

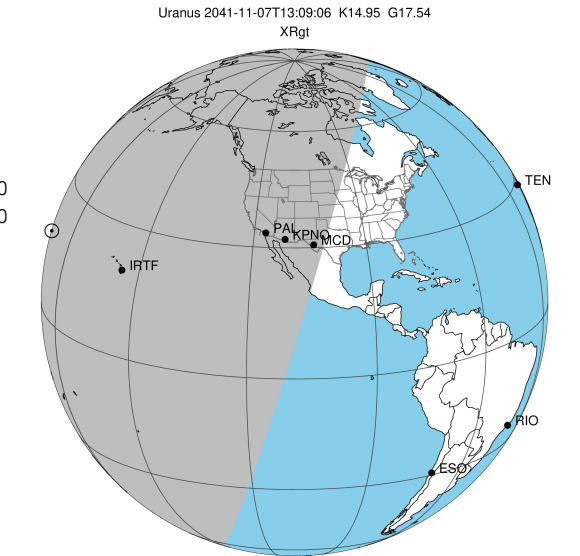
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2041-11-07T13:09:06.470
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 612027380777326592
 2Mass ID (if available) : 08590478+1746169

ICRS Star Coord at Epoch: 08h 59m 04.77548s +17:46:16.76710s

RUWE (>1.4 is poor) : 1.03
 K magnitude : 14.948
 G magnitude : 17.541
 RP magnitude : 16.799
 BP magnitude : 18.173
 DUPflag : 0
 Distance (au) : 18.421
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 5.18
 Sun-Target sep (deg) : 92.80
 Sun-Moon sep (deg) : 95.89
 B (ring opening deg) : 35.05
 PA of pole (deg) : 96.37

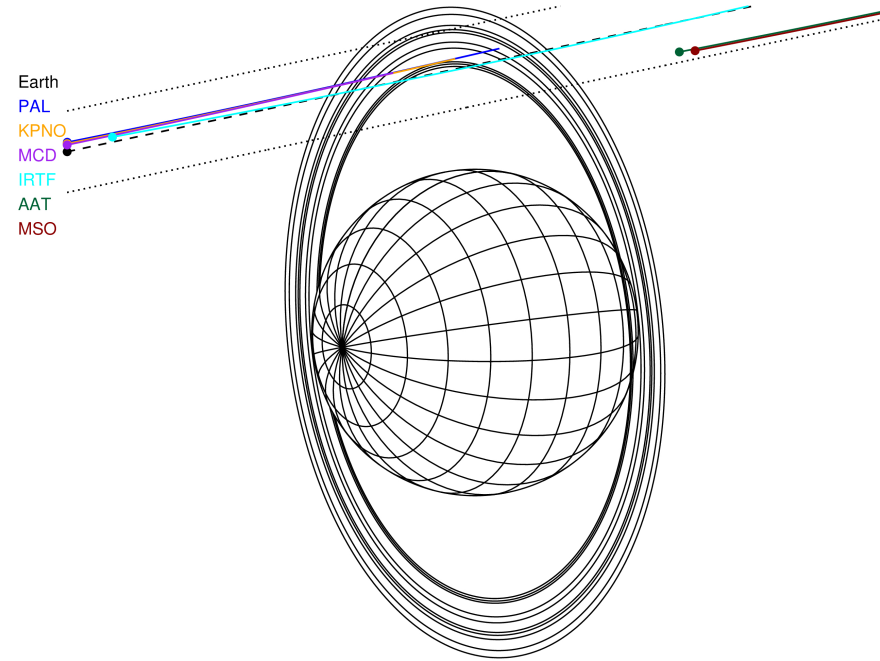
a(km) ring

- 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



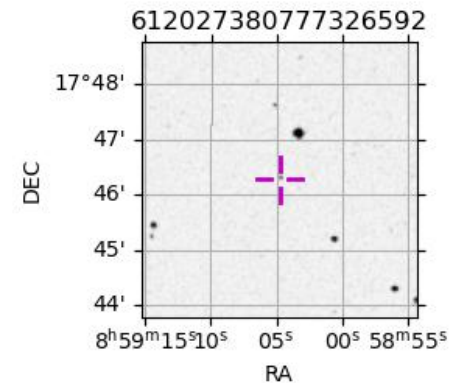
2041-11-07T13:09:06.4700 ra: 08 59 04.7755 s: +17 46 16.767 C/A 3.054° PA 193.77 deg v_sky + 5.17 km/s D 18.42 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2041-11-07T13:09:06 K14.95 G17.54 XRgt

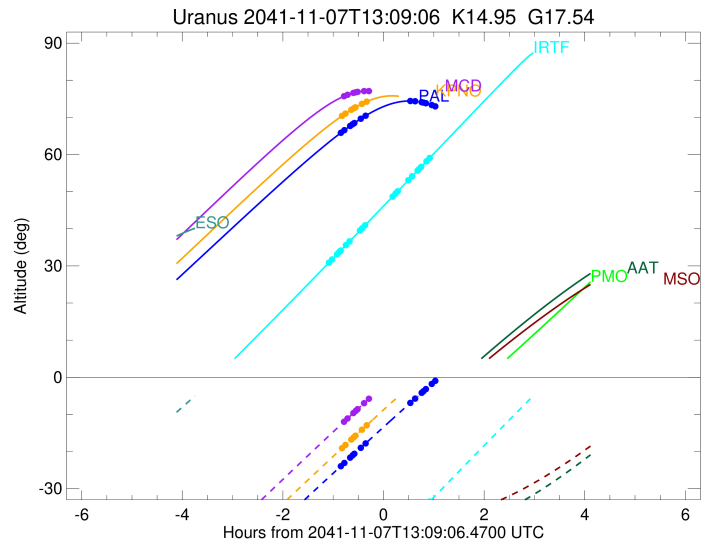
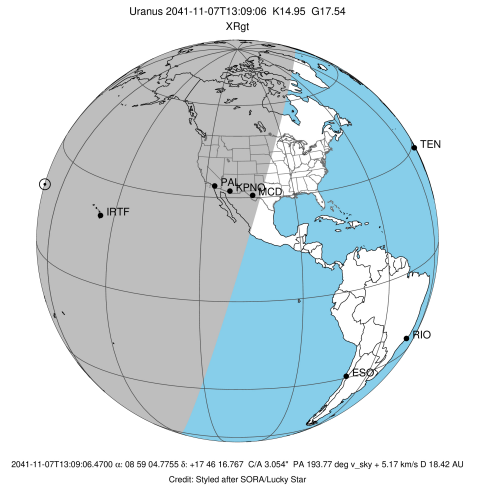


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++		++	NOV 07 12:18 - NOV 07 13:46	PnnRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++			NOV 07 12:19 - NOV 07 12:49	PnnRin
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++			NOV 07 12:21 - NOV 07 12:52	PnnRin
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++		+++++	NOV 07 12:03 - NOV 07 14:02	PnnRie
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
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					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2041-11-07T13:03:27.550
 Event type : XRgt
 : No Uranus occs
 : 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 : 612027380777326592
 2Mass ID (if available) : 08590478+1746169
 ICRS Star Coord at Epoch: 08h 59m 04.77548s +17:46:16.76710s
 RUWE (>1.4 is poor) : 1.03
 K magnitude : 14.948
 G magnitude : 17.541
 RP magnitude : 16.799
 BP magnitude : 18.173
 DUPflag : 0
 Distance (au) : 18.421
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 5.18
 Sun-Target sep (deg) : 92.80
 Sun-Moon sep (deg) : 96.85
 B (ring opening deg) : 35.05
 PA of pole (deg) : 96.37
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.181
 C/A sky separation (km) : 42505.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ural11.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ural11.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



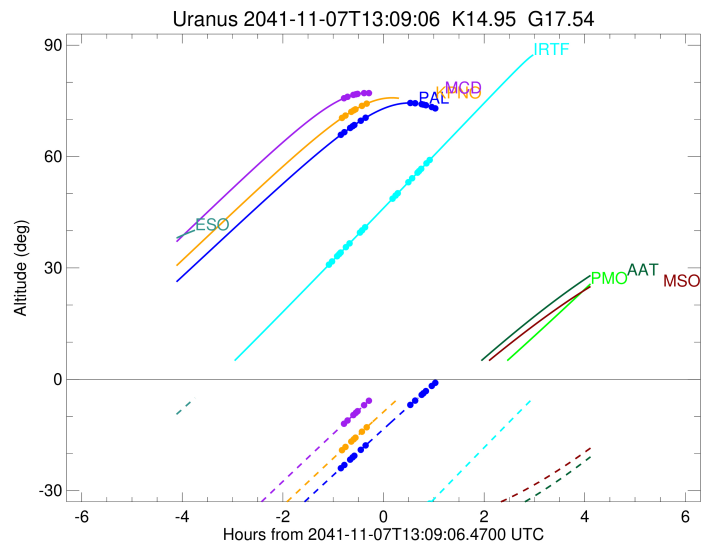
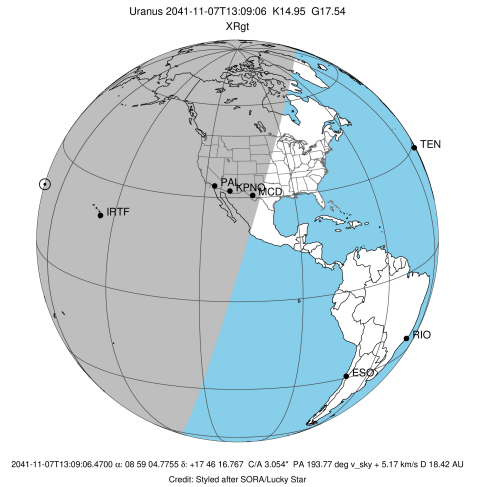
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2041-11-07T12:18:03.310		65.82	-23.99	51223.36	-4.59		
lambda	I	2041-11-07T12:22:28.555		66.57	-23.07	50026.71	-4.38		
delta	I	2041-11-07T12:29:24.271		67.71	-21.63	48300.35	-3.92		
gamma	I	2041-11-07T12:32:22.225		68.18	-21.01	47620.98	-3.71		
eta	I	2041-11-07T12:34:24.483		68.50	-20.59	47176.12	-3.56		
beta	I	2041-11-07T12:42:01.298		69.64	-19.01	45679.44	-2.97		
alpha	I	2041-11-07T12:48:04.561		70.49	-17.76	44684.73	-2.47		

No planet occultations

alpha	E	2041-11-07T13:40:46.797		74.43	-6.97	44692.21	2.45		
beta	E	2041-11-07T13:46:48.433		74.36	-5.76	45669.34	2.95		
eta	E	2041-11-07T13:54:32.934		74.10	-4.21x	47176.12	3.54		
gamma	E	2041-11-07T13:56:36.684		74.00	-3.80x	47622.67	3.68		
delta	E	2041-11-07T13:59:35.771		73.83	-3.20x	48300.35	3.89		
lambda	E	2041-11-07T14:06:35.630		73.34	-1.81x	50026.71	4.33		
epsilon	E	2041-11-07T14:09:33.939		73.09	-1.22x	50814.56	4.54		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2041-11-07T13:04:48.490
 Event type : XRgt
 : No Uranus occs
 : 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 : 612027380777326592
 2Mass ID (if available) : 08590478+1746169
 ICRS Star Coord at Epoch: 08h 59m 04.77548s +17:46:16.76710s
 RUWE (>1.4 is poor) : 1.03
 K magnitude : 14.948
 G magnitude : 17.541
 RP magnitude : 16.799
 BP magnitude : 18.173
 DUPflag : 0
 Distance (au) : 18.421
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 5.18
 Sun-Target sep (deg) : 92.80
 Sun-Moon sep (deg) : 96.86
 B (ring opening deg) : 35.05
 PA of pole (deg) : 96.37
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.177
 C/A sky separation (km) : 42452.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ural11.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ural11.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



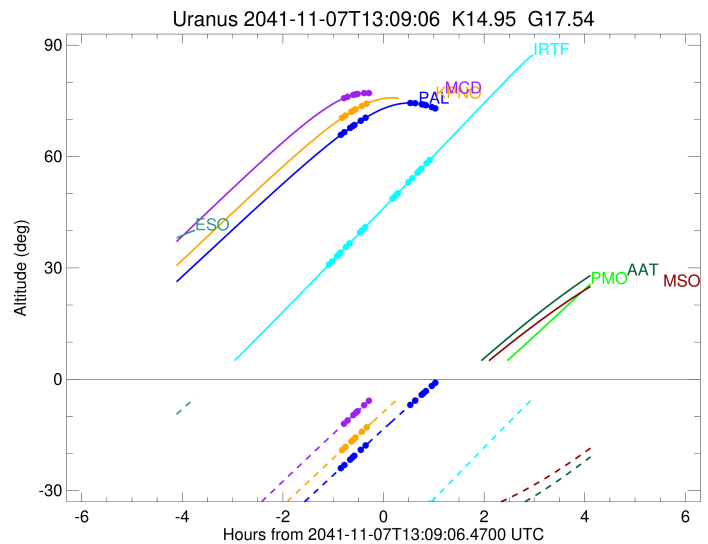
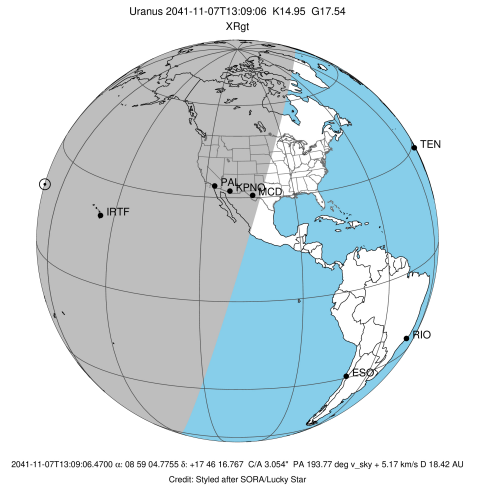
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2041-11-07T12:19:23.994		70.37	-19.15	51224.65	-4.58		
lambda	I	2041-11-07T12:23:49.731		71.05	-18.22	50026.71	-4.37		
delta	I	2041-11-07T12:30:45.437		72.05	-16.76	48300.35	-3.92		
gamma	I	2041-11-07T12:33:43.225		72.46	-16.14	47620.98	-3.72		
eta	I	2041-11-07T12:35:45.300		72.72	-15.72	47176.12	-3.57		
beta	I	2041-11-07T12:43:20.739		73.64	-14.13	45679.48	-2.99		
alpha	I	2041-11-07T12:49:21.739		74.28	-12.88	44684.72	-2.49		

No planet occultations

alpha	E	2041-11-07T13:42:43.617		74.85	-1.93x	44692.25	2.48		
beta	E	2041-11-07T13:48:42.292		74.32	-0.73x	45669.31	2.97		
eta	E	2041-11-07T13:56:24.299		73.51	0.81x	47176.12	3.55		
gamma	E	2041-11-07T13:58:27.528		73.26	1.22x	47622.68	3.70		
delta	E	2041-11-07T14:01:25.930		72.90	1.81x	48300.35	3.90		
lambda	E	2041-11-07T14:08:24.429		71.96	3.20x	50026.71	4.34		
epsilon	E	2041-11-07T14:11:22.226		71.54	3.78x	50814.53	4.55		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2041-11-07T13:06:49.030
 Event type : XRgt
 : No Uranus occs
 : 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 : 612027380777326592
 2Mass ID (if available) : 08590478+1746169
 ICRS Star Coord at Epoch: 08h 59m 04.77548s +17:46:16.76710s
 RUWE (>1.4 is poor) : 1.03
 K magnitude : 14.948
 G magnitude : 17.541
 RP magnitude : 16.799
 BP magnitude : 18.173
 DUPflag : 0
 Distance (au) : 18.421
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 5.18
 Sun-Target sep (deg) : 92.80
 Sun-Moon sep (deg) : 96.85
 B (ring opening deg) : 35.05
 PA of pole (deg) : 96.37
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.180
 C/A sky separation (km) : 42482.5
 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



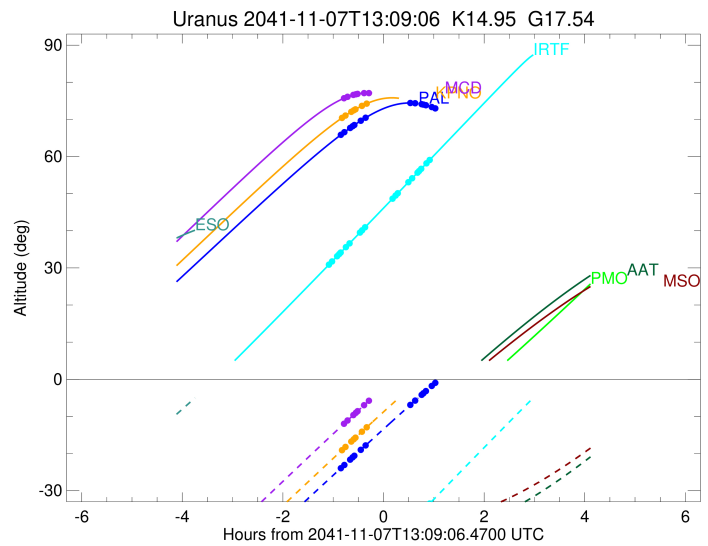
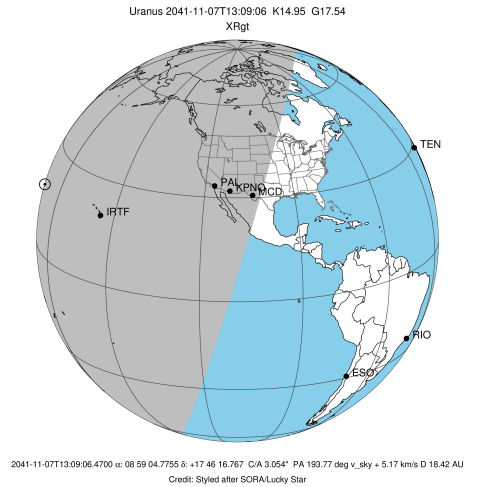
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2041-11-07T12:21:48.880		75.69	-12.03	51224.93	-4.56		
lambda	I	2041-11-07T12:26:16.146		76.10	-11.09	50026.71	-4.35		
delta	I	2041-11-07T12:33:14.298		76.61	-9.63	48300.35	-3.90		
gamma	I	2041-11-07T12:36:13.218		76.78	-9.01	47620.98	-3.69		
eta	I	2041-11-07T12:38:16.114		76.87	-8.58	47176.12	-3.55		
beta	I	2041-11-07T12:45:55.096		77.09	-6.99	45679.48	-2.96		
alpha	I	2041-11-07T12:51:59.831		77.09	-5.73	44684.72	-2.46		

No planet occultations

alpha	E	2041-11-07T13:44:49.795		71.88	5.02x	44692.14	2.45		
beta	E	2041-11-07T13:50:51.170		70.90	6.21x	45669.40	2.96		
eta	E	2041-11-07T13:58:35.040		69.56	7.73x	47176.12	3.54		
gamma	E	2041-11-07T14:00:38.582		69.20	8.14x	47622.66	3.69		
delta	E	2041-11-07T14:03:37.342		68.66	8.72x	48300.35	3.89		
lambda	E	2041-11-07T14:10:36.262		67.37	10.08x	50026.71	4.34		
epsilon	E	2041-11-07T14:13:34.267		66.82	10.65x	50815.30	4.55		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2041-11-07T12:55:06.820
 Event type : XRgt
 : No Uranus occs
 : 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 : 612027380777326592
 2Mass ID (if available) : 08590478+1746169
 ICRS Star Coord at Epoch: 08h 59m 04.77548s +17:46:16.76710s
 RUWE (>1.4 is poor) : 1.03
 K magnitude : 14.948
 G magnitude : 17.541
 RP magnitude : 16.799
 BP magnitude : 18.173
 DUPflag : 0
 Distance (au) : 18.421
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 5.18
 Sun-Target sep (deg) : 92.80
 Sun-Moon sep (deg) : 96.68
 B (ring opening deg) : 35.05
 PA of pole (deg) : 96.37
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.060
 C/A sky separation (km) : 40882.8
 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_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	2041-11-07T12:03:49.144		30.82	-61.74	51241.40	-5.15		
lambda	I	2041-11-07T12:07:48.108		31.75	-60.80	50026.71	-4.96		
delta	I	2041-11-07T12:13:50.280		33.16	-59.38	48300.35	-4.57		
gamma	I	2041-11-07T12:16:21.991		33.75	-58.78	47621.02	-4.39		
eta	I	2041-11-07T12:18:04.811		34.15	-58.38	47176.12	-4.26		
beta	I	2041-11-07T12:24:15.652		35.59	-56.93	45680.05	-3.79		
alpha	I	2041-11-07T12:28:49.943		36.66	-55.85	44684.62	-3.41		
4	I	2041-11-07T12:40:46.851		39.46	-53.04	42615.89	-2.32		
5	I	2041-11-07T12:43:01.868		39.98	-52.51	42314.08	-2.11		
6	I	2041-11-07T12:46:55.372		40.90	-51.60	41869.58	-1.71		

No planet occultations

6	E	2041-11-07T13:19:57.102		48.65	-43.84	41856.13	1.69		
5	E	2041-11-07T13:23:54.204		49.58	-42.91	42311.01	2.08		
4	E	2041-11-07T13:26:13.169		50.13	-42.37	42605.23	2.29		
alpha	E	2041-11-07T13:38:33.831		53.04	-39.47	44694.97	3.33		
beta	E	2041-11-07T13:43:11.157		54.12	-38.39	45667.38	3.69		
eta	E	2041-11-07T13:49:37.327		55.64	-36.88	47176.12	4.13		
gamma	E	2041-11-07T13:51:23.971		56.06	-36.47	47623.02	4.25		
delta	E	2041-11-07T13:54:00.385		56.68	-35.86	48300.35	4.41		
lambda	E	2041-11-07T14:00:16.010		58.15	-34.40	50026.71	4.77		
epsilon	E	2041-11-07T14:02:55.499		58.78	-33.77	50799.49	4.94		