

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-11-29T22:29:22.990
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 617976357158831744
 2Mass ID (if available) : 09363831+1459340

ICRS Star Coord at Epoch: 09h 36m 38.27064s +14:59:34.66622s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 12.683
 G magnitude : 14.357
 RP magnitude : 13.794
 BP magnitude : 14.750
 DUPflag : 0
 Distance (au) : 18.120
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -1.30
 Sun-Target sep (deg) : 105.43
 Sun-Moon sep (deg) : 87.34
 B (ring opening deg) : 25.74
 PA of pole (deg) : 99.89

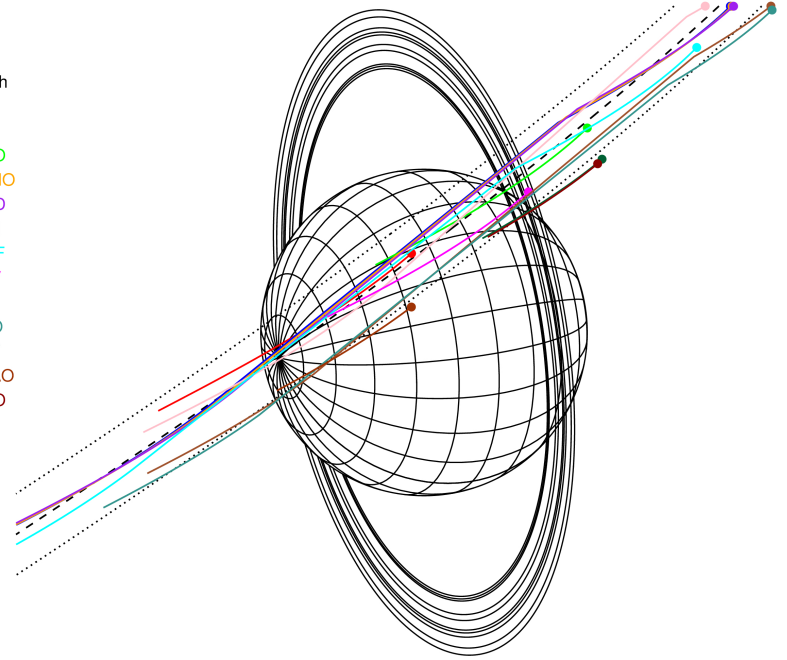
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2043-11-29T22:29:22.9900 α: 09 36 38.2706 s: +14 59 34.666 C/A 0.941° PA 233.07 deg v_sky - 1.30 km/s D 18.12 AU
 Credit: Styled after SORA/Lucky Star

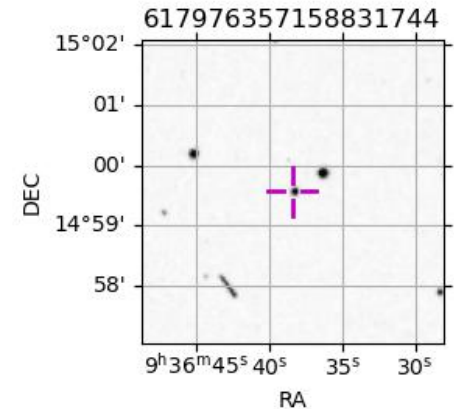
Uranus 2043-11-29T22:29:22 K12.68 G14.36 PgtRgt

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



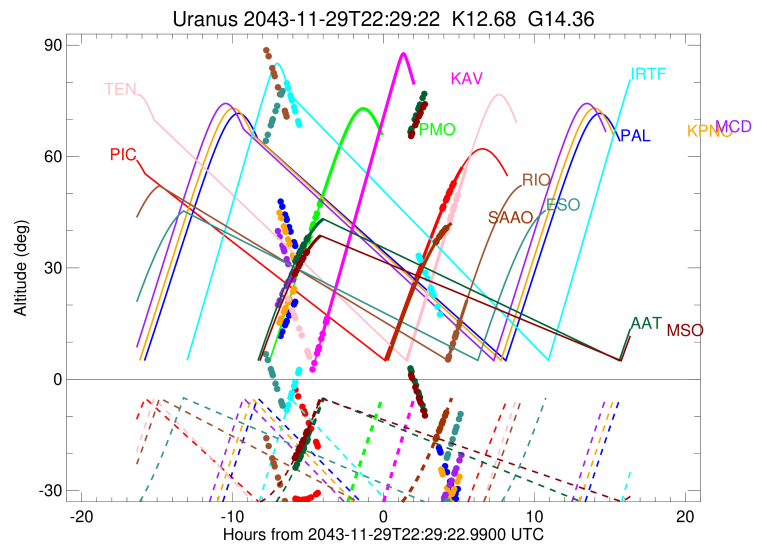
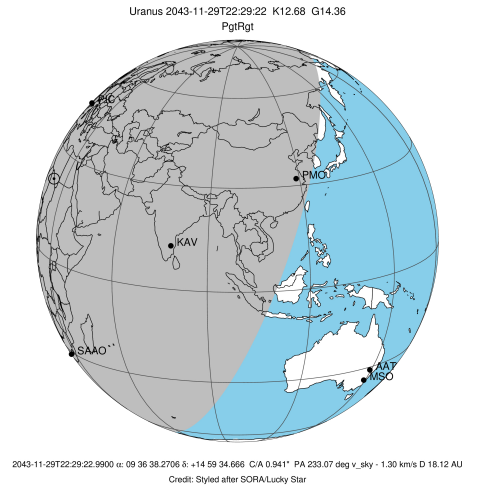
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1		+		NOV 30 03:42 - NOV 30 03:42	PneRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++++	+		NOV 29 17:30 - NOV 29 18:17	PinRin
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		+		NOV 30 03:57 - NOV 30 03:57	PneRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	++			NOV 29 16:06 - NOV 29 16:10	PnnRin
KAV	Kavalur Observatory	12.6	78.8	++++	+		NOV 29 18:05 - NOV 29 18:22	PinRin
RIO	Rio de Janeiro	-22.9	316.8		+		NOV 30 04:01 - NOV 30 04:01	PneRnn
ESO	European Southern Obs	-29.3	289.3					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1	++	+		NOV 29 16:41 - NOV 29 16:54	PinRin
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	++	+		NOV 29 16:38 - NOV 29 16:50	PinRin



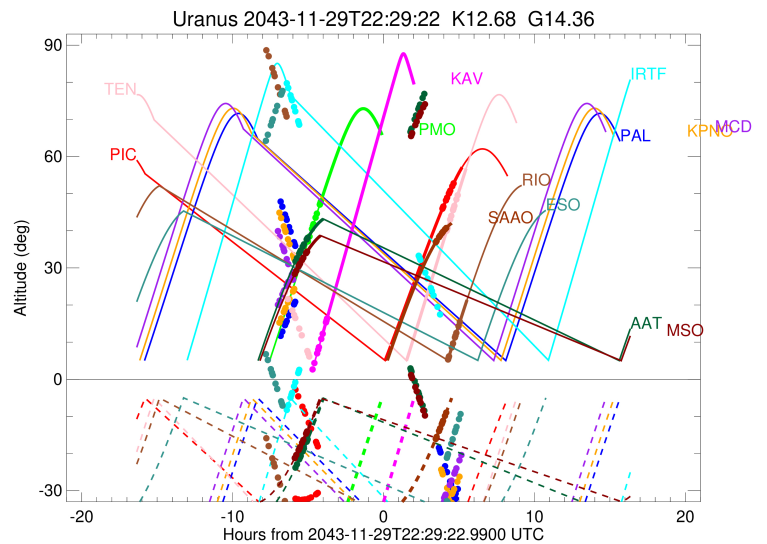
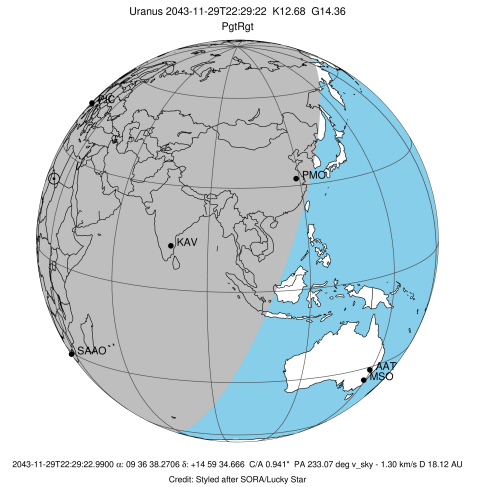
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2043-11-29T23:47:53.670
Event type           : PgtRgt
: Uranus 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       : 617976357158831744
2Mass ID (if available) : 09363831+1459340
ICRS Star Coord at Epoch: 09h 36m 38.27064s +14:59:34.66623s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 12.683
G magnitude           : 14.357
RP magnitude          : 13.794
BP magnitude          : 14.750
DUPflag              : 0
Distance (au)        : 18.119
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -1.30
Sun-Target sep (deg) : 105.43
Sun-Moon sep (deg)  : 87.44
B (ring opening deg) : 25.74
PA of pole (deg)    : 99.89
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.827
C/A sky separation (km) : 10869.7
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.spk
ura111.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.ura111.bsp
ura161.bsp
vgr2.ura161.bsp
peph.ura160.bsp
earthstns_itr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```



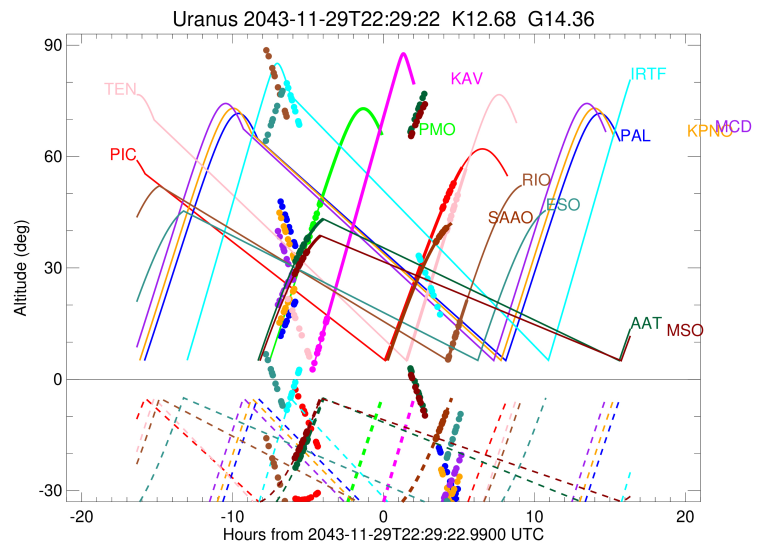
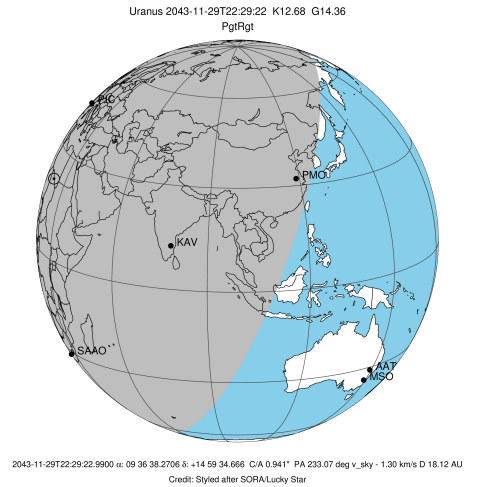
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-11-29T16:41:41.287	-32.22x	-3.17x	50953.47	-1.71			
lambda	I	2043-11-29T16:50:42.726	-32.37x	-4.66x	50026.71	-1.71			
delta	I	2043-11-29T17:07:25.519	-32.46x	-7.47	48300.35	-1.73			
gamma	I	2043-11-29T17:13:57.027	-32.42x	-8.58	47622.31	-1.74			
eta	I	2043-11-29T17:18:13.877	-32.37x	-9.31	47176.12	-1.74			
beta	I	2043-11-29T17:32:53.526	-32.09x	-11.85	45641.48	-1.76			
alpha	I	2043-11-29T17:41:36.914	-31.83x	-13.37	44709.95	-1.77			
4	I	2043-11-29T18:02:13.879	-30.94x	-17.02	42546.90	-1.80			
5	I	2043-11-29T18:04:10.156	-30.84x	-17.37	42236.91	-1.79			
6	I	2043-11-29T18:07:37.706	-30.65x	-17.98	41875.12	-1.80			
Uranus	I	2043-11-29T18:47:28.358	-27.76x	-25.19	25529.38			-27.87	-28.98
Uranus	E	2043-11-30T03:42:11.713	57.14	-37.28	25449.67			64.18	65.19
6	E	2043-11-30T02:23:16.463	b	45.89	-51.39	41820.63	3.41		
5	E	2043-11-30T02:25:18.432	b	46.22	-51.04	42182.06	3.41		
4	E	2043-11-30T02:26:35.038	b	46.43	-50.82	42565.62	3.43		
alpha	E	2043-11-30T02:37:19.529	b	48.15	-48.96	44745.47	3.47		
beta	E	2043-11-30T02:41:46.716	b	48.85	-48.17	45674.24	3.48		
eta	E	2043-11-30T02:48:58.217	b	49.96	-46.90	47176.12	3.51		
gamma	E	2043-11-30T02:51:07.873	b	50.29	-46.52	47631.55	3.52		
delta	E	2043-11-30T02:54:17.786	b	50.77	-45.95	48300.35	3.53		
lambda	E	2043-11-30T03:02:25.470	b	51.97	-44.50	50026.71	3.55		
epsilon	E	2043-11-30T03:09:21.798	b	52.96	-43.25	51510.22	3.58		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-11-29T22:05:12.540
 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 : 617976357158831744
 2Mass ID (if available) : 09363831+1459340
 ICRS Star Coord at Epoch: 09h 36m 38.27064s +14:59:34.66622s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 12.683
 G magnitude : 14.357
 RP magnitude : 13.794
 BP magnitude : 14.750
 DUPflag : 0
 Distance (au) : 18.120
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -1.30
 Sun-Target sep (deg) : 105.43
 Sun-Moon sep (deg) : 88.15
 B (ring opening deg) : 25.74
 PA of pole (deg) : 99.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.981
 C/A sky separation (km) : 12893.9
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



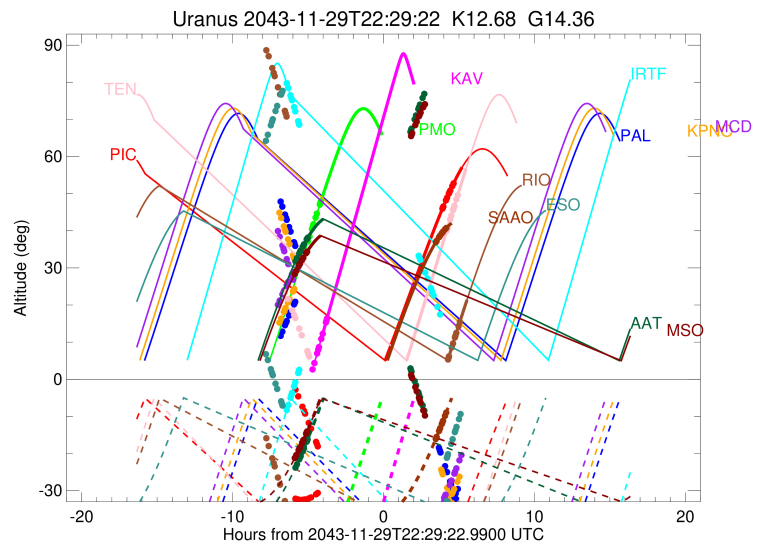
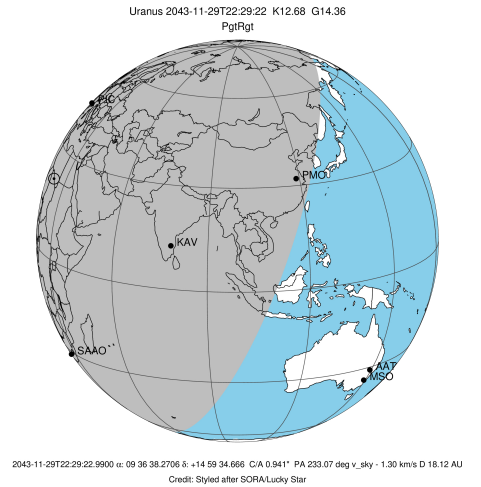
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-11-29T17:30:29.767		37.46	-65.95	50912.45	-2.97		
lambda	I	2043-11-29T17:35:27.428		38.51	-64.96	50026.71	-2.98		
delta	I	2043-11-29T17:45:03.864		40.54	-63.01	48300.35	-3.01		
gamma	I	2043-11-29T17:48:49.135		41.33	-62.24	47621.93	-3.02		
eta	I	2043-11-29T17:51:16.805		41.85	-61.73	47176.12	-3.02		
beta	I	2043-11-29T17:59:43.989		43.62	-59.99	45642.08	-3.04		
alpha	I	2043-11-29T18:04:48.341		44.68	-58.93	44706.31	-3.05		
4	I	2043-11-29T18:16:46.023		47.17	-56.43	42551.21	-3.07		
5	I	2043-11-29T18:17:49.250	b	47.39	-56.21	42245.64	-3.06		
6	I	2043-11-29T18:19:56.810	b	47.83	-55.77	41872.80	-3.07		
Uranus	I	2043-11-29T18:17:08.765		47.25	-56.35	25514.01		-35.19	-36.45
Uranus	E	2043-11-30T02:05:18.673		20.95	30.62x	25454.47		61.65	62.73
6	E	2043-11-30T00:40:07.986	b	39.05	19.36x	41824.46	3.14		
5	E	2043-11-30T00:42:18.804	b	38.59	19.70x	42176.56	3.13		
4	E	2043-11-30T00:43:44.716	b	38.28	19.92x	42561.38	3.14		
alpha	E	2043-11-30T00:55:34.090	b	35.78	21.71x	44747.24	3.13		
beta	E	2043-11-30T01:00:30.674	b	34.73	22.44x	45672.81	3.12		
eta	E	2043-11-30T01:08:35.120	b	33.01	23.60x	47176.12	3.11		
gamma	E	2043-11-30T01:11:01.556	b	32.49	23.94x	47631.58	3.11		
delta	E	2043-11-30T01:14:36.902	b	31.73	24.44x	48300.35	3.10		
lambda	E	2043-11-30T01:23:54.738	b	29.75	25.70x	50026.71	3.09		
epsilon	E	2043-11-30T01:32:01.148	b	28.03	26.75x	51524.36	3.07		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-11-29T23:56:40.360
 Event type : PgtRgt
 : Uranus 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 : 617976357158831744
 2Mass ID (if available) : 09363831+1459340
 ICRS Star Coord at Epoch: 09h 36m 38.27064s +14:59:34.66623s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 12.683
 G magnitude : 14.357
 RP magnitude : 13.794
 BP magnitude : 14.750
 DUPflag : 0
 Distance (au) : 18.119
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -1.30
 Sun-Target sep (deg) : 105.43
 Sun-Moon sep (deg) : 87.17
 B (ring opening deg) : 25.74
 PA of pole (deg) : 99.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.724
 C/A sky separation (km) : 9511.7
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



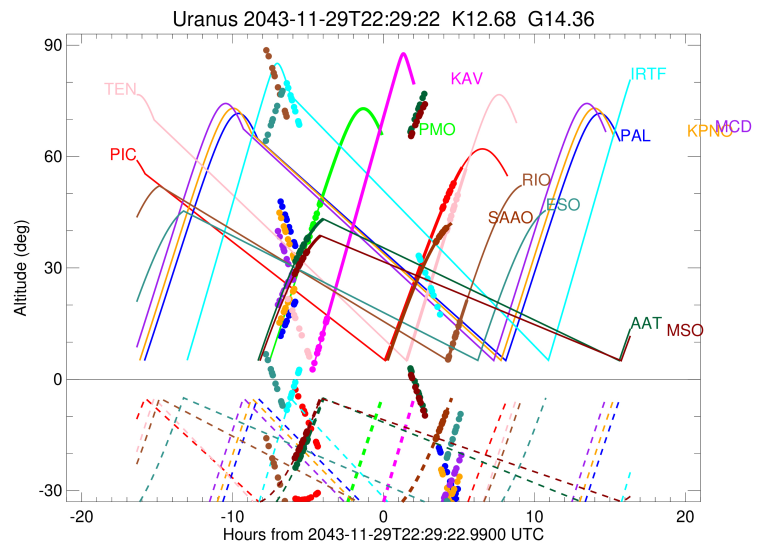
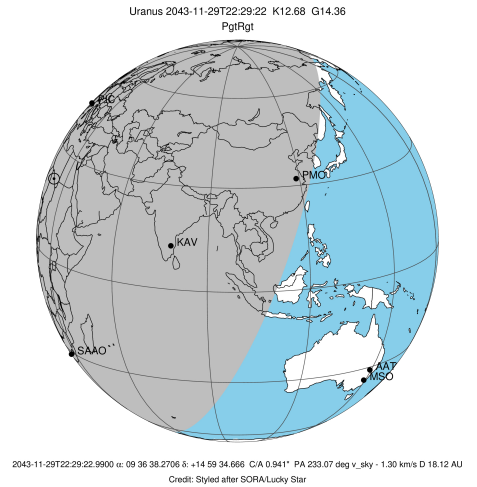
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-11-29T15:59:54.376	-36.59x	23.10x	50958.84	-1.63			
lambda	I	2043-11-29T16:09:29.985	-37.94x	21.53x	50026.71	-1.62			
delta	I	2043-11-29T16:27:22.535	-40.27x	18.49x	48300.35	-1.60			
gamma	I	2043-11-29T16:34:25.566	-41.11x	17.26x	47622.37	-1.60			
eta	I	2043-11-29T16:39:04.438	-41.64x	16.44x	47176.12	-1.60			
beta	I	2043-11-29T16:55:06.736	-43.30x	13.54x	45641.41	-1.60			
alpha	I	2043-11-29T17:04:44.031	-44.17x	11.77x	44710.52	-1.60			
4	I	2043-11-29T17:27:43.725	-45.82x	7.41x	42546.26	-1.60			
5	I	2043-11-29T17:29:55.742	-45.94x	6.99x	42235.55	-1.60			
6	I	2043-11-29T17:33:47.468	-46.14x	6.24x	41875.44	-1.60			
Uranus	I	2043-11-29T18:24:05.357	-46.95x	-3.77x	25530.83			-27.12	-28.21
Uranus	E	2043-11-30T03:57:32.766	56.74	-48.18	25449.77			64.13	65.14
6	E	2043-11-30T02:40:11.970	b	39.92	-65.17	41818.73	3.45		
5	E	2043-11-30T02:42:13.309	b	40.37	-64.73	42185.07	3.45		
4	E	2043-11-30T02:43:28.128	b	40.64	-64.46	42567.81	3.47		
alpha	E	2043-11-30T02:54:03.888	b	42.97	-62.15	44744.48	3.52		
beta	E	2043-11-30T02:58:27.530	b	43.94	-61.18	45674.92	3.54		
eta	E	2043-11-30T03:05:32.244	b	45.49	-59.63	47176.12	3.57		
gamma	E	2043-11-30T03:07:39.813	b	45.96	-59.17	47631.53	3.57		
delta	E	2043-11-30T03:10:46.593	b	46.64	-58.48	48300.35	3.59		
lambda	E	2043-11-30T03:18:45.680	b	48.38	-56.73	50026.71	3.62		
epsilon	E	2043-11-30T03:25:31.874	b	49.86	-55.23	51502.24	3.65		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-11-29T21:30:17.560
 Event type : PgtRgt
 : Uranus 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 : 617976357158831744
 2Mass ID (if available) : 09363831+1459340
 ICRS Star Coord at Epoch: 09h 36m 38.27064s +14:59:34.66622s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 12.683
 G magnitude : 14.357
 RP magnitude : 13.794
 BP magnitude : 14.750
 DUPflag : 0
 Distance (au) : 18.120
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -1.30
 Sun-Target sep (deg) : 105.43
 Sun-Moon sep (deg) : 87.17
 B (ring opening deg) : 25.74
 PA of pole (deg) : 99.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.198
 C/A sky separation (km) : 15737.9
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



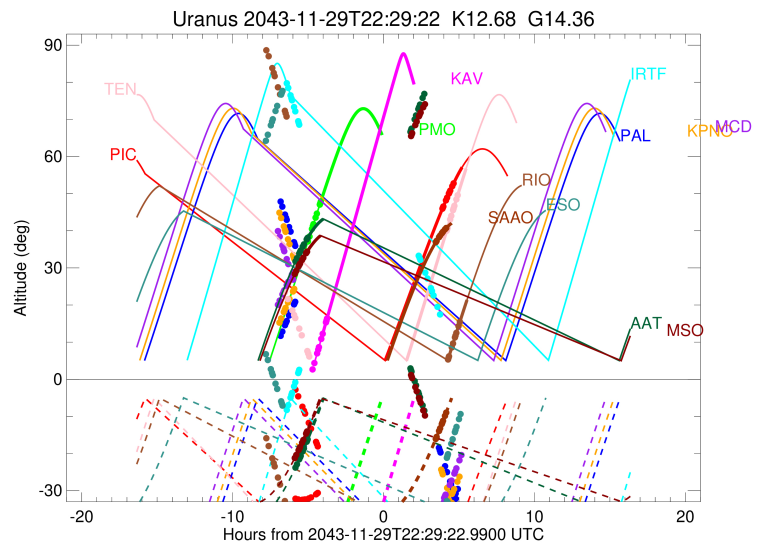
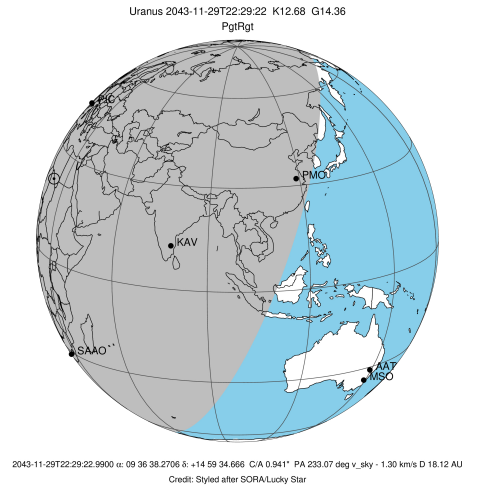
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-11-29T16:06:12.696		79.45	-7.96	50927.01	-3.20		
lambda	I	2043-11-29T16:10:55.424		78.44	-6.92	50026.71	-3.18		
delta	I	2043-11-29T16:19:59.848		76.44	-4.93x	48300.35	-3.16		
gamma	I	2043-11-29T16:23:34.658		75.64	-4.14x	47622.09	-3.15		
eta	I	2043-11-29T16:25:56.210		75.11	-3.62x	47176.12	-3.15		
beta	I	2043-11-29T16:34:06.174		73.25	-1.84x	45641.75	-3.13		
alpha	I	2043-11-29T16:39:02.360		72.12	-0.77x	44708.23	-3.11		
4	I	2043-11-29T16:50:53.186		69.38	1.79x	42548.55	-3.08		
5	I	2043-11-29T16:51:59.116		69.13	2.03x	42240.26	-3.06		
6	I	2043-11-29T16:54:03.245		68.65	2.48x	41874.32	-3.06		
Uranus	I	2043-11-29T17:12:33.542		64.33	6.43x	25526.34		-29.40	-30.54
Uranus	E	2043-11-30T03:18:59.960		-55.47x	4.01x	25450.69		63.63	64.66
6	E	2043-11-30T00:48:37.276	b	-38.22x	33.39x	41824.91	1.84		
5	E	2043-11-30T00:52:20.505	b	-38.90x	32.77x	42176.05	1.83		
4	E	2043-11-30T00:54:47.800	b	-39.35x	32.35x	42561.02	1.84		
alpha	E	2043-11-30T01:15:01.743	b	-42.88x	28.80x	44747.23	1.83		
beta	E	2043-11-30T01:23:29.273	b	-44.27x	27.26x	45672.88	1.83		
eta	E	2043-11-30T01:37:17.117	b	-46.43x	24.68x	47176.12	1.82		
gamma	E	2043-11-30T01:41:26.931	b	-47.05x	23.89x	47631.58	1.82		
delta	E	2043-11-30T01:47:33.797	b	-47.93x	22.72x	48300.35	1.82		
lambda	E	2043-11-30T02:03:20.460	b	-50.03x	19.64x	50026.71	1.82		
epsilon	E	2043-11-30T02:16:57.999	b	-51.62x	16.92x	51520.33	1.83		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-11-29T22:33:04.710
 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 : 617976357158831744
 2Mass ID (if available) : 09363831+1459340
 ICRS Star Coord at Epoch: 09h 36m 38.27064s +14:59:34.66622s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 12.683
 G magnitude : 14.357
 RP magnitude : 13.794
 BP magnitude : 14.750
 DUPflag : 0
 Distance (au) : 18.120
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -1.30
 Sun-Target sep (deg) : 105.43
 Sun-Moon sep (deg) : 88.20
 B (ring opening deg) : 25.74
 PA of pole (deg) : 99.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.697
 C/A sky separation (km) : 9159.7
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



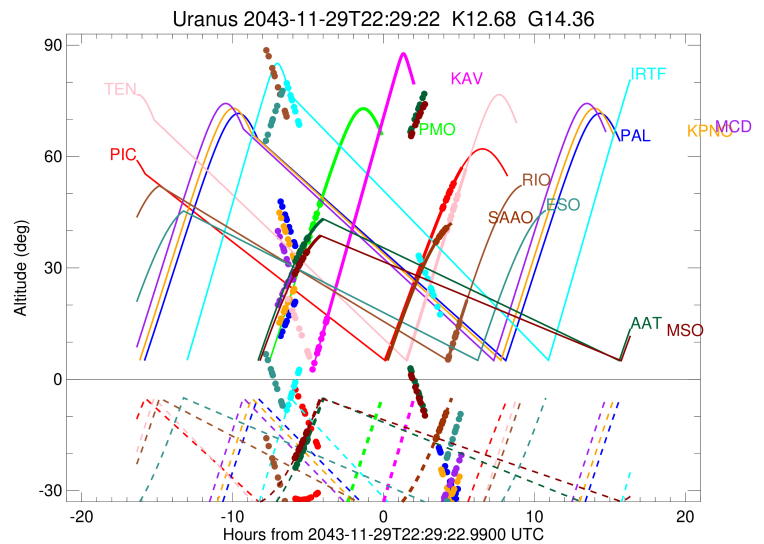
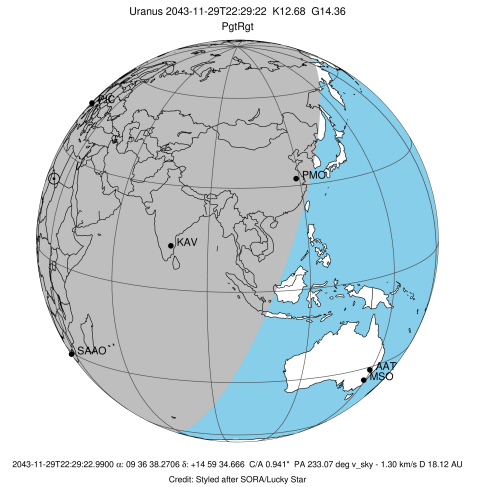
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-11-29T17:49:20.509		3.11x	-76.22	50898.13	-2.57		
lambda	I	2043-11-29T17:54:57.561		4.45x	-77.20	50026.71	-2.60		
delta	I	2043-11-29T18:05:55.504		7.05	-78.90	48300.35	-2.65		
gamma	I	2043-11-29T18:10:10.721		8.06	-79.45	47621.77	-2.67		
eta	I	2043-11-29T18:12:57.334		8.72	-79.78	47176.12	-2.68		
beta	I	2043-11-29T18:22:26.265		10.98	-80.61	45642.47	-2.72		
alpha	I	2043-11-29T18:28:06.120	b	12.34	-80.88	44704.44	-2.75		
4	I	2043-11-29T18:41:16.191	b	15.48	-80.73	42553.94	-2.81		
5	I	2043-11-29T18:42:22.678	b	15.75	-80.67	42250.93	-2.80		
6	I	2043-11-29T18:44:46.189	b	16.32	-80.51	41871.14	-2.82		
Uranus	I	2043-11-29T18:22:37.752		11.03	-80.62	25503.08		-40.00	-41.30
Uranus	E	2043-11-30T02:23:02.579		52.35	19.85x	25450.08		63.96	64.97
6	E	2043-11-30T01:07:11.136	b	70.72	3.17x	41820.74	3.69		
5	E	2043-11-30T01:09:03.944	b	70.27	3.59x	42181.86	3.69		
4	E	2043-11-30T01:10:15.051	b	69.98	3.86x	42565.46	3.70		
alpha	E	2043-11-30T01:20:16.406	b	67.56	6.10x	44745.59	3.69		
beta	E	2043-11-30T01:24:27.869	b	66.54	7.04x	45674.13	3.69		
eta	E	2043-11-30T01:31:16.722	b	64.89	8.55x	47176.12	3.69		
gamma	E	2043-11-30T01:33:20.211	b	64.39	9.01x	47631.56	3.69		
delta	E	2043-11-30T01:36:21.632	b	63.66	9.68x	48300.35	3.69		
lambda	E	2043-11-30T01:44:10.476	b	61.77	11.41x	50026.71	3.68		
epsilon	E	2043-11-30T01:50:54.667	b	60.13	12.89x	51512.26	3.67		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-11-29T23:21:11.310
 Event type : PgtRgt
 : Uranus 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 : 617976357158831744
 2Mass ID (if available) : 09363831+1459340
 ICRS Star Coord at Epoch: 09h 36m 38.27064s +14:59:34.66623s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 12.683
 G magnitude : 14.357
 RP magnitude : 13.794
 BP magnitude : 14.750
 DUPflag : 0
 Distance (au) : 18.119
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -1.30
 Sun-Target sep (deg) : 105.43
 Sun-Moon sep (deg) : 86.65
 B (ring opening deg) : 25.74
 PA of pole (deg) : 99.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.507
 C/A sky separation (km) : 6662.9
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



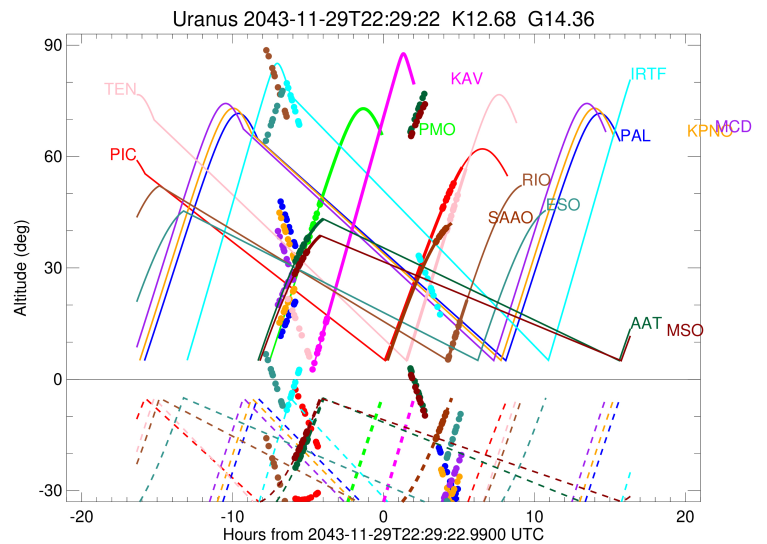
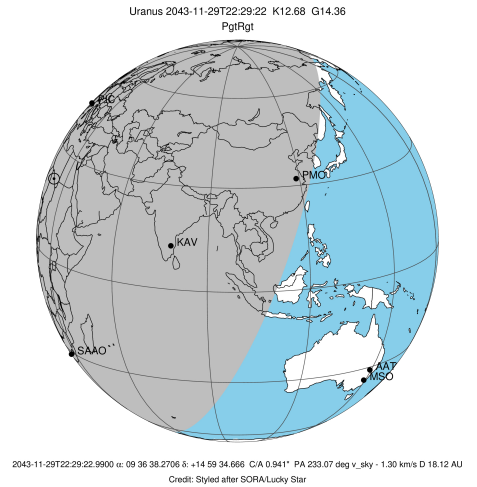
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-11-29T14:45:38.362	-16.36x	88.37x	50934.46	-2.04			
lambda	I	2043-11-29T14:53:05.946	-18.06x	86.95x	50026.71	-2.02			
delta	I	2043-11-29T15:07:31.229	-21.36x	83.75x	48300.35	-1.97			
gamma	I	2043-11-29T15:13:16.300	-22.68x	82.44x	47622.14	-1.96			
eta	I	2043-11-29T15:17:04.844	-23.55x	81.57x	47176.12	-1.95			
beta	I	2043-11-29T15:30:22.400	-26.61x	78.52x	45641.69	-1.91			
alpha	I	2043-11-29T15:38:29.050	-28.47x	76.65x	44708.54	-1.89			
4	I	2043-11-29T15:58:10.993	-33.02x	72.11x	42548.44	-1.84			
5	I	2043-11-29T16:00:01.517	-33.44x	71.69x	42240.07	-1.83			
6	I	2043-11-29T16:03:29.790	-34.24x	70.89x	41874.34	-1.82			
Uranus	I	2043-11-29T16:28:19.263	-39.98x	65.17x	25524.23			-30.43	-31.60
Uranus	E	2043-11-30T04:01:18.434	21.37	-41.54	25456.55			60.60	61.70
6	E	2043-11-30T02:45:35.557	b	5.25	-45.63	41814.22	3.17		
5	E	2043-11-30T02:47:49.089	b	5.73	-45.61	42192.99	3.18		
4	E	2043-11-30T02:49:08.531	b	6.02	-45.60	42573.24	3.20		
alpha	E	2043-11-30T03:00:34.864	b	8.52	-45.39	44741.79	3.25		
beta	E	2043-11-30T03:05:20.055	b	9.55	-45.25	45676.49	3.28		
eta	E	2043-11-30T03:12:56.774	b	11.19	-44.97	47176.12	3.32		
gamma	E	2043-11-30T03:15:13.868	b	11.68	-44.87	47631.41	3.33		
delta	E	2043-11-30T03:18:34.464	b	12.40	-44.72	48300.35	3.34		
lambda	E	2043-11-30T03:27:07.737	b	14.23	-44.25	50026.71	3.38		
epsilon	E	2043-11-30T03:34:14.872	b	15.73	-43.80	51479.27	3.42		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-11-29T21:09:36.930
 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 : 617976357158831744
 2Mass ID (if available) : 09363831+1459340
 ICRS Star Coord at Epoch: 09h 36m 38.27064s +14:59:34.66622s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 12.683
 G magnitude : 14.357
 RP magnitude : 13.794
 BP magnitude : 14.750
 DUPflag : 0
 Distance (au) : 18.121
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -1.30
 Sun-Target sep (deg) : 105.43
 Sun-Moon sep (deg) : 87.67
 B (ring opening deg) : 25.74
 PA of pole (deg) : 99.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.660
 C/A sky separation (km) : 8671.2
 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_itr93_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	2043-11-29T16:41:06.932		31.99	-23.55	50880.84	-3.16		
lambda	I	2043-11-29T16:45:36.847		32.65	-22.88	50026.71	-3.17		
delta	I	2043-11-29T16:54:39.712	b	33.93	-21.52	48300.35	-3.19		
gamma	I	2043-11-29T16:58:12.215	b	34.41	-20.97	47621.63	-3.20		
eta	I	2043-11-29T17:00:31.434	b	34.73	-20.61	47176.12	-3.20		
beta	I	2043-11-29T17:08:30.353	b	35.77	-19.35	45642.88	-3.22		
alpha	I	2043-11-29T17:13:19.752	b	36.38	-18.58	44702.87	-3.23		
4	I	2043-11-29T17:24:36.788	b	37.73	-16.73	42556.06	-3.25		
5	I	2043-11-29T17:25:32.680	b	37.84	-16.57	42254.86	-3.24		
6	I	2043-11-29T17:27:39.892	b	38.08	-16.22	41869.81	-3.25		
Uranus	I	2043-11-29T16:54:11.734		33.86	-21.59	25492.81		-44.39	-45.70
Uranus	E	2043-11-30T01:58:05.026		-18.29x	80.40x	25449.52		64.26	65.27
6	E	2043-11-30T00:16:00.235	b	3.02x	66.54x	41819.83	2.88		
5	E	2043-11-30T00:18:25.518	b	2.53x	67.03x	42183.29	2.87		
4	E	2043-11-30T00:19:56.425	b	2.23x	67.34x	42566.52	2.88		
alpha	E	2043-11-30T00:32:53.861	b	-0.42x	69.92x	44745.09	2.84		
beta	E	2043-11-30T00:38:21.797	b	-1.54x	70.99x	45674.50	2.83		
eta	E	2043-11-30T00:47:17.767	b	-3.39x	72.68x	47176.12	2.80		
gamma	E	2043-11-30T00:50:00.475	b	-3.95x	73.18x	47631.54	2.80		
delta	E	2043-11-30T00:54:00.181	b	-4.78x	73.91x	48300.35	2.78		
lambda	E	2043-11-30T01:04:23.251	b	-6.95x	75.72x	50026.71	2.76		
epsilon	E	2043-11-30T01:13:22.741	b	-8.83x	77.14x	51507.27	2.73		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-11-29T21:09:50.820
 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 : 617976357158831744
 2Mass ID (if available) : 09363831+1459340
 ICRS Star Coord at Epoch: 09h 36m 38.27064s +14:59:34.66622s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 12.683
 G magnitude : 14.357
 RP magnitude : 13.794
 BP magnitude : 14.750
 DUPflag : 0
 Distance (au) : 18.121
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -1.30
 Sun-Target sep (deg) : 105.43
 Sun-Moon sep (deg) : 87.63
 B (ring opening deg) : 25.74
 PA of pole (deg) : 99.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.634
 C/A sky separation (km) : 8338.0
 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_itr93_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	2043-11-29T16:38:21.800		28.61	-20.98	50879.69	-3.12		
lambda	I	2043-11-29T16:42:54.613		29.23	-20.36	50026.71	-3.13		
delta	I	2043-11-29T16:52:03.995	b	30.44	-19.08	48300.35	-3.15		
gamma	I	2043-11-29T16:55:39.031	b	30.90	-18.57	47621.62	-3.16		
eta	I	2043-11-29T16:57:59.897	b	31.20	-18.23	47176.12	-3.17		
beta	I	2043-11-29T17:06:04.445	b	32.19	-17.04	45642.92	-3.18		
alpha	I	2043-11-29T17:10:57.290	b	32.76	-16.31	44702.73	-3.19		
4	I	2043-11-29T17:22:21.995	b	34.04	-14.55	42556.28	-3.21		
5	I	2043-11-29T17:23:18.368	b	34.14	-14.41	42255.27	-3.20		
6	I	2043-11-29T17:25:27.310	b	34.36	-14.07	41869.67	-3.21		
Uranus	I	2043-11-29T16:50:26.785		30.23	-19.31	25491.98		-44.74	-46.06
Uranus	E	2043-11-30T02:00:30.869		-19.16x	76.34x	25449.56		64.24	65.25
6	E	2043-11-30T00:18:30.407	b	1.25x	65.42x	41819.41	2.87		
5	E	2043-11-30T00:20:56.231	b	0.77x	65.86x	42183.96	2.86		
4	E	2043-11-30T00:22:27.097	b	0.48x	66.13x	42567.00	2.87		
alpha	E	2043-11-30T00:35:25.892	b	-2.06x	68.41x	44744.87	2.84		
beta	E	2043-11-30T00:40:54.392	b	-3.13x	69.32x	45674.65	2.82		
eta	E	2043-11-30T00:49:50.937	b	-4.90x	70.76x	47176.12	2.80		
gamma	E	2043-11-30T00:52:33.791	b	-5.44x	71.17x	47631.54	2.79		
delta	E	2043-11-30T00:56:33.678	b	-6.23x	71.77x	48300.35	2.78		
lambda	E	2043-11-30T01:06:56.972	b	-8.31x	73.21x	50026.71	2.76		
epsilon	E	2043-11-30T01:15:55.707	b	-10.11x	74.29x	51505.47	2.74		