

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2025-11-12T08:15:26.150
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 51158493631604224
 2Mass ID (if available) : 03491314+1949446

ICRS Star Coord at Epoch: 03h 49m 13.14861s +19:49:44.48039s

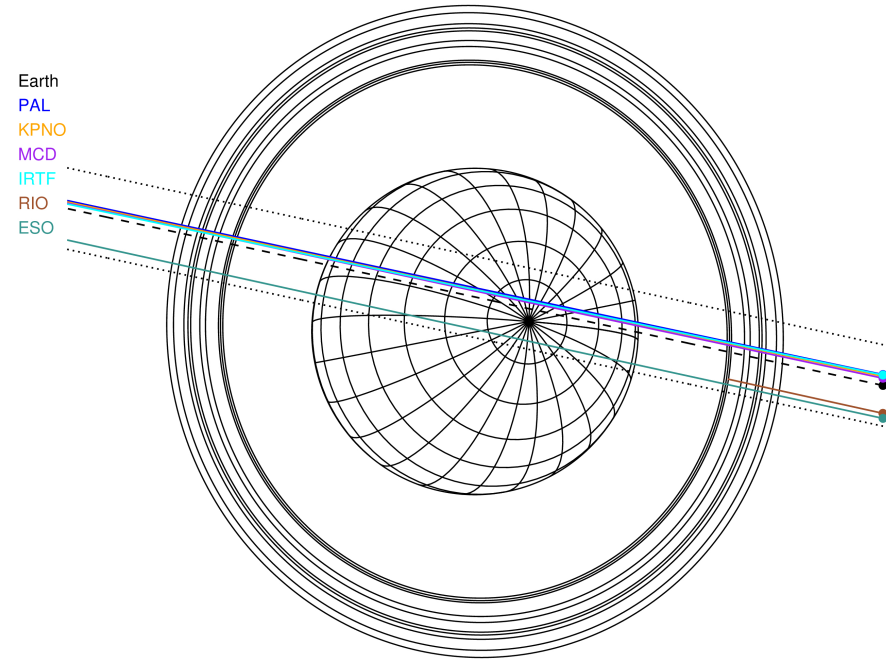
RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.375
 G magnitude : 16.576
 RP magnitude : 15.857
 BP magnitude : 17.133
 DUPflag : 0
 Distance (au) : 18.522
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.02
 Sun-Target sep (deg) : 170.38
 Sun-Moon sep (deg) : 81.79
 B (ring opening deg) : 70.38
 PA of pole (deg) : -79.47
 # 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



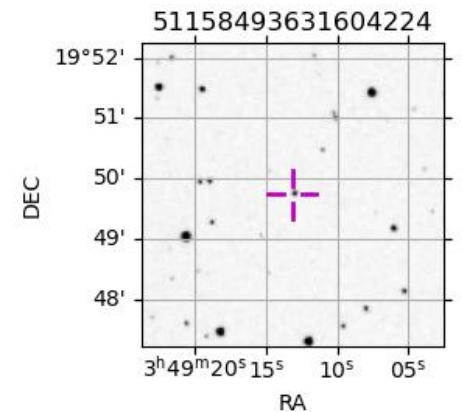
2025-11-12T08:15:26.1500 ra: 03 49 13.1486 s: +19 49 44.480 C/A 0.996° PA 167.76 deg v_sky -23.02 km/s D 18.52 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2025-11-12T08:15:26 K14.38 G16.58 PgtRgt



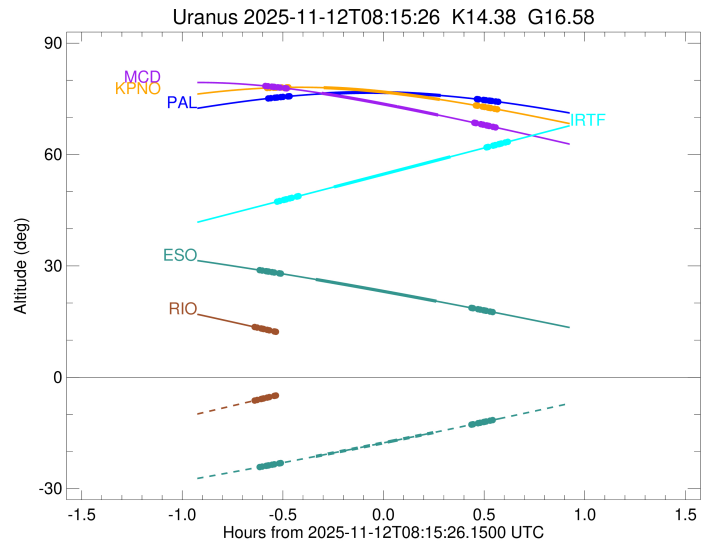
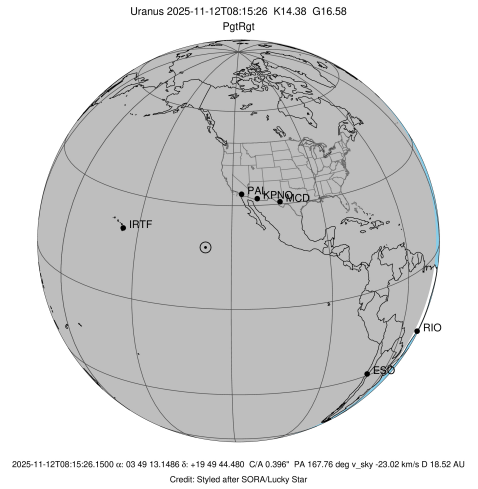
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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 12 07:41 - NOV 12 08:49	PieRie
PNO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++	+ +	+++++	NOV 12 07:40 - NOV 12 08:49	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++	+ +	+++++	NOV 12 07:40 - NOV 12 08:49	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++	+ +	+++++	NOV 12 07:43 - NOV 12 08:52	PieRie
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++			NOV 12 07:37 - NOV 12 07:42	PnnRin
ESO	European Southern Obs	-29.3	289.3	+++++	+ +	+++++	NOV 12 07:38 - NOV 12 08:48	PieRie
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



```

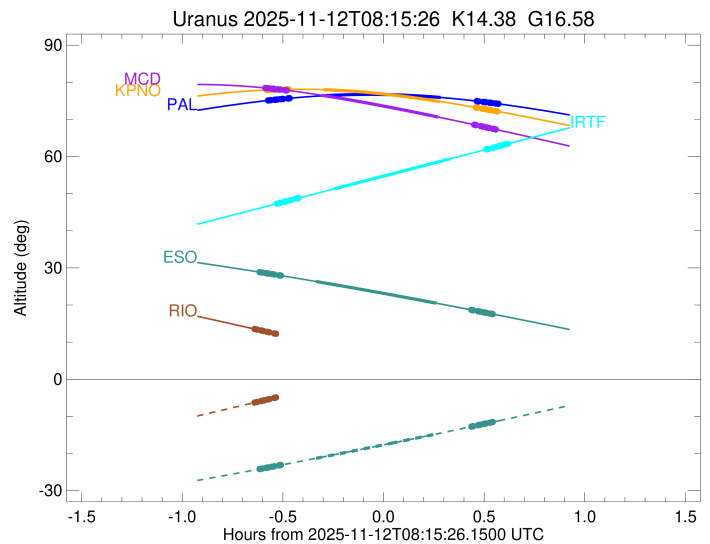
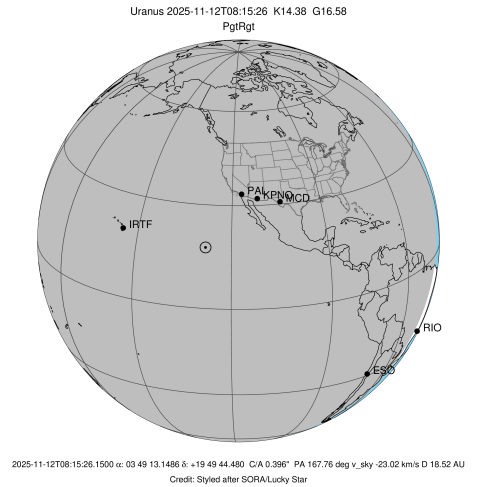
target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2025-11-12T08:15:09.990
Event type          : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code       : PAL
Location            : Palomar Mt (200")
Latitude (deg)      : 33.35622
E. Longitude (deg)  : 243.13601
Altitude (km)       : 1.706
Gaia source ID      : 51158493631604224
2Mass ID (if available) : 03491314+1949446
ICRS Star Coord at Epoch: 03h 49m 13.14861s +19:49:44.48039s
RUWE (>1.4 is poor) : 0.97
K magnitude         : 14.375
G magnitude         : 16.576
RP magnitude        : 15.857
BP magnitude        : 17.133
DUPflag            : 0
Distance (au)       : 18.522
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : -23.02
Sun-Target sep (deg) : 170.38
Sun-Moon sep (deg)  : 82.70
B (ring opening deg) : 70.38
PA of pole (deg)    : -79.47
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.498
C/A sky separation (km) : 6694.2
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	2025-11-12T07:41:18.963		75.13	-74.46	50794.74	-24.42		
lambda	I	2025-11-12T07:41:50.435		75.19	-74.44	50026.71	-24.40		
delta	I	2025-11-12T07:43:01.211		75.30	-74.40	48300.35	-24.38		
gamma	I	2025-11-12T07:43:29.009		75.34	-74.38	47622.61	-24.38		
eta	I	2025-11-12T07:43:47.328		75.37	-74.37	47176.12	-24.37		
beta	I	2025-11-12T07:44:50.134		75.47	-74.33	45644.59	-24.35		
alpha	I	2025-11-12T07:45:28.986		75.53	-74.30	44701.54	-24.35		
4	I	2025-11-12T07:46:55.645		75.65	-74.23	42599.01	-24.32		
5	I	2025-11-12T07:47:08.089		75.67	-74.22	42297.97	-24.31		
6	I	2025-11-12T07:47:27.905		75.70	-74.20	41797.65	-24.29		
Uranus	I	2025-11-12T07:57:58.747		76.40	-73.51	25047.39		19.47	20.32
Uranus	E	2025-11-12T08:32:29.324		75.91	-69.43	25232.55		-15.35	-16.04
6	E	2025-11-12T08:43:17.848		74.93	-67.75	41869.77	24.30		
5	E	2025-11-12T08:43:29.133		74.91	-67.72	42159.50	24.32		
4	E	2025-11-12T08:43:45.578		74.88	-67.68	42556.12	24.33		
alpha	E	2025-11-12T08:45:15.740		74.71	-67.43	44743.52	24.35		
beta	E	2025-11-12T08:45:54.262		74.64	-67.33	45680.31	24.36		
eta	E	2025-11-12T08:46:55.586		74.53	-67.16	47176.12	24.38		
gamma	E	2025-11-12T08:47:14.236		74.49	-67.11	47630.86	24.39		
delta	E	2025-11-12T08:47:41.686		74.44	-67.03	48300.35	24.39		
lambda	E	2025-11-12T08:48:52.434		74.30	-66.83	50026.71	24.41		
epsilon	E	2025-11-12T08:49:54.534		74.17	-66.66	51542.98	24.43		

```

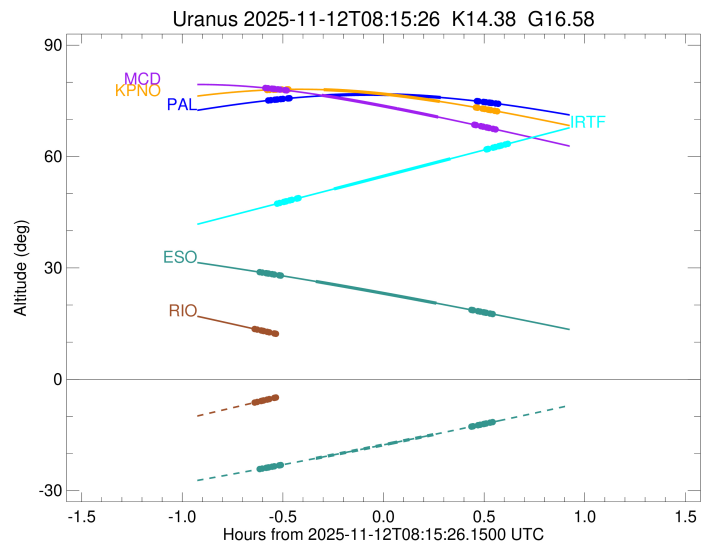
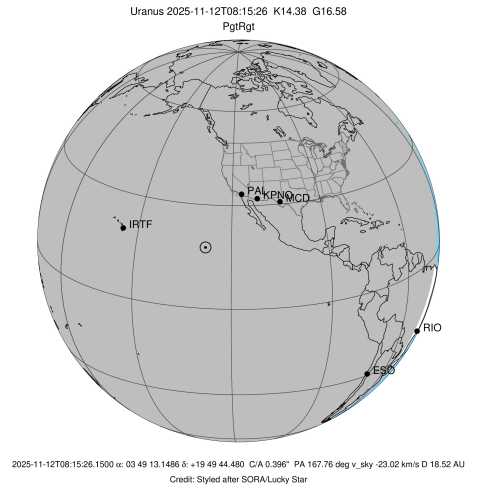
target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2025-11-12T08:14:50.280
Event type           : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : KPNO
Location             : Kitt Peak Natl Obs
Latitude (deg)       : 31.96333
E. Longitude (deg)   : 248.40000
Altitude (km)        : 2.120
Gaia source ID       : 51158493631604224
2Mass ID (if available) : 03491314+1949446
ICRS Star Coord at Epoch: 03h 49m 13.14861s +19:49:44.48039s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 14.375
G magnitude          : 16.576
RP magnitude         : 15.857
BP magnitude         : 17.133
DUPflag             : 0
Distance (au)        : 18.522
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -23.02
Sun-Target sep (deg) : 170.38
Sun-Moon sep (deg)   : 82.69
B (ring opening deg) : 70.38
PA of pole (deg)     : -79.47
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.480
C/A sky separation (km) : 6454.2
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	2025-11-12T07:40:58.329		77.93	-74.40	50793.72	-24.45		
lambda	I	2025-11-12T07:41:29.724		77.95	-74.35	50026.71	-24.43		
delta	I	2025-11-12T07:42:40.419		77.99	-74.23	48300.35	-24.41		
gamma	I	2025-11-12T07:43:08.186		78.01	-74.18	47622.59	-24.41		
eta	I	2025-11-12T07:43:26.481		78.02	-74.15	47176.12	-24.40		
beta	I	2025-11-12T07:44:29.214		78.05	-74.04	45644.52	-24.38		
alpha	I	2025-11-12T07:45:08.022		78.06	-73.97	44701.37	-24.38		
4	I	2025-11-12T07:46:34.571		78.09	-73.81	42598.80	-24.35		
5	I	2025-11-12T07:46:46.978		78.09	-73.78	42298.28	-24.34		
6	I	2025-11-12T07:47:06.778		78.10	-73.74	41797.74	-24.33		
Uranus	I	2025-11-12T07:57:36.525		78.01	-72.42	25048.72		19.44	20.29
Uranus	E	2025-11-12T08:32:11.950		74.84	-66.86	25227.91		-15.47	-16.16
6	E	2025-11-12T08:42:59.046		73.22	-64.88	41869.92	24.33		
5	E	2025-11-12T08:43:10.316		73.19	-64.85	42159.65	24.34		
4	E	2025-11-12T08:43:26.730		73.15	-64.80	42555.90	24.35		
alpha	E	2025-11-12T08:44:56.813		72.91	-64.51	44743.40	24.38		
beta	E	2025-11-12T08:45:35.307		72.81	-64.39	45680.29	24.38		
eta	E	2025-11-12T08:46:36.582		72.64	-64.20	47176.12	24.40		
gamma	E	2025-11-12T08:46:55.217		72.59	-64.14	47630.85	24.40		
delta	E	2025-11-12T08:47:22.647		72.51	-64.05	48300.35	24.41		
lambda	E	2025-11-12T08:48:33.345		72.32	-63.83	50026.71	24.43		
epsilon	E	2025-11-12T08:49:35.387		72.15	-63.63	51542.55	24.44		

```

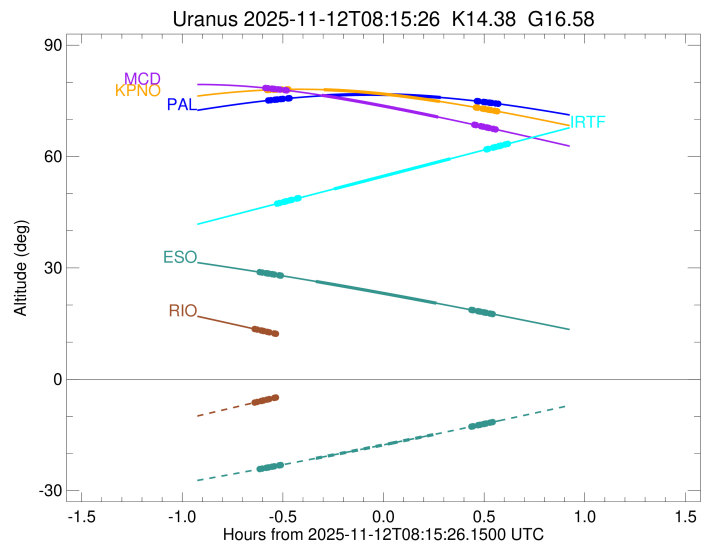
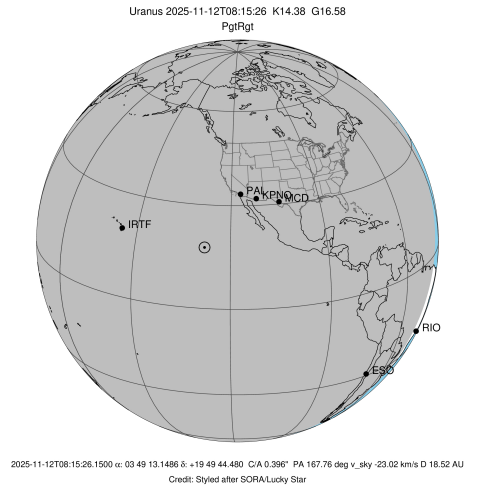
target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2025-11-12T08:14:20.720
Event type           : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : MCD
Location              : McDonald Obs. 2.7m
Latitude (deg)       : 30.67158
E. Longitude (deg)   : 255.97844
Altitude (km)        : 2.075
Gaia source ID       : 51158493631604224
2Mass ID (if available) : 03491314+1949446
ICRS Star Coord at Epoch: 03h 49m 13.14861s +19:49:44.48039s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 14.375
G magnitude           : 16.576
RP magnitude          : 15.857
BP magnitude          : 17.133
DUPflag               : 0
Distance (au)         : 18.522
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -23.02
Sun-Target sep (deg) : 170.38
Sun-Moon sep (deg)   : 82.66
B (ring opening deg) : 70.38
PA of pole (deg)     : -79.47
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.462
C/A sky separation (km) : 6208.6
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	2025-11-12T07:40:27.418		78.45	-71.32	50792.63	-24.47		
lambda	I	2025-11-12T07:40:58.739		78.40	-71.24	50026.71	-24.45		
delta	I	2025-11-12T07:42:09.367		78.29	-71.04	48300.35	-24.44		
gamma	I	2025-11-12T07:42:37.108		78.24	-70.96	47622.57	-24.43		
eta	I	2025-11-12T07:42:55.384		78.21	-70.91	47176.12	-24.43		
beta	I	2025-11-12T07:43:58.056		78.11	-70.73	45644.45	-24.41		
alpha	I	2025-11-12T07:44:36.826		78.04	-70.62	44701.19	-24.40		
4	I	2025-11-12T07:46:03.284		77.89	-70.37	42598.56	-24.38		
5	I	2025-11-12T07:46:15.655		77.86	-70.34	42298.61	-24.37		
6	I	2025-11-12T07:46:35.442		77.83	-70.28	41797.85	-24.36		
Uranus	I	2025-11-12T07:57:04.256		76.50	-68.41	25050.22		19.41	20.26
Uranus	E	2025-11-12T08:31:44.989		70.64	-61.68	25223.33		-15.58	-16.28
6	E	2025-11-12T08:42:30.904		68.56	-59.49	41870.06	24.34		
5	E	2025-11-12T08:42:42.164		68.53	-59.45	42159.79	24.36		
4	E	2025-11-12T08:42:58.552		68.47	-59.40	42555.68	24.37		
alpha	E	2025-11-12T08:44:28.590		68.18	-59.09	44743.29	24.39		
beta	E	2025-11-12T08:45:07.070		68.05	-58.96	45680.26	24.39		
eta	E	2025-11-12T08:46:08.321		67.85	-58.75	47176.12	24.41		
gamma	E	2025-11-12T08:46:26.948		67.79	-58.68	47630.84	24.41		
delta	E	2025-11-12T08:46:54.368		67.70	-58.59	48300.35	24.42		
lambda	E	2025-11-12T08:48:05.043		67.46	-58.34	50026.71	24.43		
epsilon	E	2025-11-12T08:49:07.051		67.26	-58.13	51542.13	24.45		

```

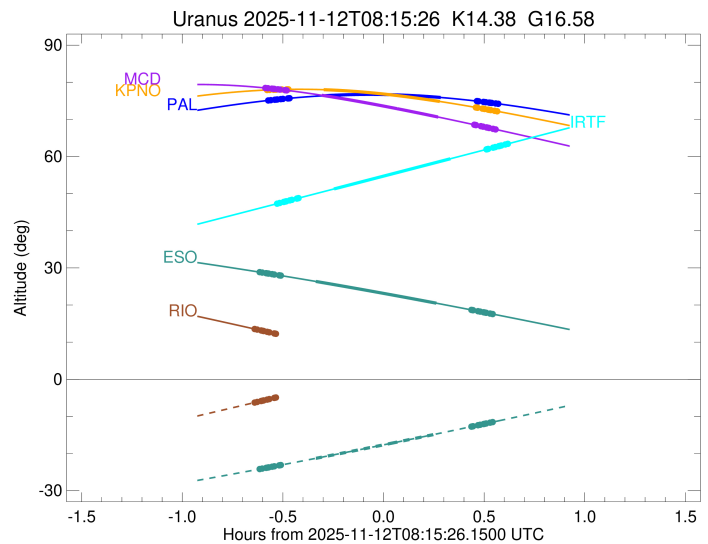
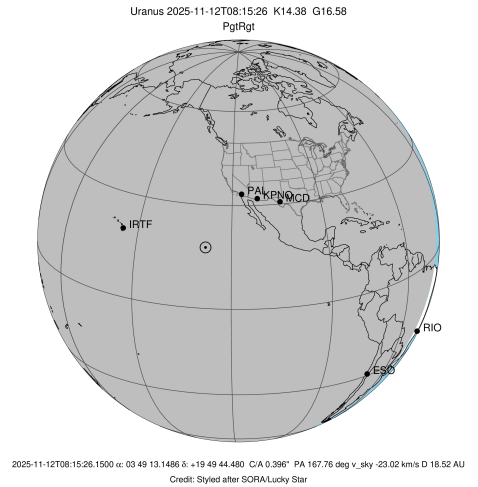
target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2025-11-12T08:17:57.830
Event type          : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code       : IRTF
Location            : Mauna Kea/IRTF
Latitude (deg)      : 19.82622
E. Longitude (deg)  : 204.52800
Altitude (km)       : 4.168
Gaia source ID      : 51158493631604224
2Mass ID (if available) : 03491314+1949446
ICRS Star Coord at Epoch: 03h 49m 13.14861s +19:49:44.48039s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 14.375
G magnitude          : 16.576
RP magnitude         : 15.857
BP magnitude         : 17.133
DUPflag             : 0
Distance (au)       : 18.522
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -23.02
Sun-Target sep (deg) : 170.38
Sun-Moon sep (deg)  : 82.63
B (ring opening deg) : 70.38
PA of pole (deg)    : -79.47
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.478
C/A sky separation (km) : 6418.5
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	2025-11-12T07:43:58.378		47.36	-56.37	50794.26	-24.34		
lambda	I	2025-11-12T07:44:29.931		47.49	-56.49	50026.71	-24.32		
delta	I	2025-11-12T07:45:40.929		47.76	-56.77	48300.35	-24.31		
gamma	I	2025-11-12T07:46:08.813		47.87	-56.88	47622.60	-24.30		
eta	I	2025-11-12T07:46:27.187		47.94	-56.95	47176.12	-24.30		
beta	I	2025-11-12T07:47:30.180		48.19	-57.20	45644.55	-24.28		
alpha	I	2025-11-12T07:48:09.146		48.34	-57.35	44701.45	-24.28		
4	I	2025-11-12T07:49:36.044		48.68	-57.69	42598.89	-24.26		
5	I	2025-11-12T07:49:48.509		48.73	-57.74	42298.15	-24.25		
6	I	2025-11-12T07:50:08.383		48.80	-57.82	41797.70	-24.23		
Uranus	I	2025-11-12T08:00:40.369		51.27	-60.30	25048.40		19.45	20.30
Uranus	E	2025-11-12T08:35:22.124		59.40	-68.46	25225.16		-15.53	-16.23
6	E	2025-11-12T08:46:09.679		61.93	-71.00	41870.05	24.31		
5	E	2025-11-12T08:46:20.955		61.98	-71.05	42159.78	24.32		
4	E	2025-11-12T08:46:37.367		62.04	-71.11	42555.69	24.33		
alpha	E	2025-11-12T08:48:07.523		62.39	-71.46	44743.29	24.36		
beta	E	2025-11-12T08:48:46.049		62.54	-71.62	45680.26	24.37		
eta	E	2025-11-12T08:49:47.367		62.78	-71.86	47176.12	24.38		
gamma	E	2025-11-12T08:50:06.013		62.86	-71.93	47630.84	24.39		
delta	E	2025-11-12T08:50:33.461		62.97	-72.04	48300.35	24.40		
lambda	E	2025-11-12T08:51:44.200		63.24	-72.31	50026.71	24.41		
epsilon	E	2025-11-12T08:52:46.255		63.49	-72.56	51542.07	24.43		

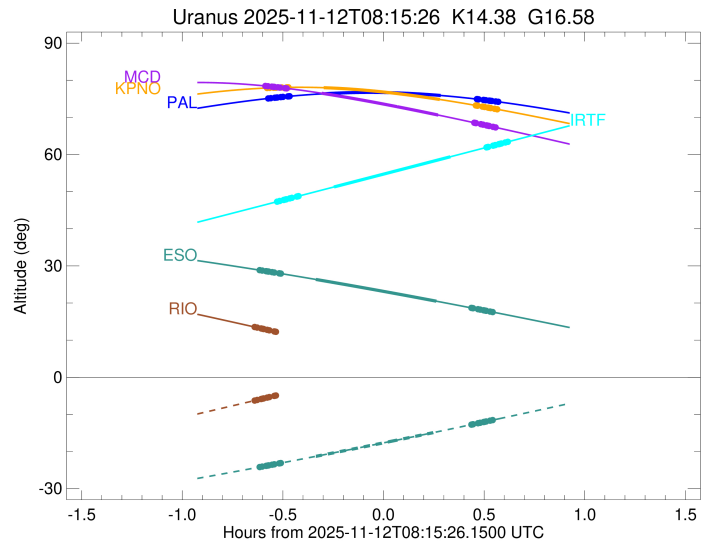
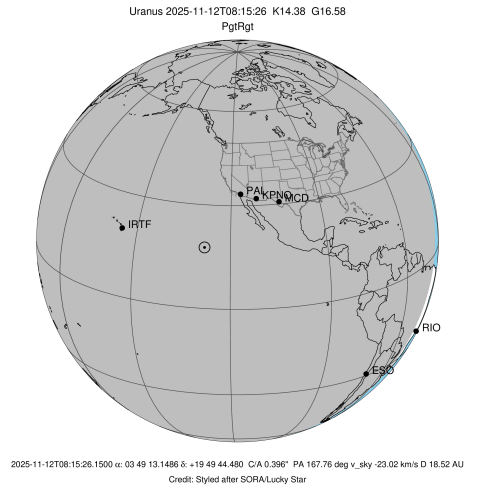
```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch              : 2025-11-12T08:11:52.370
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        : 51158493631604224
2Mass ID (if available) : 03491314+1949446
ICRS Star Coord at Epoch: 03h 49m 13.14861s +19:49:44.48039s
RUWE (>1.4 is poor)  : 0.97
K magnitude           : 14.375
G magnitude           : 16.576
RP magnitude          : 15.857
BP magnitude          : 17.133
DUPflag              : 0
Distance (au)         : 18.522
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : -23.02
Sun-Target sep (deg)  : 170.38
Sun-Moon sep (deg)   : 81.78
B (ring opening deg) : 70.38
PA of pole (deg)     : -79.47
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.096
C/A sky separation (km) : 1284.8
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_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	2025-11-12T07:37:16.466		13.49	-6.22	50774.47	-24.43		
lambda	I	2025-11-12T07:37:47.074		13.38	-6.11	50026.71	-24.43		
delta	I	2025-11-12T07:38:57.747		13.14	-5.86	48300.35	-24.43		
gamma	I	2025-11-12T07:39:25.513		13.05	-5.76	47622.17	-24.42		
eta	I	2025-11-12T07:39:43.776		12.99	-5.69	47176.12	-24.42		
beta	I	2025-11-12T07:40:46.485		12.78	-5.47	45643.27	-24.42		
alpha	I	2025-11-12T07:41:25.296		12.64	-5.33	44697.87	-24.42		
4	I	2025-11-12T07:42:51.729		12.35	-5.02	42593.88	-24.42		
5	I	2025-11-12T07:43:03.692		12.31	-4.98x	42304.20	-24.42		
6	I	2025-11-12T07:43:23.614		12.24	-4.91x	41800.16	-24.41		
Uranus	I	2025-11-12T07:53:51.269		10.09	-2.66x	25099.42		18.39	19.19
Uranus	E	2025-11-12T08:29:56.500		2.52x	5.22x	25136.98		-17.57	-18.35
6	E	2025-11-12T08:40:32.220		0.25x	7.56x	41872.89	24.31		
5	E	2025-11-12T08:40:43.468		0.21x	7.60x	42163.35	24.32		
4	E	2025-11-12T08:40:59.528		0.15x	7.66x	42551.07	24.32		
alpha	E	2025-11-12T08:42:29.865		-0.17x	7.99x	44740.73	24.31		
beta	E	2025-11-12T08:43:08.566		-0.31x	8.14x	45679.52	24.31		
eta	E	2025-11-12T08:44:10.074		-0.53x	8.36x	47176.12	24.31		
gamma	E	2025-11-12T08:44:28.767		-0.60x	8.43x	47630.55	24.31		
delta	E	2025-11-12T08:44:56.320		-0.69x	8.53x	48300.35	24.31		
lambda	E	2025-11-12T08:46:07.337		-0.95x	8.80x	50026.71	24.31		
epsilon	E	2025-11-12T08:47:09.230		-1.17x	9.03x	51531.22	24.31		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2025-11-12T08:13:12.630
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : ESO
 Location : European Southern Obs. (3.6m)
 Latitude (deg) : -29.26097
 E. Longitude (deg) : 289.26831
 Altitude (km) : 2.400
 Gaia source ID : 51158493631604224
 2Mass ID (if available) : 03491314+1949446
 ICRS Star Coord at Epoch: 03h 49m 13.14861s +19:49:44.48039s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.375
 G magnitude : 16.576
 RP magnitude : 15.857
 BP magnitude : 17.133
 DUPflag : 0
 Distance (au) : 18.522
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.02
 Sun-Target sep (deg) : 170.38
 Sun-Moon sep (deg) : 82.10
 B (ring opening deg) : 70.38
 PA of pole (deg) : -79.47
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.023
 C/A sky separation (km) : 308.9
 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	2025-11-12T07:38:46.922		28.82	-24.14	50771.99	-24.57		
lambda	I	2025-11-12T07:39:17.251		28.74	-24.06	50026.71	-24.57		
delta	I	2025-11-12T07:40:27.506		28.57	-23.86	48300.35	-24.57		
gamma	I	2025-11-12T07:40:55.109		28.51	-23.78	47622.11	-24.57		
eta	I	2025-11-12T07:41:13.261		28.46	-23.73	47176.12	-24.57		
beta	I	2025-11-12T07:42:15.601		28.31	-23.55	45643.11	-24.57		
alpha	I	2025-11-12T07:42:54.188		28.22	-23.44	44697.36	-24.57		
4	I	2025-11-12T07:44:20.108		28.01	-23.20	42593.09	-24.57		
5	I	2025-11-12T07:44:31.938		27.98	-23.16	42305.02	-24.57		
6	I	2025-11-12T07:44:51.760		27.93	-23.11	41800.60	-24.56		
Uranus	I	2025-11-12T07:55:16.257		26.35	-21.30	25111.61		18.12	18.92
Uranus	E	2025-11-12T08:31:10.319		20.50	-14.74	25120.75		-17.93	-18.72
6	E	2025-11-12T08:41:39.919		18.68	-12.75	41873.49	24.49		
5	E	2025-11-12T08:41:51.084		18.65	-12.72	42164.32	24.50		
4	E	2025-11-12T08:42:06.935		18.60	-12.67	42550.02	24.50		
alpha	E	2025-11-12T08:43:36.607		18.34	-12.38	44740.08	24.50		
beta	E	2025-11-12T08:44:15.041		18.23	-12.26	45679.32	24.49		
eta	E	2025-11-12T08:45:16.095		18.05	-12.06	47176.12	24.49		
gamma	E	2025-11-12T08:45:34.645		17.99	-12.00	47630.48	24.49		
delta	E	2025-11-12T08:46:01.994		17.91	-11.92	48300.35	24.49		
lambda	E	2025-11-12T08:47:12.478		17.70	-11.69	50026.71	24.49		
epsilon	E	2025-11-12T08:48:13.779		17.52	-11.49	51528.08	24.49		