg) : 78.83167
 Altitude (km) : 0.722
 Gaia source ID : 3379757387821109504
 2Mass ID (if available) : 06411629+2325224
 ICRS Star Coord at Epoch: 06h 41m 16.29595s +23:25:22.23704s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.774
 G magnitude : 16.865
 RP magnitude : 16.188
 BP magnitude : 17.384
 DUPflag : 0
 Distance (au) : 18.112
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -16.92
 Sun-Target sep (deg) : 141.57
 Sun-Moon sep (deg) : 69.94
 B (ring opening deg) : 66.81
 PA of pole (deg) : 73.33
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.779
 C/A sky separation (km) : 23365.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-11-23T17:28:27.368		34.90	-73.02	51554.99	-16.41		
lambda	I	2034-11-23T17:30:00.877		35.26	-73.35	50026.71	-16.28		
delta	I	2034-11-23T17:31:47.485		35.67	-73.72	48300.35	-16.11		
gamma	I	2034-11-23T17:32:29.754		35.83	-73.87	47621.00	-16.04		
eta	I	2034-11-23T17:32:57.539		35.94	-73.96	47176.12	-15.99		
beta	I	2034-11-23T17:34:31.794		36.30	-74.29	45675.83	-15.81		
alpha	I	2034-11-23T17:35:34.929		36.54	-74.50	44685.34	-15.68		
4	I	2034-11-23T17:37:48.376		37.06	-74.96	42612.64	-15.37		
5	I	2034-11-23T17:38:19.149		37.17	-75.06	42154.97	-15.31		
6	I	2034-11-23T17:38:37.323		37.24	-75.12	41879.56	-15.26		
Uranus	I	2034-11-23T17:59:03.059		41.94	-78.94	25313.62		-15.99	-16.70
Uranus	E	2034-11-23T18:18:29.564		46.39	-81.48	25558.27		0.86	0.90
6	E	2034-11-23T18:40:39.795		51.44	-81.71	41825.45	15.36		
5	E	2034-11-23T18:41:07.956		51.55	-81.68	42260.47	15.40		
4	E	2034-11-23T18:41:26.671		51.62	-81.66	42538.20	15.47		
alpha	E	2034-11-23T18:43:46.534		52.15	-81.47	44726.96	15.78		
beta	E	2034-11-23T18:44:44.174		52.37	-81.39	45642.16	15.91		
eta	E	2034-11-23T18:46:19.966		52.73	-81.24	47176.12	16.10		
gamma	E	2034-11-23T18:46:48.085		52.84	-81.19	47629.56	16.15		
delta	E	2034-11-23T18:47:29.521		52.99	-81.12	48300.35	16.23		
lambda	E	2034-11-23T18:49:15.343		53.39	-80.92	50026.71	16.40		
epsilon	E	2034-11-23T18:50:08.500		53.59	-80.82	50900.65	16.54		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-11-23T18:01:55.510
Event type          : PgtRgt
: Uranus 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      : 3379757387821109504
2Mass ID (if available) : 06411629+2325224
ICRS Star Coord at Epoch: 06h 41m 16.29595s +23:25:22.23704s
RUWE (>1.4 is poor) : 0.99
K magnitude          : 14.774
G magnitude          : 16.865
RP magnitude         : 16.188
BP magnitude         : 17.384
DUPflag             : 0
Distance (au)       : 18.112
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -16.92
Sun-Target sep (deg) : 141.57
Sun-Moon sep (deg)  : 70.16
B (ring opening deg) : 66.81
PA of pole (deg)    : 73.33
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.086
C/A sky separation (km) : 27405.8
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itrfr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```

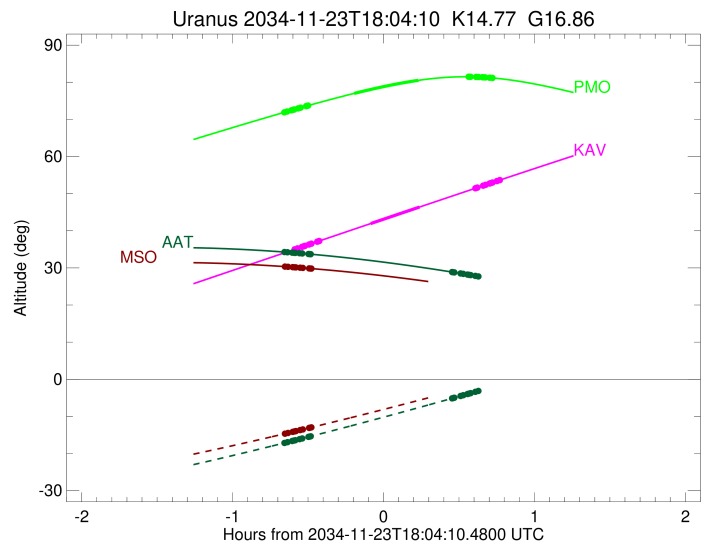
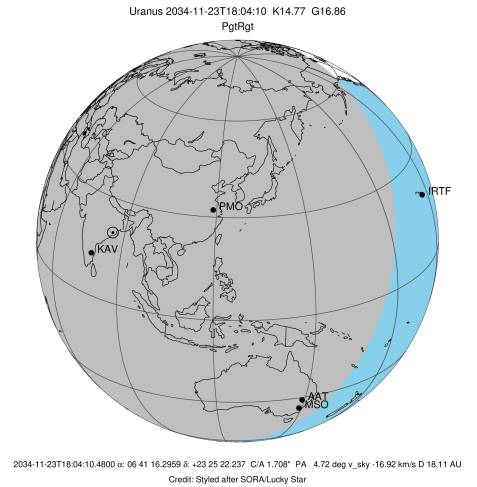


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-11-23T17:24:23.801		34.29	-17.22	51551.26	-15.68		
lambda	I	2034-11-23T17:26:01.552		34.21	-16.95	50026.71	-15.50		
delta	I	2034-11-23T17:27:53.861		34.11	-16.63	48300.35	-15.24		
gamma	I	2034-11-23T17:28:38.578		34.07	-16.50	47621.11	-15.14		
eta	I	2034-11-23T17:29:08.050		34.04	-16.42	47176.12	-15.06		
beta	I	2034-11-23T17:30:48.547		33.95	-16.13	45674.10	-14.79		
alpha	I	2034-11-23T17:31:56.135		33.89	-15.94	44684.74	-14.60		
4	I	2034-11-23T17:34:20.542		33.75	-15.52	42609.88	-14.13		
5	I	2034-11-23T17:34:53.693		33.71	-15.43	42155.03	-14.03		
6	I	2034-11-23T17:35:13.569		33.69	-15.37	41879.71	-13.96		

No planet occultations

6	E	2034-11-23T18:31:24.957		28.88	-5.15	41830.13	13.94		
5	E	2034-11-23T18:31:54.996		28.83	-5.05	42251.85	14.01		
4	E	2034-11-23T18:32:16.243		28.79	-4.99x	42541.80	14.11		
alpha	E	2034-11-23T18:34:48.116		28.51	-4.51x	44723.60	14.58		
beta	E	2034-11-23T18:35:50.644		28.39	-4.31x	45642.90	14.77		
eta	E	2034-11-23T18:37:33.492		28.20	-3.98x	47176.12	15.04		
gamma	E	2034-11-23T18:38:03.545		28.14	-3.88x	47629.16	15.11		
delta	E	2034-11-23T18:38:47.804		28.06	-3.74x	48300.35	15.22		
lambda	E	2034-11-23T18:40:40.308		27.85	-3.38x	50026.71	15.47		
epsilon	E	2034-11-23T18:41:38.329		27.73	-3.20x	50927.64	15.65		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-11-23T18:01:59.440
 Event type : PgtRgt
 : Uranus 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 : 3379757387821109504
 2Mass ID (if available) : 06411629+2325224
 ICRS Star Coord at Epoch: 06h 41m 16.29595s +23:25:22.23704s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.774
 G magnitude : 16.865
 RP magnitude : 16.188
 BP magnitude : 17.384
 DUPflag : 0
 Distance (au) : 18.112
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -16.92
 Sun-Target sep (deg) : 141.57
 Sun-Moon sep (deg) : 70.10
 B (ring opening deg) : 66.81
 PA of pole (deg) : 73.33
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.106
 C/A sky separation (km) : 27666.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-11-23T17:24:35.494		30.37	-14.72	51550.91	-15.61		
lambda	I	2034-11-23T17:26:13.719		30.29	-14.46	50026.71	-15.41		
delta	I	2034-11-23T17:28:06.644		30.20	-14.16	48300.35	-15.16		
gamma	I	2034-11-23T17:28:51.620		30.16	-14.04	47621.12	-15.05		
eta	I	2034-11-23T17:29:21.269		30.14	-13.96	47176.12	-14.97		
beta	I	2034-11-23T17:31:02.409		30.05	-13.69	45673.99	-14.69		
alpha	I	2034-11-23T17:32:10.452		29.99	-13.50	44684.72	-14.50		
4	I	2034-11-23T17:34:35.960		29.86	-13.11	42609.69	-14.01		
5	I	2034-11-23T17:35:09.354		29.83	-13.02	42155.07	-13.91		
6	I	2034-11-23T17:35:29.403		29.82	-12.96	41879.69	-13.84		

No planet occultations

6	E	2034-11-23T18:31:18.756		25.42	-3.33x	41830.49	13.82		
5	E	2034-11-23T18:31:48.971		25.37	-3.24x	42251.18	13.90		
4	E	2034-11-23T18:32:10.446		25.33	-3.17x	42542.09	14.00		
alpha	E	2034-11-23T18:34:43.408		25.07	-2.71x	44723.34	14.48		
beta	E	2034-11-23T18:35:46.376		24.97	-2.52x	45642.96	14.67		
eta	E	2034-11-23T18:37:29.859		24.79	-2.21x	47176.12	14.95		
gamma	E	2034-11-23T18:38:00.086		24.73	-2.11x	47629.13	15.02		
delta	E	2034-11-23T18:38:44.599		24.66	-1.98x	48300.35	15.13		
lambda	E	2034-11-23T18:40:37.704		24.46	-1.63x	50026.71	15.39		
epsilon	E	2034-11-23T18:41:36.155		24.35	-1.46x	50929.81	15.58		