

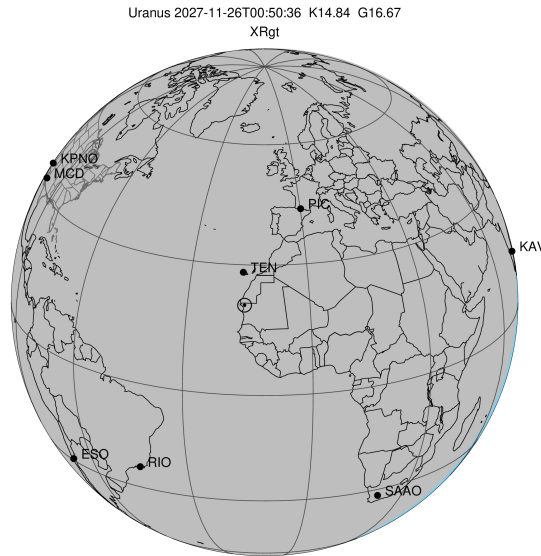
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2027-11-26T00:50:36.470  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 145328675252675968  
 2Mass ID (if available) : 04234725+2130226

ICRS Star Coord at Epoch: 04h 23m 47.24984s +21:30:22.52789s

RUWE (>1.4 is poor) : 1.05  
 K magnitude : 14.837  
 G magnitude : 16.672  
 RP magnitude : 15.994  
 BP magnitude : 17.183  
 DUPflag : 0  
 Distance (au) : 18.380  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.37  
 Sun-Target sep (deg) : 175.42  
 Sun-Moon sep (deg) : 149.22  
 B (ring opening deg) : 77.50  
 PA of pole (deg) : -61.48

# a(km) ring

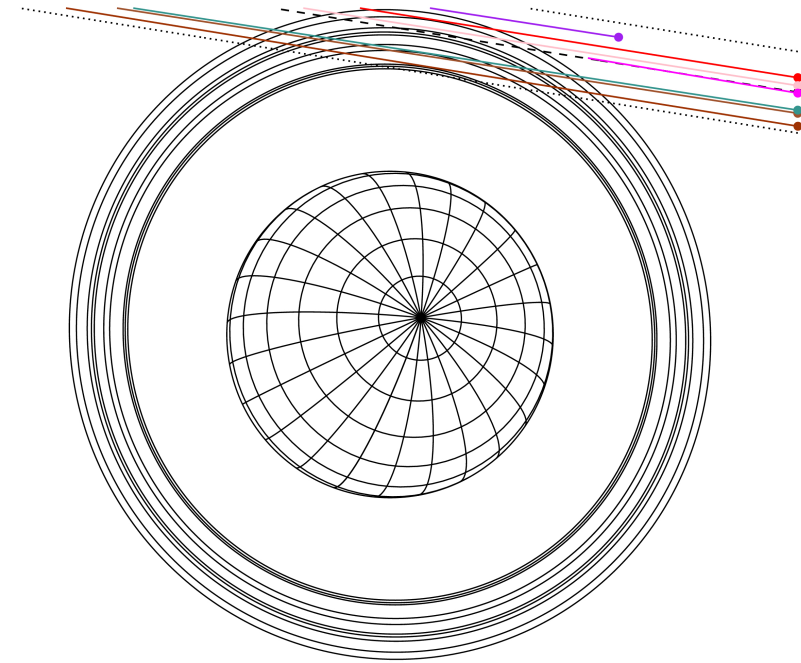
- 1 41837.2 6
- 2 42235.0 5
- 3 42571.2 4
- 4 44718.5 alpha
- 5 45661.1 beta
- 6 47176.1 eta
- 7 47626.3 gamma
- 8 48300.3 delta
- 9 50026.7 lambda
- 10 51149.4 epsilon



2027-11-26T00:50:36.4700 ra: 04 23 47.2498 s: +21 30 22.528 C/A 3.573° PA 170.88 deg v\_sky -23.37 km/s D 18.38 AU  
 Credit: Styled after SORA/Lucky Star

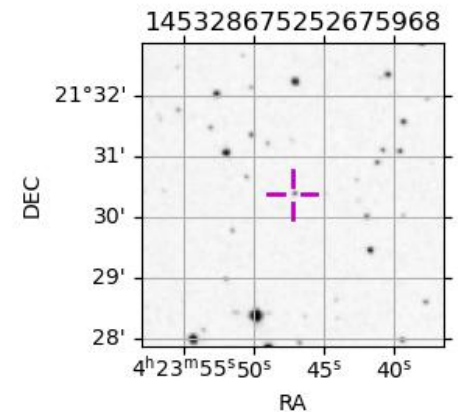
Uranus 2027-11-26T00:50:36 K14.84 G16.67 XRgt

Earth  
 PIC  
 MCD  
 TEN  
 KAV  
 RIO  
 ESO  
 SAAO



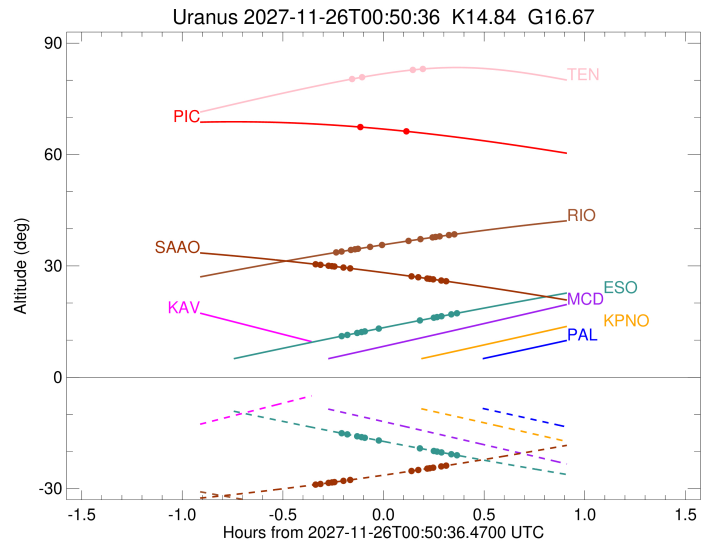
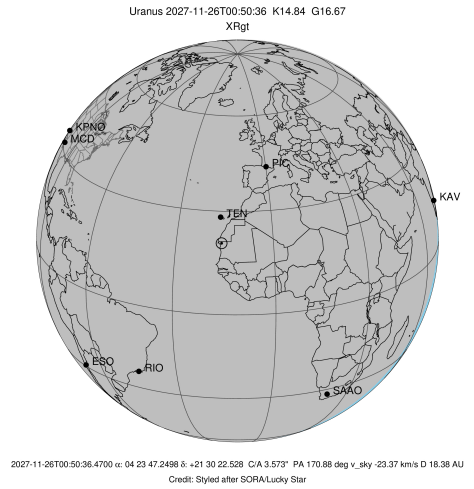
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+		+	NOV 26 00:42 - NOV 26 00:58	PnnRie
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
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 26 00:40 - NOV 26 01:03	PnnRie
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++++		+++++++	NOV 26 00:36 - NOV 26 01:12	PnnRie
ESO	European Southern Obs	-29.3	289.3	+++++++		+++++++	NOV 26 00:37 - NOV 26 01:13	PnnRie
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8	+++++++		+++++++	NOV 26 00:29 - NOV 26 01:09	PnnRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2027-11-26T00:49:45.910
Event type          : XRgt
: No Uranus occs
: 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      : 145328675252675968
2Mass ID (if available) : 04234725+2130226
ICRS Star Coord at Epoch: 04h 23m 47.24984s +21:30:22.52789s
RUWE (>1.4 is poor) : 1.05
K magnitude         : 14.837
G magnitude         : 16.672
RP magnitude        : 15.994
BP magnitude        : 17.183
DUPflag            : 0
Distance (au)       : 18.380
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -23.37
Sun-Target sep (deg) : 175.42
Sun-Moon sep (deg)  : 149.78
B (ring opening deg) : 77.50
PA of pole (deg)    : -61.48
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.731
C/A sky separation (km) : 49740.8
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_itrf93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```



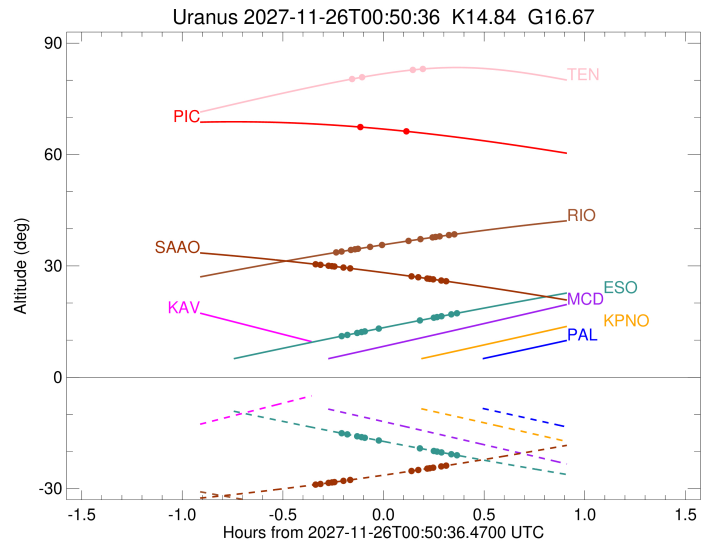
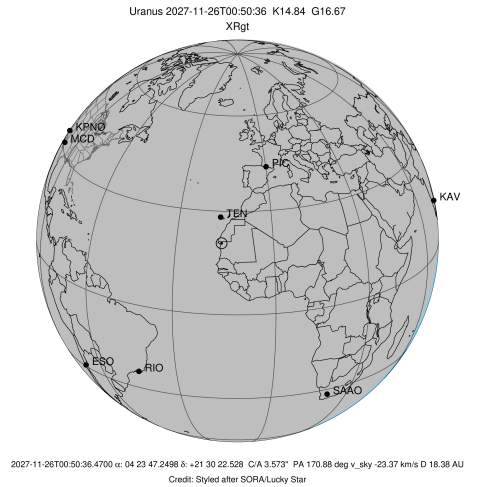
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2027-11-26T00:42:28.214		67.49	-65.17	51540.55	-5.52		

No planet occultations

epsilon	E	2027-11-26T00:58:41.668		66.13	-63.40	51548.25	5.52		
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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2027-11-26T00:51:00.540
Event type          : XRgt
: No Uranus occs
: 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      : 145328675252675968
2Mass ID (if available) : 04234725+2130226
ICRS Star Coord at Epoch: 04h 23m 47.24984s +21:30:22.52789s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 14.837
G magnitude          : 16.672
RP magnitude         : 15.994
BP magnitude         : 17.183
DUPflag             : 0
Distance (au)       : 18.380
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -23.37
Sun-Target sep (deg) : 175.42
Sun-Moon sep (deg)  : 149.63
B (ring opening deg) : 77.50
PA of pole (deg)    : -61.48
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.630
C/A sky separation (km) : 48385.9
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_itrf93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```

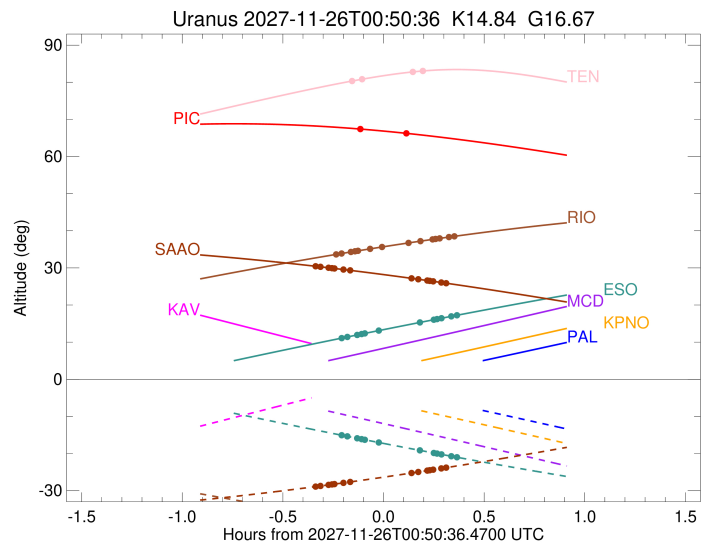
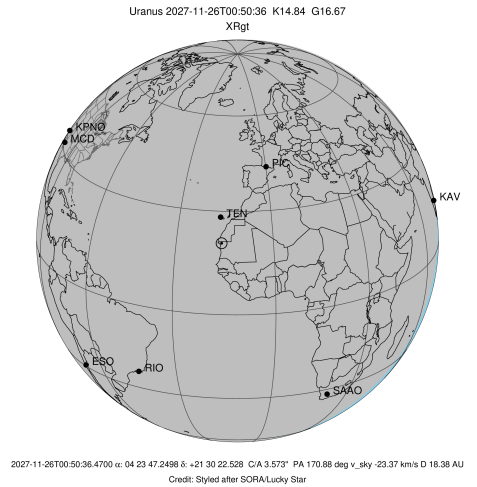


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2027-11-26T00:40:25.514		80.21	-82.18	51528.26	-7.78		
lambda	I	2027-11-26T00:44:16.334		80.84	-82.46	50026.71	-5.26		

No planet occultations

lambda	E	2027-11-26T00:59:18.444		82.79	-82.59	50026.71	5.26		
epsilon	E	2027-11-26T01:03:10.536		83.11	-82.37	51538.53	7.78		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2027-11-26T00:53:24.800  
 Event type : XRgt  
 : No Uranus occs  
 : 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 : 145328675252675968  
 2Mass ID (if available) : 04234725+2130226  
 ICRS Star Coord at Epoch: 04h 23m 47.24984s +21:30:22.52789s  
 RUWE (>1.4 is poor) : 1.05  
 K magnitude : 14.837  
 G magnitude : 16.672  
 RP magnitude : 15.994  
 BP magnitude : 17.183  
 DUPflag : 0  
 Distance (au) : 18.380  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.37  
 Sun-Target sep (deg) : 175.42  
 Sun-Moon sep (deg) : 149.11  
 B (ring opening deg) : 77.50  
 PA of pole (deg) : -61.48  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.298  
 C/A sky separation (km) : 43968.5  
 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\_itrf93\_040916.bsp  
 earth\_720101\_070426.bpc  
 earth\_200101\_990628\_predict.bpc  
 pg3f0000r.bsp  
 pg490000r.bsp  
 naif0012.tls  
 earth\_flat\_IAU.spk



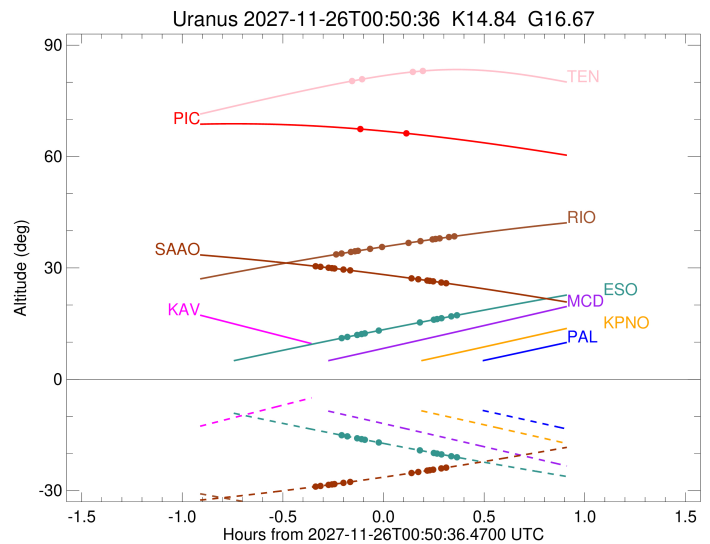
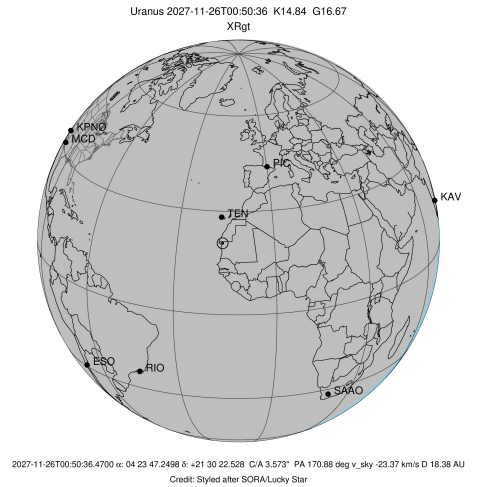
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2027-11-26T00:36:02.455		33.57	-36.95	51490.47	-12.31		
lambda	I	2027-11-26T00:38:07.802		33.88	-37.24	50026.71	-11.12		
delta	I	2027-11-26T00:40:54.859		34.30	-37.62	48300.35	-9.52		
gamma	I	2027-11-26T00:42:08.366		34.48	-37.78	47628.53	-8.75		
eta	I	2027-11-26T00:43:01.767		34.61	-37.90	47176.12	-8.18		
beta	I	2027-11-26T00:46:42.562		35.14	-38.39	45644.17	-5.66		
alpha	I	2027-11-26T00:50:22.026		35.66	-38.86	44697.02	-2.91		

No planet occultations

alpha	E	2027-11-26T00:57:50.547		36.70	-39.78	44691.37	2.91		
beta	E	2027-11-26T01:01:33.275		37.20	-40.22	45650.94	5.67		
eta	E	2027-11-26T01:05:12.647		37.68	-40.65	47176.12	8.19		
gamma	E	2027-11-26T01:06:05.551		37.79	-40.75	47624.68	8.76		
delta	E	2027-11-26T01:07:19.410		37.95	-40.89	48300.35	9.53		
lambda	E	2027-11-26T01:10:06.237		38.30	-41.19	50026.71	11.14		
epsilon	E	2027-11-26T01:12:12.630		38.56	-41.42	51505.71	12.33		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2027-11-26T00:54:36.780  
 Event type : XRgt  
 : No Uranus occs  
 : 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 : 145328675252675968  
 2Mass ID (if available) : 04234725+2130226  
 ICRS Star Coord at Epoch: 04h 23m 47.24984s +21:30:22.52789s  
 RUWE (>1.4 is poor) : 1.05  
 K magnitude : 14.837  
 G magnitude : 16.672  
 RP magnitude : 15.994  
 BP magnitude : 17.183  
 DUPflag : 0  
 Distance (au) : 18.380  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.37  
 Sun-Target sep (deg) : 175.42  
 Sun-Moon sep (deg) : 148.72  
 B (ring opening deg) : 77.50  
 PA of pole (deg) : -61.48  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.332  
 C/A sky separation (km) : 44418.6  
 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

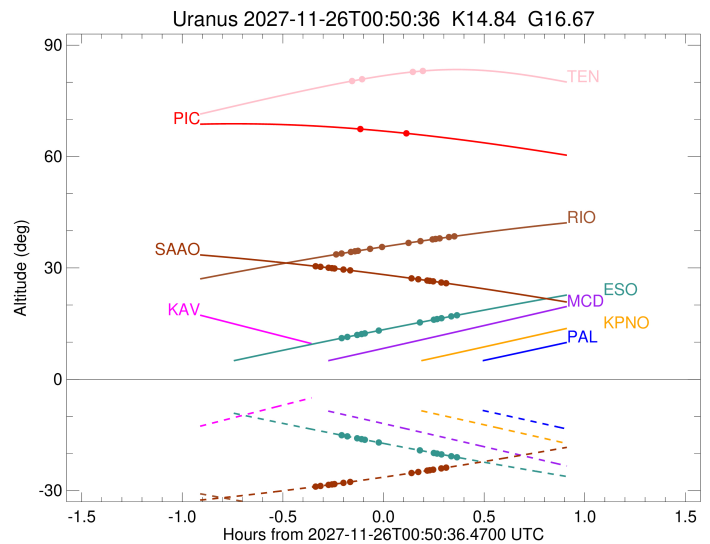
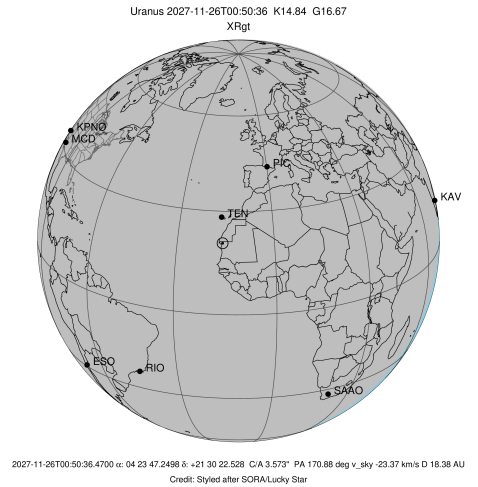


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2027-11-26T00:37:39.914		11.00	-14.99	51494.45	-11.85		
lambda	I	2027-11-26T00:39:50.959		11.40	-15.38	50026.71	-10.62		
delta	I	2027-11-26T00:42:47.504		11.94	-15.90	48300.35	-8.91		
gamma	I	2027-11-26T00:44:06.540		12.18	-16.14	47628.40	-8.09		
eta	I	2027-11-26T00:45:04.704		12.36	-16.31	47176.12	-7.46		
beta	I	2027-11-26T00:49:19.340		13.13	-17.05	45644.70	-4.53		

No planet occultations

beta	E	2027-11-26T01:01:21.917		15.29	-19.14	45650.16	4.53		
eta	E	2027-11-26T01:05:35.026		16.03	-19.85	47176.12	7.47		
gamma	E	2027-11-26T01:06:32.662		16.20	-20.01	47624.82	8.10		
delta	E	2027-11-26T01:07:52.011		16.43	-20.24	48300.35	8.93		
lambda	E	2027-11-26T01:10:48.215		16.95	-20.73	50026.71	10.64		
epsilon	E	2027-11-26T01:13:00.185		17.33	-21.09	51508.88	11.88		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2027-11-26T00:49:08.110  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Observer code : SAAO  
 Location : So. Afr. Astro. Obs. (Sutherland)  
 Latitude (deg) : -32.37953  
 E. Longitude (deg) : 20.81070  
 Altitude (km) : 1.768  
 Gaia source ID : 145328675252675968  
 2Mass ID (if available) : 04234725+2130226  
 ICRS Star Coord at Epoch: 04h 23m 47.24984s +21:30:22.52789s  
 RUWE (>1.4 is poor) : 1.05  
 K magnitude : 14.837  
 G magnitude : 16.672  
 RP magnitude : 15.994  
 BP magnitude : 17.183  
 DUPflag : 0  
 Distance (au) : 18.380  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.37  
 Sun-Target sep (deg) : 175.42  
 Sun-Moon sep (deg) : 149.82  
 B (ring opening deg) : 77.50  
 PA of pole (deg) : -61.48  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.177  
 C/A sky separation (km) : 42345.5  
 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\_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	2027-11-26T00:29:58.545		30.48	-28.96	51475.23	-13.53		
lambda	I	2027-11-26T00:31:50.084		30.29	-28.74	50026.71	-12.53		
delta	I	2027-11-26T00:34:15.297		30.03	-28.45	48300.35	-11.23		
gamma	I	2027-11-26T00:35:16.699		29.93	-28.32	47628.96	-10.63		
eta	I	2027-11-26T00:36:00.153		29.85	-28.24	47176.12	-10.20		
beta	I	2027-11-26T00:38:44.269		29.55	-27.90	45642.93	-8.46		
alpha	I	2027-11-26T00:40:45.007		29.33	-27.65	44702.13	-7.05		

No planet occultations

alpha	E	2027-11-26T00:58:51.576		27.20	-25.27	44688.33	7.05		
beta	E	2027-11-26T01:00:55.771		26.94	-24.98	45652.99	8.46		
eta	E	2027-11-26T01:03:38.798		26.60	-24.61	47176.12	10.20		
gamma	E	2027-11-26T01:04:21.853		26.51	-24.51	47624.29	10.63		
delta	E	2027-11-26T01:05:23.756		26.38	-24.36	48300.35	11.22		
lambda	E	2027-11-26T01:07:49.129		26.07	-24.02	50026.71	12.51		
epsilon	E	2027-11-26T01:09:42.280		25.82	-23.75	51494.99	13.51		