

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2048-04-13T13:49:42.120  
 Event type : PgtX  
 : Uranus occs: geocentric, topocentric  
 : No ring occs  
 Gaia source ID : 3870146209532714368  
 2Mass ID (if available) : 10350643+0946475

Uranus 2048-04-13T13:49:42 K14.45 G15.83 PgtX

ICRS Star Coord at Epoch: 10h 35m 06.43365s +09:46:47.39795s

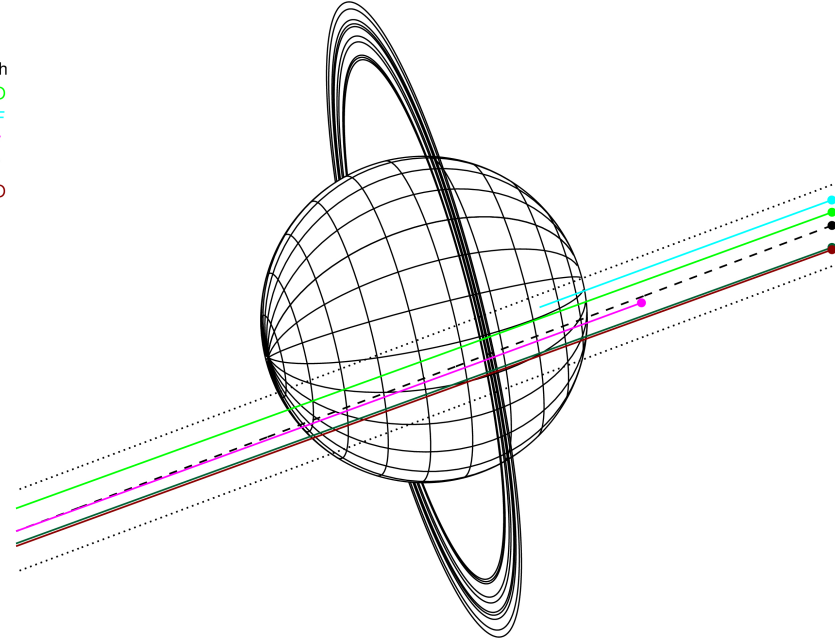
RUWE (>1.4 is poor) : 1.00  
 K magnitude : 14.451  
 G magnitude : 15.829  
 RP magnitude : 15.349  
 BP magnitude : 16.137  
 DUPflag : 0  
 Distance (au) : 17.597  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -13.54  
 Sun-Target sep (deg) : 133.10  
 Sun-Moon sep (deg) : 128.88  
 B (ring opening deg) : 10.70  
 PA of pole (deg) : 103.75

Uranus 2048-04-13T13:49:42 K14.45 G15.83  
 PgtX



2048-04-13T13:49:42.1200 α: 10 35 06.4336 s; +09 46 47.398 C/A 0.680° PA 20.54 deg v\_sky -13.55 km/s D 17.60 AU  
 Credit: Styled after SORA/Lucky Star

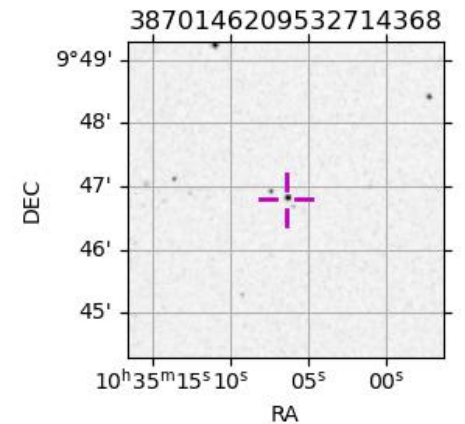
Earth  
 PMO  
 IRTF  
 KAV  
 AAT  
 MSO



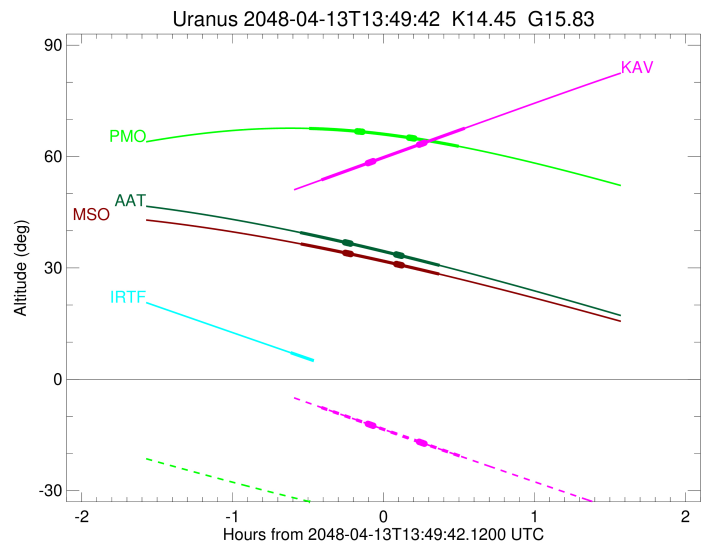
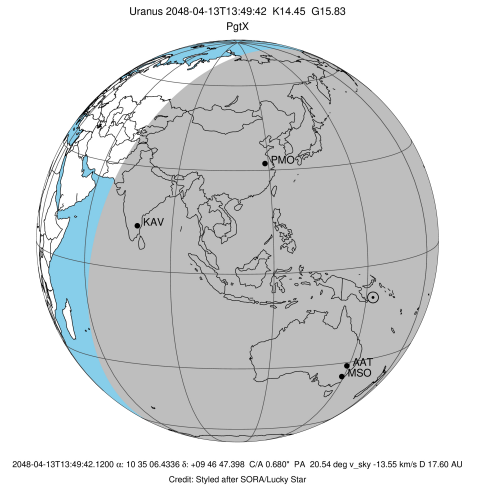
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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		+	+	APR 13 13:20 - APR 13 14:19	PieRnn
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		+		APR 13 13:12 - APR 13 13:12	PinRnn
KAV	Kavalur Observatory	12.6	78.8		+	+	APR 13 13:25 - APR 13 14:22	PieRnn
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		+	+	APR 13 13:16 - APR 13 14:12	PieRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0		+	+	APR 13 13:16 - APR 13 14:11	PieRnn



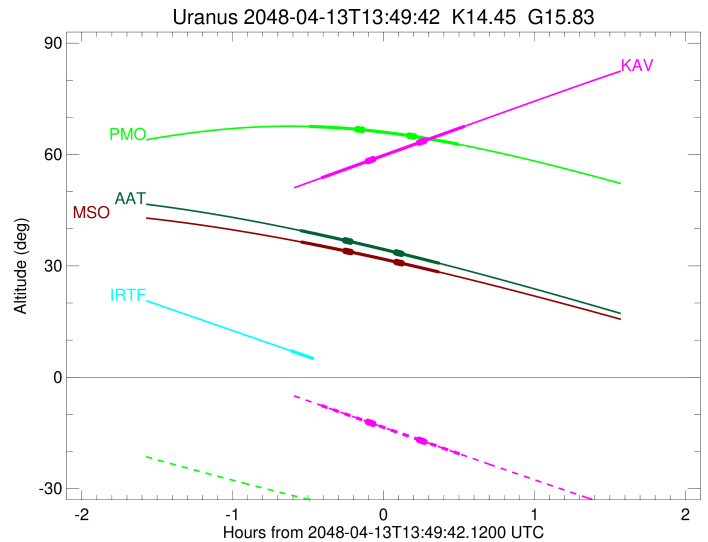
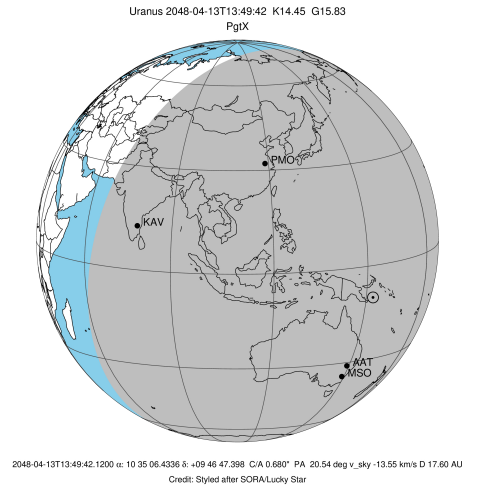
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2048-04-13T13:49:49.710  
 Event type : PgtX  
 : Uranus occs: geocentric, topocentric  
 : No ring occs  
 Observer code : PMO  
 Location : Purple Mtn Obs. Nanking  
 Latitude (deg) : 32.06667  
 E. Longitude (deg) : 118.82089  
 Altitude (km) : 0.364  
 Gaia source ID : 3870146209532714368  
 2Mass ID (if available) : 10350643+0946475  
 ICRS Star Coord at Epoch: 10h 35m 06.43365s +09:46:47.39795s  
 RUWE (>1.4 is poor) : 1.00  
 K magnitude : 14.451  
 G magnitude : 15.829  
 RP magnitude : 15.349  
 BP magnitude : 16.137  
 DUPflag : 0  
 Distance (au) : 17.597  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -13.54  
 Sun-Target sep (deg) : 133.10  
 Sun-Moon sep (deg) : 129.55  
 B (ring opening deg) : 10.70  
 PA of pole (deg) : 103.75  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.474  
 C/A sky separation (km) : 6045.3  
 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	2048-04-13T13:39:23.157	b	66.79	-36.00	50748.69	-73.76		
lambda	I	2048-04-13T13:39:32.945	b	66.78	-36.02	50026.71	-73.75		
delta	I	2048-04-13T13:39:56.359	b	66.75	-36.08	48300.35	-73.71		
gamma	I	2048-04-13T13:40:05.506	b	66.74	-36.11	47626.16	-73.69		
eta	I	2048-04-13T13:40:11.614	b	66.73	-36.12	47176.12	-73.68		
beta	I	2048-04-13T13:40:32.595	b	66.71	-36.18	45648.72	-73.67		
alpha	I	2048-04-13T13:40:45.221	b	66.70	-36.21	44747.37	-73.70		
4	I	2048-04-13T13:41:12.646	b	66.67	-36.28	42559.60	-73.33		
5	I	2048-04-13T13:41:19.179	b	66.66	-36.29	42215.89	-73.53		
6	I	2048-04-13T13:41:21.485	b	66.66	-36.30	41798.30	-73.11		
Uranus	I	2048-04-13T13:20:06.149		67.57	-32.93	25539.37		-76.96	-77.52
Uranus	E	2048-04-13T14:19:35.759		62.76	-41.61	25541.34		67.54	68.45
6	E	2048-04-13T13:59:50.675	b	65.09	-39.00	41869.58	73.11		
5	E	2048-04-13T13:59:53.841	b	65.08	-39.01	42275.43	73.53		
4	E	2048-04-13T13:59:58.770	b	65.08	-39.02	42569.88	73.33		
alpha	E	2048-04-13T14:00:25.180	b	65.03	-39.08	44685.93	73.70		
beta	E	2048-04-13T14:00:39.207	b	65.01	-39.11	45677.30	73.67		
eta	E	2048-04-13T14:00:59.753	b	64.97	-39.16	47176.12	73.68		
gamma	E	2048-04-13T14:01:05.845	b	64.96	-39.18	47625.02	73.69		
delta	E	2048-04-13T14:01:15.008	b	64.94	-39.20	48300.35	73.71		
lambda	E	2048-04-13T14:01:38.423	b	64.90	-39.25	50026.71	73.75		
epsilon	E	2048-04-13T14:01:58.705	b	64.87	-39.30	51522.71	73.75		

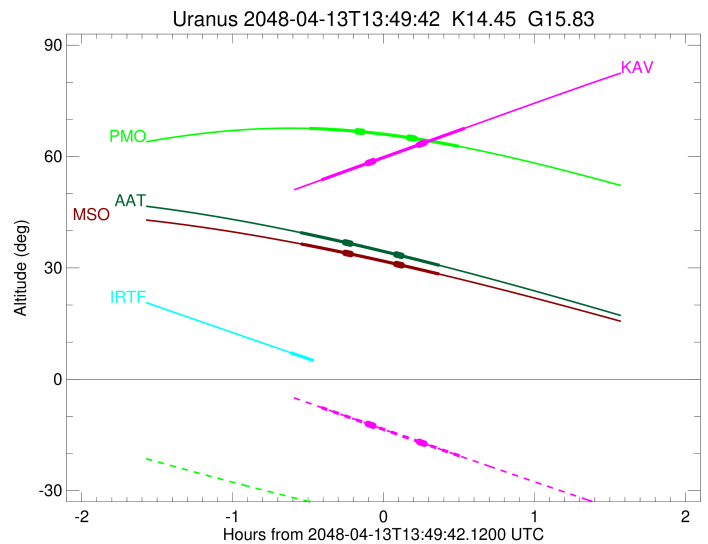
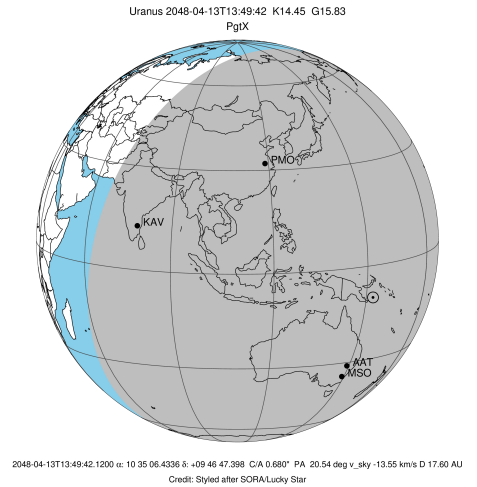
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2048-04-13T13:43:46.150
Event type          : PgtX
: Uranus occs: geocentric, topocentric
: No ring occs
Observer code       : IRTF
Location            : Mauna Kea/IRTF
Latitude (deg)      : 19.82622
E. Longitude (deg)  : 204.52800
Altitude (km)       : 4.168
Gaia source ID      : 3870146209532714368
2Mass ID (if available) : 10350643+0946475
ICRS Star Coord at Epoch: 10h 35m 06.43365s +09:46:47.39795s
RUWE (>1.4 is poor) : 1.00
K magnitude         : 14.451
G magnitude         : 15.829
RP magnitude        : 15.349
BP magnitude        : 16.137
DUPflag            : 0
Distance (au)       : 17.597
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : -13.54
Sun-Target sep (deg) : 133.10
Sun-Moon sep (deg)  : 128.48
B (ring opening deg) : 10.70
PA of pole (deg)    : 103.75
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.351
C/A sky separation (km) : 4478.6
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_itr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
    
```



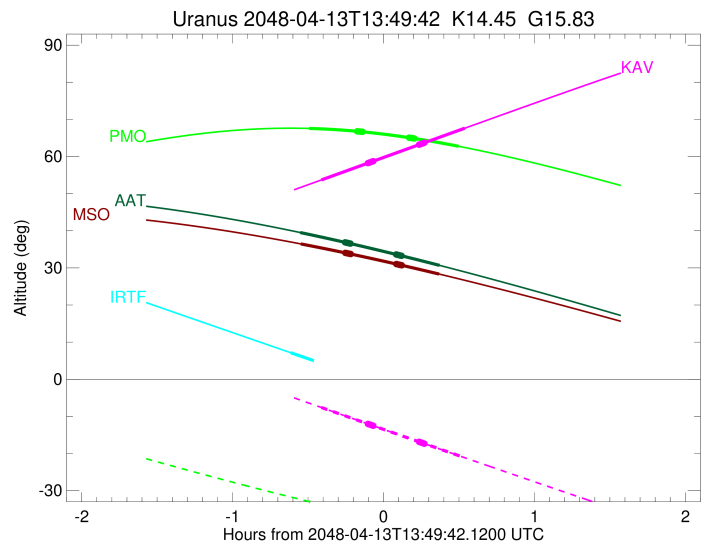
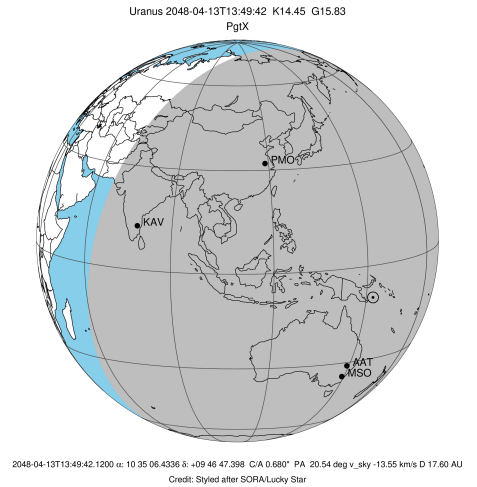
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2048-04-13T13:32:48.600	b	2.49x	-34.77	50750.99	-71.74		
lambda	I	2048-04-13T13:32:58.695	b	2.45x	-34.73	50026.71	-71.73		
delta	I	2048-04-13T13:33:22.768	b	2.35x	-34.65	48300.35	-71.69		
gamma	I	2048-04-13T13:33:32.170	b	2.32x	-34.61	47626.34	-71.68		
eta	I	2048-04-13T13:33:38.452	b	2.29x	-34.59	47176.12	-71.67		
beta	I	2048-04-13T13:34:00.026	b	2.21x	-34.52	45648.17	-71.66		
alpha	I	2048-04-13T13:34:13.018	b	2.16x	-34.47	44748.01	-71.69		
4	I	2048-04-13T13:34:41.168	b	2.05x	-34.37	42561.31	-71.34		
5	I	2048-04-13T13:34:47.837	b	2.02x	-34.35	42212.87	-71.52		
6	I	2048-04-13T13:34:50.264	b	2.01x	-34.34	41799.01	-71.13		
Uranus	I	2048-04-13T13:12:47.576		7.16	-38.89	25539.11		-78.72	-79.21
Uranus	E	2048-04-13T14:14:53.593		-7.26x	-25.74	25540.68		70.26	71.07
6	E	2048-04-13T13:53:58.119	b	-2.43x	-30.28	41870.57	71.03		
5	E	2048-04-13T13:54:01.172	b	-2.44x	-30.27	42272.90	71.42		
4	E	2048-04-13T13:54:06.436	b	-2.46x	-30.25	42571.51	71.23		
alpha	E	2048-04-13T13:54:33.596	b	-2.57x	-30.15	44686.27	71.56		
beta	E	2048-04-13T13:54:48.014	b	-2.62x	-30.10	45676.89	71.53		
eta	E	2048-04-13T13:55:09.191	b	-2.70x	-30.02	47176.12	71.52		
gamma	E	2048-04-13T13:55:15.469	b	-2.73x	-30.00	47625.18	71.53		
delta	E	2048-04-13T13:55:24.908	b	-2.76x	-29.97	48300.34	71.54		
lambda	E	2048-04-13T13:55:49.034	b	-2.86x	-29.88	50026.71	71.57		
epsilon	E	2048-04-13T13:56:09.999	b	-2.94x	-29.81	51527.27	71.57		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2048-04-13T13:53:32.770  
 Event type : PgtX  
 : Uranus occs: geocentric, topocentric  
 : No ring occs  
 Observer code : KAV  
 Location : Kavalur Observatory  
 Latitude (deg) : 12.57556  
 E. Longitude (deg) : 78.83167  
 Altitude (km) : 0.722  
 Gaia source ID : 3870146209532714368  
 2Mass ID (if available) : 10350643+0946475  
 ICRS Star Coord at Epoch: 10h 35m 06.43365s +09:46:47.39795s  
 RUWE (>1.4 is poor) : 1.00  
 K magnitude : 14.451  
 G magnitude : 15.829  
 RP magnitude : 15.349  
 BP magnitude : 16.137  
 DUPflag : 0  
 Distance (au) : 17.597  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -13.54  
 Sun-Target sep (deg) : 133.10  
 Sun-Moon sep (deg) : 129.76  
 B (ring opening deg) : 10.70  
 PA of pole (deg) : 103.75  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.728  
 C/A sky separation (km) : 9287.4  
 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	2048-04-13T13:43:38.721	b	58.26	-12.05	50745.37	-73.23		
lambda	I	2048-04-13T13:43:48.536	b	58.30	-12.09	50026.71	-73.21		
delta	I	2048-04-13T13:44:12.130	b	58.40	-12.18	48300.35	-73.13		
gamma	I	2048-04-13T13:44:21.357	b	58.43	-12.22	47625.79	-73.09		
eta	I	2048-04-13T13:44:27.510	b	58.46	-12.25	47176.12	-73.07		
beta	I	2048-04-13T13:44:48.667	b	58.54	-12.33	45649.90	-73.01		
alpha	I	2048-04-13T13:45:01.387	b	58.60	-12.38	44745.97	-73.00		
4	I	2048-04-13T13:45:29.192	b	58.71	-12.49	42556.24	-72.54		
5	I	2048-04-13T13:45:35.866	b	58.74	-12.52	42222.04	-72.74		
6	I	2048-04-13T13:45:38.119	b	58.75	-12.53	41797.08	-72.29		
Uranus	I	2048-04-13T13:25:02.666		53.71	-7.61	25540.36		-71.71	-72.47
Uranus	E	2048-04-13T14:22:01.103		67.63	-21.14	25543.33		60.51	61.61
6	E	2048-04-13T14:03:52.000	b	63.20	-16.85	41867.28	72.34		
5	E	2048-04-13T14:03:55.656	b	63.22	-16.87	42280.77	72.78		
4	E	2048-04-13T14:04:00.231	b	63.24	-16.89	42566.34	72.58		
alpha	E	2048-04-13T14:04:26.987	b	63.35	-16.99	44685.32	73.05		
beta	E	2048-04-13T14:04:41.189	b	63.40	-17.05	45678.12	73.07		
eta	E	2048-04-13T14:05:01.867	b	63.49	-17.13	47176.11	73.13		
gamma	E	2048-04-13T14:05:07.999	b	63.51	-17.15	47624.66	73.16		
delta	E	2048-04-13T14:05:17.233	b	63.55	-17.19	48300.34	73.20		
lambda	E	2048-04-13T14:05:40.803	b	63.65	-17.28	50026.71	73.29		
epsilon	E	2048-04-13T14:06:01.053	b	63.73	-17.36	51511.54	73.31		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2048-04-13T13:44:14.940  
 Event type : PgtX  
 : Uranus occs: geocentric, topocentric  
 : No ring occs  
 Observer code : AAT  
 Location : Siding Spring (AAT)  
 Latitude (deg) : -31.27703  
 E. Longitude (deg) : 149.06608  
 Altitude (km) : 1.164  
 Gaia source ID : 3870146209532714368  
 2Mass ID (if available) : 10350643+0946475  
 ICRS Star Coord at Epoch: 10h 35m 06.43365s +09:46:47.39795s  
 RUWE (>1.4 is poor) : 1.00  
 K magnitude : 14.451  
 G magnitude : 15.829  
 RP magnitude : 15.349  
 BP magnitude : 16.137  
 DUPflag : 0  
 Distance (au) : 17.597  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -13.54  
 Sun-Target sep (deg) : 133.10  
 Sun-Moon sep (deg) : 128.84  
 B (ring opening deg) : 10.70  
 PA of pole (deg) : 103.75  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.874  
 C/A sky separation (km) : 11149.3  
 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

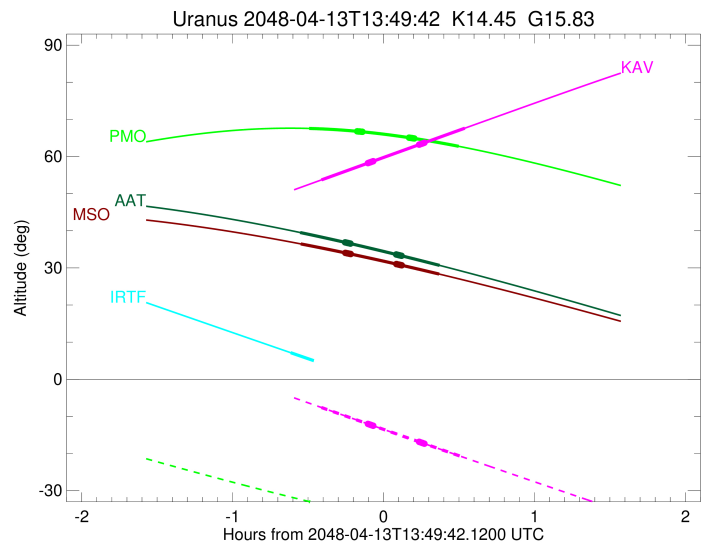
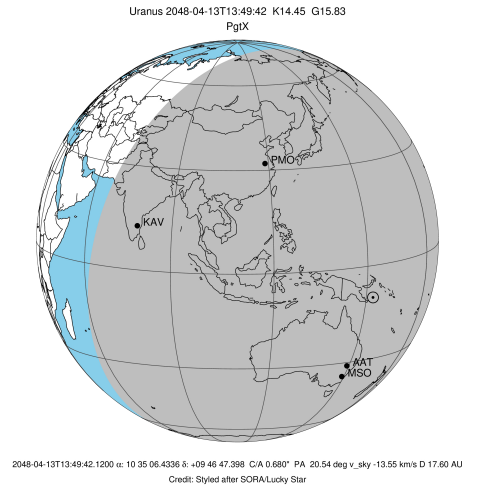


b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2048-04-13T13:34:33.842	b	36.86	-67.26	50744.20	-72.32		
lambda	I	2048-04-13T13:34:43.764	b	36.83	-67.28	50026.71	-72.28		
delta	I	2048-04-13T13:35:07.670	b	36.77	-67.30	48300.35	-72.15		
gamma	I	2048-04-13T13:35:17.026	b	36.75	-67.31	47625.58	-72.09		
eta	I	2048-04-13T13:35:23.262	b	36.73	-67.32	47176.12	-72.05		
beta	I	2048-04-13T13:35:44.716	b	36.67	-67.35	45650.61	-71.95		
alpha	I	2048-04-13T13:35:57.612	b	36.64	-67.36	44745.08	-71.90		
4	I	2048-04-13T13:36:25.929	b	36.57	-67.39	42554.31	-71.36		
5	I	2048-04-13T13:36:32.743	b	36.55	-67.40	42225.69	-71.55		
6	I	2048-04-13T13:36:35.009	b	36.54	-67.40	41796.48	-71.09		
Uranus	I	2048-04-13T13:16:34.933		39.53	-65.67	25541.30		-67.67	-68.57
Uranus	E	2048-04-13T14:11:59.654		30.68	-68.25	25544.66		56.38	57.58
6	E	2048-04-13T13:54:44.887	b	33.62	-68.22	41865.87	70.93		
5	E	2048-04-13T13:54:48.885	b	33.61	-68.22	42283.71	71.39		
4	E	2048-04-13T13:54:53.319	b	33.59	-68.22	42564.32	71.20		
alpha	E	2048-04-13T13:55:20.647	b	33.52	-68.23	44685.06	71.74		
beta	E	2048-04-13T13:55:35.132	b	33.48	-68.23	45678.56	71.78		
eta	E	2048-04-13T13:55:56.158	b	33.42	-68.24	47176.12	71.89		
gamma	E	2048-04-13T13:56:02.393	b	33.40	-68.24	47624.46	71.93		
delta	E	2048-04-13T13:56:11.786	b	33.38	-68.25	48300.35	71.98		
lambda	E	2048-04-13T13:56:35.747	b	33.31	-68.25	50026.71	72.11		
epsilon	E	2048-04-13T13:56:56.226	b	33.25	-68.26	51504.53	72.15		



target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2048-04-13T13:44:16.810  
 Event type : PgtX  
 : Uranus occs: geocentric, topocentric  
 : No ring occs  
 Observer code : MSO  
 Location : Mt. Stromlo Observatory  
 Latitude (deg) : -35.32000  
 E. Longitude (deg) : 149.00833  
 Altitude (km) : 0.770  
 Gaia source ID : 3870146209532714368  
 2Mass ID (if available) : 10350643+0946475  
 ICRS Star Coord at Epoch: 10h 35m 06.43365s +09:46:47.39795s  
 RUWE (>1.4 is poor) : 1.00  
 K magnitude : 14.451  
 G magnitude : 15.829  
 RP magnitude : 15.349  
 BP magnitude : 16.137  
 DUPflag : 0  
 Distance (au) : 17.597  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -13.54  
 Sun-Target sep (deg) : 133.10  
 Sun-Moon sep (deg) : 128.81  
 B (ring opening deg) : 10.70  
 PA of pole (deg) : 103.75  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.903  
 C/A sky separation (km) : 11520.3  
 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	2048-04-13T13:34:39.407	b	34.03	-63.41	50744.03	-72.13		
lambda	I	2048-04-13T13:34:49.354	b	34.00	-63.42	50026.71	-72.09		
delta	I	2048-04-13T13:35:13.325	b	33.95	-63.45	48300.35	-71.95		
gamma	I	2048-04-13T13:35:22.709	b	33.92	-63.46	47625.54	-71.88		
eta	I	2048-04-13T13:35:28.962	b	33.91	-63.46	47176.12	-71.84		
beta	I	2048-04-13T13:35:50.479	b	33.86	-63.48	45650.76	-71.73		
alpha	I	2048-04-13T13:36:03.413	b	33.83	-63.49	44744.90	-71.67		
4	I	2048-04-13T13:36:31.839	b	33.76	-63.52	42553.93	-71.11		
5	I	2048-04-13T13:36:38.680	b	33.74	-63.53	42226.41	-71.30		
6	I	2048-04-13T13:36:40.952	b	33.74	-63.53	41796.37	-70.83		
Uranus	I	2048-04-13T13:16:48.484		36.46	-62.10	25541.51		-66.88	-67.81
Uranus	E	2048-04-13T14:11:49.631		28.34	-64.23	25544.96		55.48	56.69
6	E	2048-04-13T13:54:49.168	b	31.04	-64.20	41865.58	70.68		
5	E	2048-04-13T13:54:53.235	b	31.02	-64.20	42284.31	71.14		
4	E	2048-04-13T13:54:57.637	b	31.01	-64.20	42563.90	70.96		
alpha	E	2048-04-13T13:55:25.070	b	30.94	-64.21	44685.01	71.51		
beta	E	2048-04-13T13:55:39.605	b	30.91	-64.22	45678.64	71.57		
eta	E	2048-04-13T13:56:00.689	b	30.85	-64.22	47176.12	71.68		
gamma	E	2048-04-13T13:56:06.941	b	30.84	-64.22	47624.42	71.72		
delta	E	2048-04-13T13:56:16.362	b	30.81	-64.23	48300.35	71.78		
lambda	E	2048-04-13T13:56:40.388	b	30.75	-64.23	50026.71	71.92		
epsilon	E	2048-04-13T13:57:00.899	b	30.70	-64.24	51503.02	71.96		