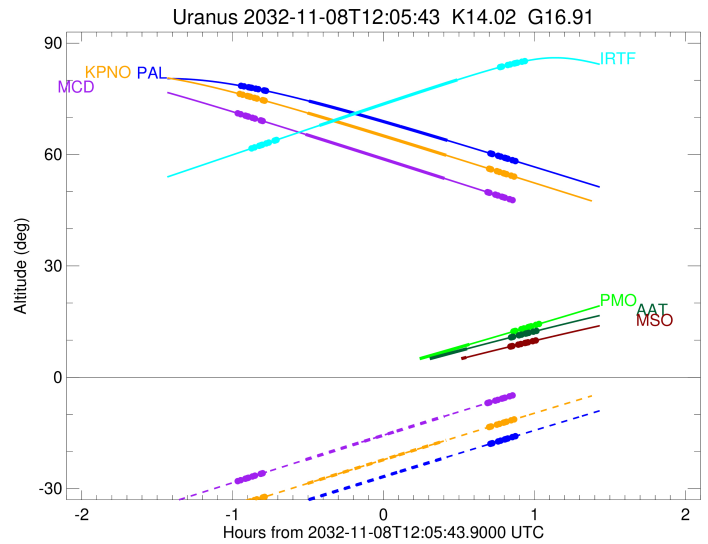
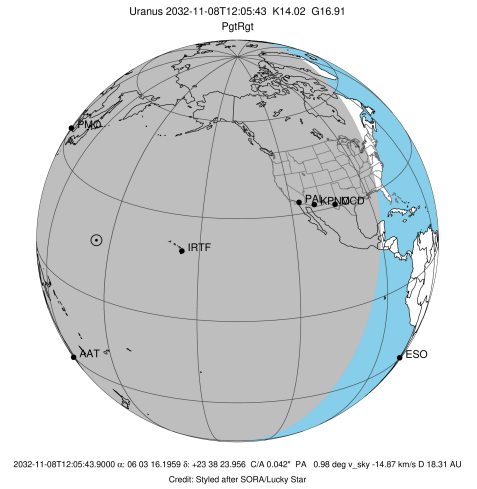


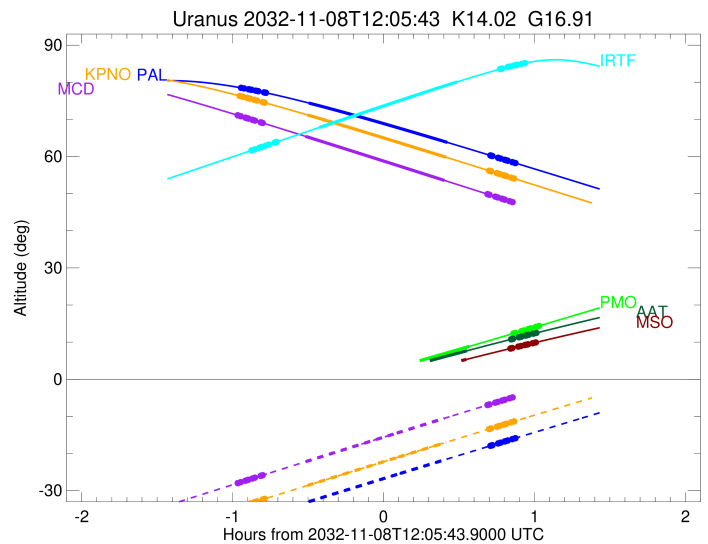
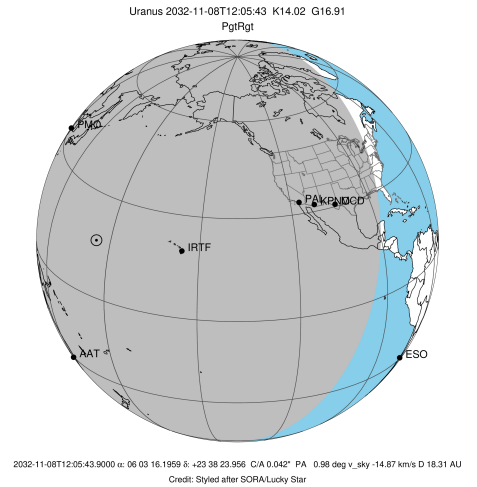
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-11-08T12:03:37.060
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 3424684914697290368
 2Mass ID (if available) : 06031618+2338238
 ICRS Star Coord at Epoch: 06h 03m 16.19587s +23:38:23.95596s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.020
 G magnitude : 16.908
 RP magnitude : 15.989
 BP magnitude : 17.679
 DUPflag : 0
 Distance (au) : 18.309
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.87
 Sun-Target sep (deg) : 135.43
 Sun-Moon sep (deg) : 159.58
 B (ring opening deg) : 74.72
 PA of pole (deg) : 58.80
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.043
 C/A sky separation (km) : 569.9
 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



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

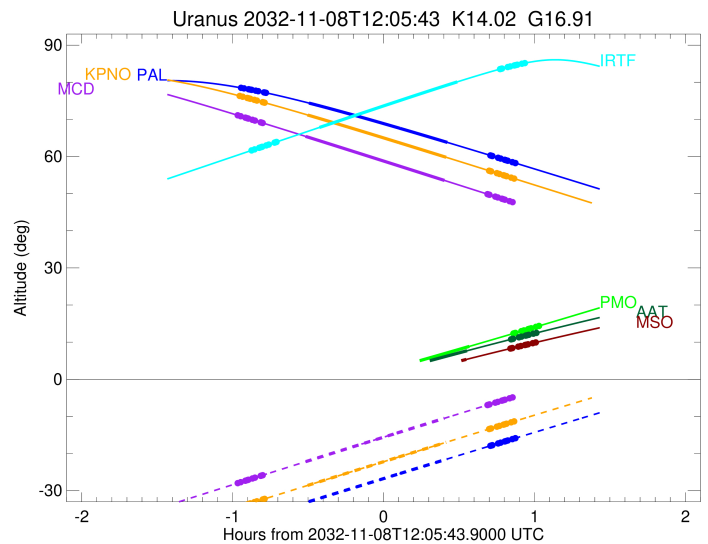
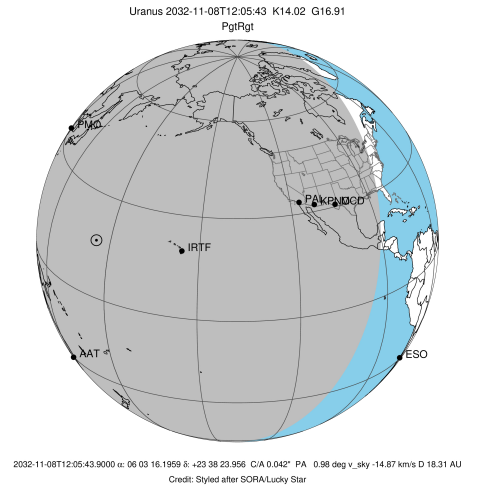
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-11-08T11:08:46.486		78.55	-38.66	51465.31	-15.64		
lambda	I	2032-11-08T11:10:18.483		78.36	-38.34	50026.71	-15.64		
delta	I	2032-11-08T11:12:08.885		78.12	-37.96	48300.35	-15.64		
gamma	I	2032-11-08T11:12:51.864		78.03	-37.81	47628.29	-15.64		
eta	I	2032-11-08T11:13:20.782		77.96	-37.71	47176.12	-15.64		
beta	I	2032-11-08T11:14:57.022		77.74	-37.37	45670.60	-15.64		
alpha	I	2032-11-08T11:15:56.655		77.61	-37.16	44739.03	-15.64		
4	I	2032-11-08T11:18:18.025		77.27	-36.67	42533.55	-15.64		
5	I	2032-11-08T11:18:32.835		77.23	-36.62	42287.59	-15.63		
6	I	2032-11-08T11:19:00.437		77.17	-36.52	41857.49	-15.63		
Uranus	I	2032-11-08T11:36:05.025		74.41	-32.96	25174.22		-12.73	-13.31
Uranus	E	2032-11-08T12:31:08.714		63.80	-21.46	25151.85		13.11	13.71
6	E	2032-11-08T12:48:11.472		60.31	-17.93	41818.15	15.60		
5	E	2032-11-08T12:48:34.797		60.23	-17.85	42180.41	15.60		
4	E	2032-11-08T12:49:01.269		60.13	-17.76	42608.10	15.61		
alpha	E	2032-11-08T12:51:15.482		59.67	-17.30	44697.18	15.60		
beta	E	2032-11-08T12:52:16.674		59.46	-17.09	45651.15	15.60		
eta	E	2032-11-08T12:53:54.375		59.12	-16.75	47176.12	15.60		
gamma	E	2032-11-08T12:54:23.090		59.03	-16.65	47624.11	15.60		
delta	E	2032-11-08T12:55:06.436		58.88	-16.50	48300.35	15.60		
lambda	E	2032-11-08T12:56:57.097		58.49	-16.12	50026.71	15.60		
epsilon	E	2032-11-08T12:57:49.086		58.31	-15.94	50837.73	15.60		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-11-08T12:11:47.340
 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 : 3424684914697290368
 2Mass ID (if available) : 06031618+2338238
 ICRS Star Coord at Epoch: 06h 03m 16.19587s +23:38:23.95596s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.020
 G magnitude : 16.908
 RP magnitude : 15.989
 BP magnitude : 17.679
 DUPflag : 0
 Distance (au) : 18.308
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.87
 Sun-Target sep (deg) : 135.43
 Sun-Moon sep (deg) : 160.36
 B (ring opening deg) : 74.72
 PA of pole (deg) : 58.80
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.206
 C/A sky separation (km) : 2735.4
 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



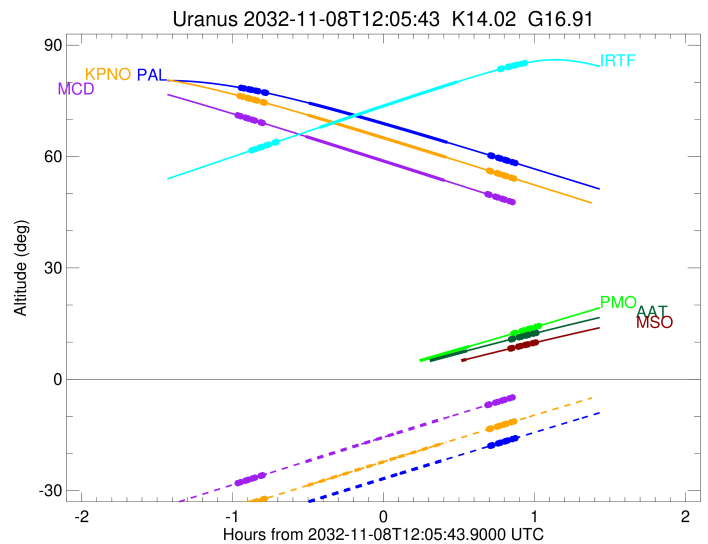
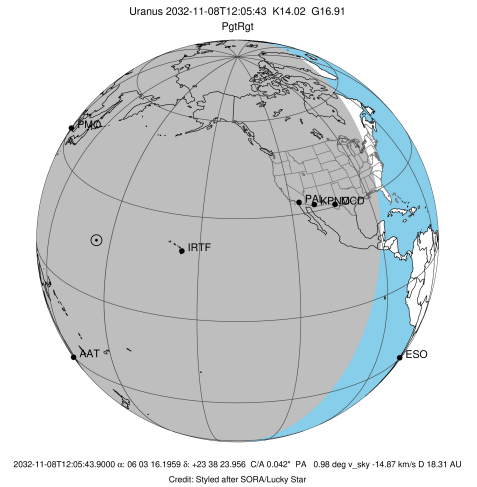
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-11-08T11:15:03.931	-7.09x	-26.91	51479.05	-15.05			
lambda	I	2032-11-08T11:16:40.453	-6.80x	-27.25	50026.71	-15.05			
delta	I	2032-11-08T11:18:35.175	-6.46x	-27.66	48300.35	-15.05			
gamma	I	2032-11-08T11:19:19.852	-6.33x	-27.81	47628.00	-15.05			
eta	I	2032-11-08T11:19:49.877	-6.24x	-27.92	47176.12	-15.05			
beta	I	2032-11-08T11:21:29.937	-5.94x	-28.27	45669.50	-15.05			
alpha	I	2032-11-08T11:22:31.939	-5.75x	-28.49	44737.31	-15.05			
4	I	2032-11-08T11:24:58.760	-5.31x	-29.01	42532.01	-15.05			
5	I	2032-11-08T11:25:14.353	-5.27x	-29.07	42283.54	-15.05			
6	I	2032-11-08T11:25:42.554	-5.18x	-29.17	41859.90	-15.05			
Uranus	I	2032-11-08T11:43:29.413	-1.93x	-32.94	25225.53	-11.82		-12.37	
Uranus	E	2032-11-08T12:39:51.807	8.85	-44.87	25119.91	13.64		14.26	
6	E	2032-11-08T12:57:20.964	12.32	-48.54	41819.58	15.23			
5	E	2032-11-08T12:57:44.644	12.40	-48.62	42178.29	15.23			
4	E	2032-11-08T12:58:11.810	12.49	-48.71	42607.11	15.24			
alpha	E	2032-11-08T13:00:29.220	12.95	-49.19	44696.30	15.25			
beta	E	2032-11-08T13:01:31.851	13.16	-49.41	45650.59	15.25			
eta	E	2032-11-08T13:03:11.831	13.49	-49.75	47176.12	15.25			
gamma	E	2032-11-08T13:03:41.187	13.59	-49.86	47623.96	15.26			
delta	E	2032-11-08T13:04:25.519	13.74	-50.01	48300.35	15.26			
lambda	E	2032-11-08T13:06:18.637	14.12	-50.40	50026.71	15.26			
epsilon	E	2032-11-08T13:07:12.239	14.30	-50.59	50844.99	15.27			

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-11-08T12:03:05.030
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 3424684914697290368
 2Mass ID (if available) : 06031618+2338238
 ICRS Star Coord at Epoch: 06h 03m 16.19587s +23:38:23.95596s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.020
 G magnitude : 16.908
 RP magnitude : 15.989
 BP magnitude : 17.679
 DUPflag : 0
 Distance (au) : 18.309
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.87
 Sun-Target sep (deg) : 135.43
 Sun-Moon sep (deg) : 159.50
 B (ring opening deg) : 74.72
 PA of pole (deg) : 58.80
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.038
 C/A sky separation (km) : 506.7
 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_itrff93_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	2032-11-08T11:08:13.687		76.38	-34.40	51464.76	-15.64		
lambda	I	2032-11-08T11:09:45.649		76.11	-34.08	50026.71	-15.64		
delta	I	2032-11-08T11:11:36.051		75.78	-33.69	48300.35	-15.64		
gamma	I	2032-11-08T11:12:19.030		75.65	-33.53	47628.30	-15.64		
eta	I	2032-11-08T11:12:47.949		75.56	-33.43	47176.12	-15.64		
beta	I	2032-11-08T11:14:24.190		75.27	-33.09	45670.64	-15.64		
alpha	I	2032-11-08T11:15:23.824		75.08	-32.88	44739.09	-15.64		
4	I	2032-11-08T11:17:45.203		74.65	-32.38	42533.61	-15.64		
5	I	2032-11-08T11:18:00.007		74.60	-32.33	42287.73	-15.63		
6	I	2032-11-08T11:18:27.628		74.51	-32.23	41857.40	-15.63		
Uranus	I	2032-11-08T11:35:32.293		71.20	-28.60	25172.54		-12.76	-13.34
Uranus	E	2032-11-08T12:30:38.004		59.80	-16.98	25152.61		13.10	13.70
6	E	2032-11-08T12:47:41.682		56.18	-13.42	41818.12	15.59		
5	E	2032-11-08T12:48:05.033		56.10	-13.34	42180.45	15.58		
4	E	2032-11-08T12:48:31.530		56.01	-13.25	42608.12	15.59		
alpha	E	2032-11-08T12:50:45.874		55.53	-12.78	44697.19	15.59		
beta	E	2032-11-08T12:51:47.127		55.31	-12.57	45651.16	15.59		
eta	E	2032-11-08T12:53:24.927		54.97	-12.23	47176.12	15.59		
gamma	E	2032-11-08T12:53:53.671		54.87	-12.13	47624.11	15.59		
delta	E	2032-11-08T12:54:37.061		54.71	-11.98	48300.35	15.58		
lambda	E	2032-11-08T12:56:27.838		54.32	-11.60	50026.71	15.58		
epsilon	E	2032-11-08T12:57:19.875		54.13	-11.42	50837.63	15.58		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-11-08T12:02:21.440
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 3424684914697290368
 2Mass ID (if available) : 06031618+2338238
 ICRS Star Coord at Epoch: 06h 03m 16.19587s +23:38:23.95596s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.020
 G magnitude : 16.908
 RP magnitude : 15.989
 BP magnitude : 17.679
 DUPflag : 0
 Distance (au) : 18.309
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.87
 Sun-Target sep (deg) : 135.43
 Sun-Moon sep (deg) : 159.40
 B (ring opening deg) : 74.72
 PA of pole (deg) : 58.80
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.039
 C/A sky separation (km) : 521.9
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

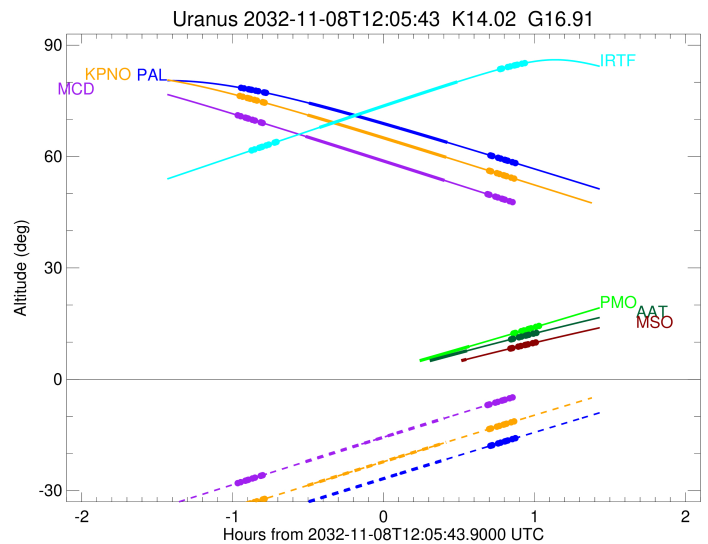
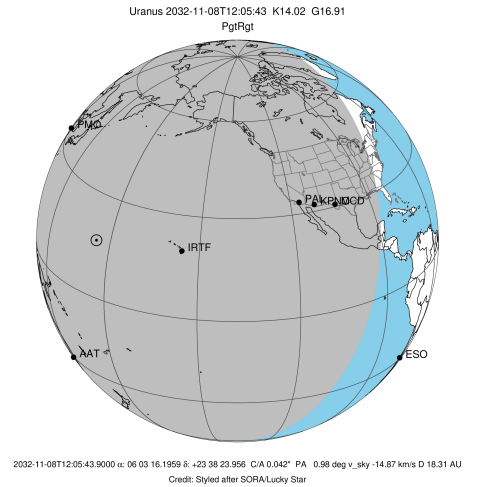


b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-11-08T11:07:26.881		71.18	-28.05	51464.52	-15.63		
lambda	I	2032-11-08T11:08:58.881		70.86	-27.72	50026.71	-15.63		
delta	I	2032-11-08T11:10:49.352		70.48	-27.33	48300.35	-15.63		
gamma	I	2032-11-08T11:11:32.359		70.33	-27.17	47628.30	-15.63		
eta	I	2032-11-08T11:12:01.296		70.23	-27.07	47176.12	-15.63		
beta	I	2032-11-08T11:13:37.600		69.89	-26.73	45670.66	-15.62		
alpha	I	2032-11-08T11:14:37.274		69.69	-26.51	44739.11	-15.62		
4	I	2032-11-08T11:16:58.753		69.19	-26.01	42533.63	-15.62		
5	I	2032-11-08T11:17:13.566		69.14	-25.95	42287.79	-15.62		
6	I	2032-11-08T11:17:41.212		69.04	-25.85	41857.37	-15.62		
Uranus	I	2032-11-08T11:34:46.742		65.43	-22.20	25172.22		-12.77	-13.35
Uranus	E	2032-11-08T12:29:56.948		53.57	-10.51	25151.77		13.11	13.71
6	E	2032-11-08T12:47:02.482		49.88	-6.95	41818.18	15.56		
5	E	2032-11-08T12:47:25.871		49.79	-6.87	42180.36	15.55		
4	E	2032-11-08T12:47:52.421		49.70	-6.78	42608.07	15.56		
alpha	E	2032-11-08T12:50:07.031		49.21	-6.31	44697.16	15.56		
beta	E	2032-11-08T12:51:08.407		48.99	-6.10	45651.14	15.56		
eta	E	2032-11-08T12:52:46.405		48.64	-5.76	47176.12	15.55		
gamma	E	2032-11-08T12:53:15.207		48.53	-5.66	47624.10	15.55		
delta	E	2032-11-08T12:53:58.686		48.38	-5.51	48300.35	15.55		
lambda	E	2032-11-08T12:55:49.689		47.98	-5.13	50026.71	15.55		
epsilon	E	2032-11-08T12:56:41.857		47.79	-4.95x	50838.00	15.55		

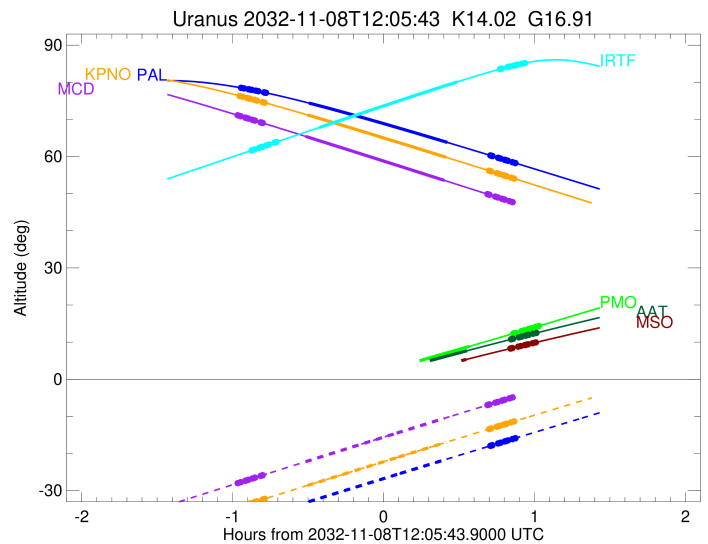
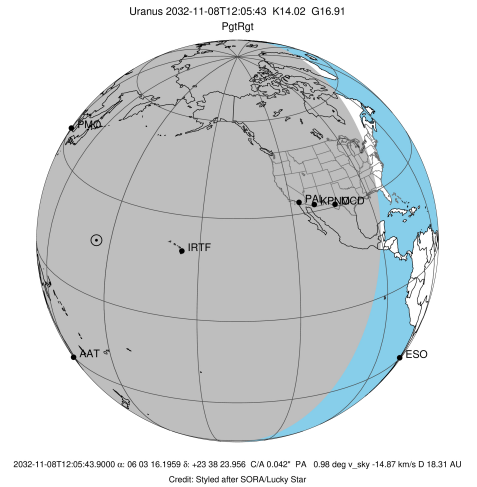
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2032-11-08T12:07:38.890
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       : 3424684914697290368
2Mass ID (if available) : 06031618+2338238
ICRS Star Coord at Epoch: 06h 03m 16.19587s +23:38:23.95596s
RUWE (>1.4 is poor) : 1.07
K magnitude          : 14.020
G magnitude          : 16.908
RP magnitude         : 15.989
BP magnitude         : 17.679
DUPflag             : 0
Distance (au)        : 18.309
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -14.87
Sun-Target sep (deg) : 135.43
Sun-Moon sep (deg)   : 160.03
B (ring opening deg) : 74.72
PA of pole (deg)     : 58.80
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.078
C/A sky separation (km) : 1038.1
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	2032-11-08T11:12:57.659	61.58	-73.76	51458.87	-15.62		
lambda	I	2032-11-08T11:14:29.305	61.93	-73.41	50026.71	-15.63		
delta	I	2032-11-08T11:16:19.765	62.35	-72.98	48300.35	-15.63		
gamma	I	2032-11-08T11:17:02.755	62.52	-72.81	47628.42	-15.63		
eta	I	2032-11-08T11:17:31.693	62.63	-72.70	47176.12	-15.63		
beta	I	2032-11-08T11:19:07.933	62.99	-72.32	45671.11	-15.63		
alpha	I	2032-11-08T11:20:07.556	63.22	-72.09	44739.82	-15.63		
4	I	2032-11-08T11:22:28.949	63.76	-71.54	42534.36	-15.64		
5	I	2032-11-08T11:22:43.673	63.82	-71.48	42289.48	-15.63		
6	I	2032-11-08T11:23:11.493	63.93	-71.37	41856.28	-15.63		
Uranus	I	2032-11-08T11:40:14.272	67.83	-67.37	25146.93		-13.19	-13.80
Uranus	E	2032-11-08T12:35:03.781	80.12	-54.48	25186.28		12.52	13.10
6	E	2032-11-08T12:52:01.859	83.55	-50.49	41816.45	15.71		
5	E	2032-11-08T12:52:25.280	83.62	-50.40	42183.10	15.71		
4	E	2032-11-08T12:52:51.500	83.70	-50.29	42609.24	15.71		
alpha	E	2032-11-08T12:55:04.786	84.09	-49.77	44698.33	15.71		
beta	E	2032-11-08T12:56:05.535	84.27	-49.53	45651.89	15.71		
eta	E	2032-11-08T12:57:42.498	84.54	-49.15	47176.12	15.71		
gamma	E	2032-11-08T12:58:11.020	84.61	-49.04	47624.31	15.71		
delta	E	2032-11-08T12:58:54.042	84.72	-48.87	48300.35	15.71		
lambda	E	2032-11-08T13:00:43.897	85.00	-48.44	50026.71	15.72		
epsilon	E	2032-11-08T13:01:34.885	85.12	-48.24	50828.04	15.71		

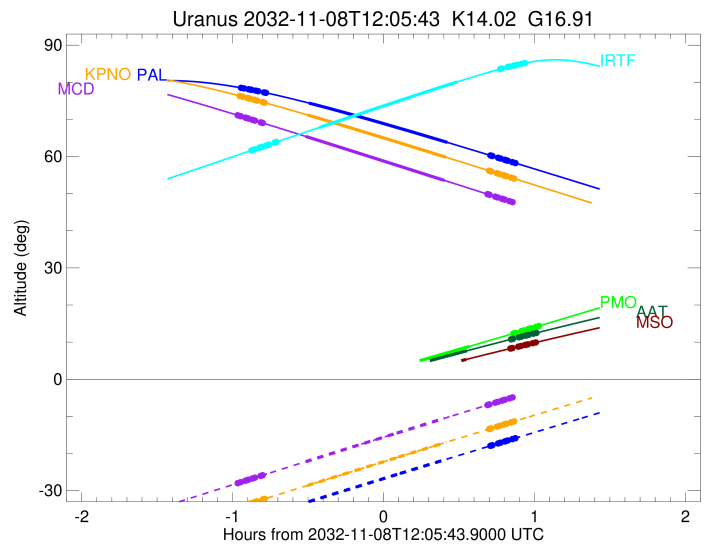
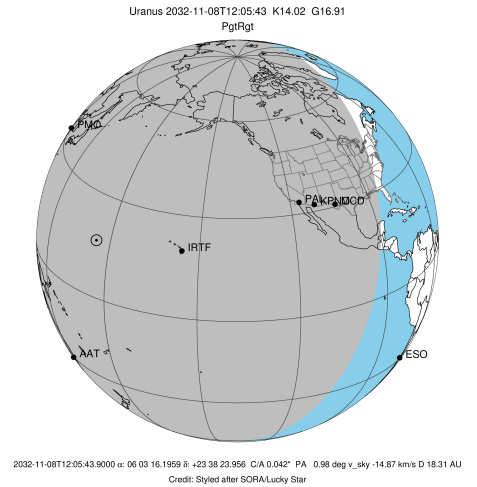
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-11-08T12:11:23.140
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 3424684914697290368
 2Mass ID (if available) : 06031618+2338238
 ICRS Star Coord at Epoch: 06h 03m 16.19587s +23:38:23.95596s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.020
 G magnitude : 16.908
 RP magnitude : 15.989
 BP magnitude : 17.679
 DUPflag : 0
 Distance (au) : 18.308
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.87
 Sun-Target sep (deg) : 135.43
 Sun-Moon sep (deg) : 160.05
 B (ring opening deg) : 74.72
 PA of pole (deg) : 58.80
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.338
 C/A sky separation (km) : 4493.5
 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	2032-11-08T11:15:52.871	-8.04x	-29.84	51441.93	-15.21			
lambda	I	2032-11-08T11:17:25.871	-7.73x	-30.06	50026.71	-15.22			
delta	I	2032-11-08T11:19:19.325	-7.36x	-30.33	48300.35	-15.22			
gamma	I	2032-11-08T11:20:03.464	-7.21x	-30.44	47628.74	-15.22			
eta	I	2032-11-08T11:20:33.212	-7.11x	-30.51	47176.12	-15.21			
beta	I	2032-11-08T11:22:12.015	-6.79x	-30.74	45672.31	-15.21			
alpha	I	2032-11-08T11:23:13.226	-6.59x	-30.88	44741.66	-15.21			
4	I	2032-11-08T11:25:38.558	-6.11x	-31.22	42536.47	-15.21			
5	I	2032-11-08T11:25:53.513	-6.06x	-31.26	42293.83	-15.21			
6	I	2032-11-08T11:26:22.651	-5.97x	-31.32	41853.28	-15.20			
Uranus	I	2032-11-08T11:43:54.707	-2.56x	-33.64	25091.21	-14.10		-14.74	
Uranus	E	2032-11-08T12:38:57.481	7.68	-39.33	25262.70	11.12		11.63	
6	E	2032-11-08T12:56:25.022	10.75	-40.53	41813.16	15.37			
5	E	2032-11-08T12:56:49.476	10.82	-40.56	42188.83	15.38			
4	E	2032-11-08T12:57:16.075	10.90	-40.58	42611.30	15.39			
alpha	E	2032-11-08T12:59:32.124	11.29	-40.71	44700.74	15.40			
beta	E	2032-11-08T13:00:34.061	11.47	-40.77	45653.43	15.40			
eta	E	2032-11-08T13:02:12.850	11.75	-40.86	47176.12	15.41			
gamma	E	2032-11-08T13:02:41.957	11.83	-40.88	47624.71	15.41			
delta	E	2032-11-08T13:03:25.788	11.96	-40.92	48300.35	15.42			
lambda	E	2032-11-08T13:05:17.740	12.28	-41.02	50026.71	15.42			
epsilon	E	2032-11-08T13:06:08.524	12.42	-41.06	50810.13	15.42			

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-11-08T12:11:07.230
 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 : 3424684914697290368
 2Mass ID (if available) : 06031618+2338238
 ICRS Star Coord at Epoch: 06h 03m 16.19587s +23:38:23.95596s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.020
 G magnitude : 16.908
 RP magnitude : 15.989
 BP magnitude : 17.679
 DUPflag : 0
 Distance (au) : 18.308
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.87
 Sun-Target sep (deg) : 135.43
 Sun-Moon sep (deg) : 159.99
 B (ring opening deg) : 74.72
 PA of pole (deg) : 58.80
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.361
 C/A sky separation (km) : 4795.8
 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_itrff93_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	2032-11-08T11:15:38.534	-9.67x	-26.77	51440.11	-15.20			
lambda	I	2032-11-08T11:17:11.482	-9.38x	-26.98	50026.71	-15.21			
delta	I	2032-11-08T11:19:05.023	-9.02x	-27.23	48300.35	-15.20			
gamma	I	2032-11-08T11:19:49.196	-8.88x	-27.33	47628.78	-15.20			
eta	I	2032-11-08T11:20:18.971	-8.79x	-27.40	47176.12	-15.20			
beta	I	2032-11-08T11:21:57.851	-8.47x	-27.61	45672.43	-15.20			
alpha	I	2032-11-08T11:22:59.112	-8.28x	-27.75	44741.84	-15.20			
4	I	2032-11-08T11:25:24.583	-7.82x	-28.06	42536.69	-15.20			
5	I	2032-11-08T11:25:39.538	-7.78x	-28.09	42294.25	-15.19			
6	I	2032-11-08T11:26:08.759	-7.69x	-28.16	41852.98	-15.19			
Uranus	I	2032-11-08T11:43:42.275	-4.42x	-30.31	25086.49	-14.17		-14.82	
Uranus	E	2032-11-08T12:38:39.097	5.34	-35.53	25269.05	11.00		11.51	
6	E	2032-11-08T12:56:08.979	8.27	-36.62	41812.92	15.35			
5	E	2032-11-08T12:56:33.511	8.34	-36.65	42189.28	15.36			
4	E	2032-11-08T12:57:00.134	8.41	-36.67	42611.44	15.36			
alpha	E	2032-11-08T12:59:16.377	8.78	-36.79	44700.92	15.38			
beta	E	2032-11-08T13:00:18.395	8.95	-36.84	45653.54	15.38			
eta	E	2032-11-08T13:01:57.310	9.22	-36.92	47176.12	15.39			
gamma	E	2032-11-08T13:02:26.457	9.30	-36.94	47624.74	15.39			
delta	E	2032-11-08T13:03:10.343	9.42	-36.98	48300.35	15.40			
lambda	E	2032-11-08T13:05:02.439	9.72	-37.07	50026.71	15.41			
epsilon	E	2032-11-08T13:05:53.206	9.86	-37.10	50808.89	15.40			