

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2026-10-02T03:41:58.970  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 52362523286618240  
 2Mass ID (if available) : 04125327+2100019

Uranus 2026-10-02T03:41:58 K14.75 G18.11 PgtRgt

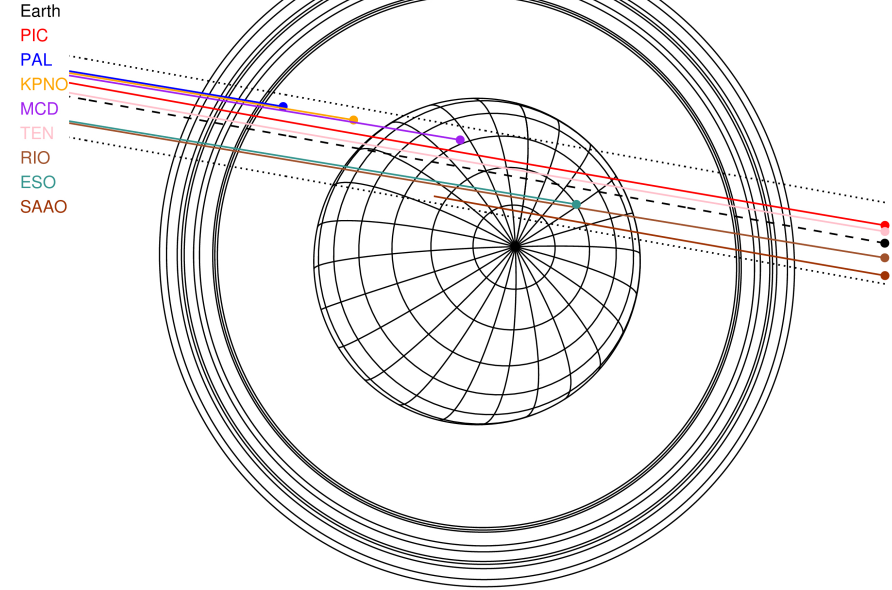
ICRS Star Coord at Epoch: 04h 12m 53.29800s +21:00:01.54741s

RUWE (>1.4 is poor) : 1.10  
 K magnitude : 14.748  
 G magnitude : 18.114  
 RP magnitude : 17.096  
 BP magnitude : 19.154  
 DUPflag : 0  
 Distance (au) : 18.871  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -10.09  
 Sun-Target sep (deg) : 123.48  
 Sun-Moon sep (deg) : 15.67  
 B (ring opening deg) : 75.41  
 PA of pole (deg) : -68.81

#	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

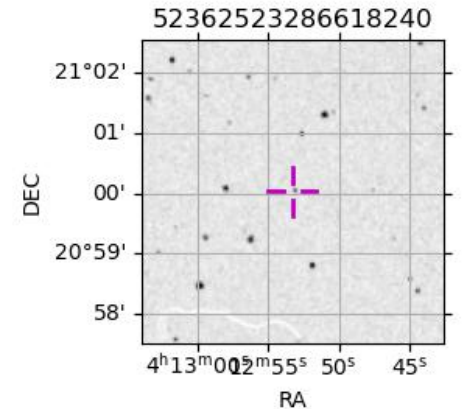


2026-10-02T03:41:58.9700 α: 04 12 53.2980 δ: +21 00 01.547 C/A 1.035° PA 169.81 deg v\_sky -10.09 km/s D 18.87 AU  
 Credit: Styled after SORA/Lucky Star

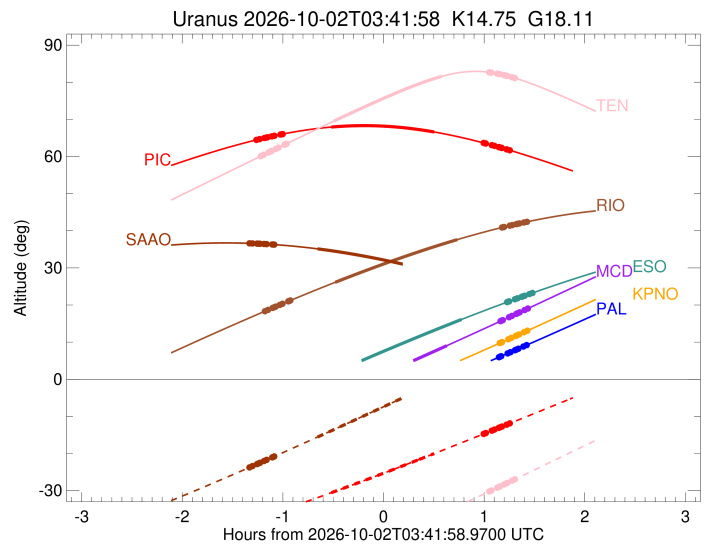
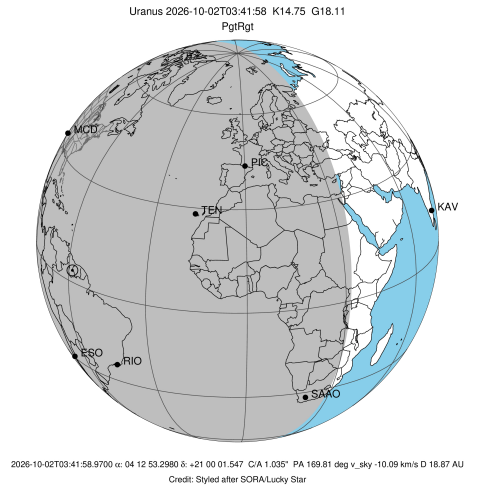


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++	+ +	+++++	OCT 02 02:26 - OCT 02 04:57	PieRie
PAL	Palomar Mt (200")	33.4	243.1			+++++	OCT 02 04:50 - OCT 02 05:07	PnnRne
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4			+++++	OCT 02 04:51 - OCT 02 05:07	PnnRne
MCD	McDonald Obs. 2.7m	30.7	256.0		+	+++++	OCT 02 04:19 - OCT 02 05:08	PneRne
TEN	Teide Obs./Tenerife	28.3	343.5	+++++	+ +	+++++	OCT 02 02:29 - OCT 02 05:00	PieRie
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	+++++	+ +	+++++	OCT 02 02:31 - OCT 02 05:07	PieRie
ESO	European Southern Obs	-29.3	289.3		+	+++++	OCT 02 04:28 - OCT 02 05:10	PneRne
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8	+++++	+		OCT 02 02:22 - OCT 02 03:02	PinRin
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn

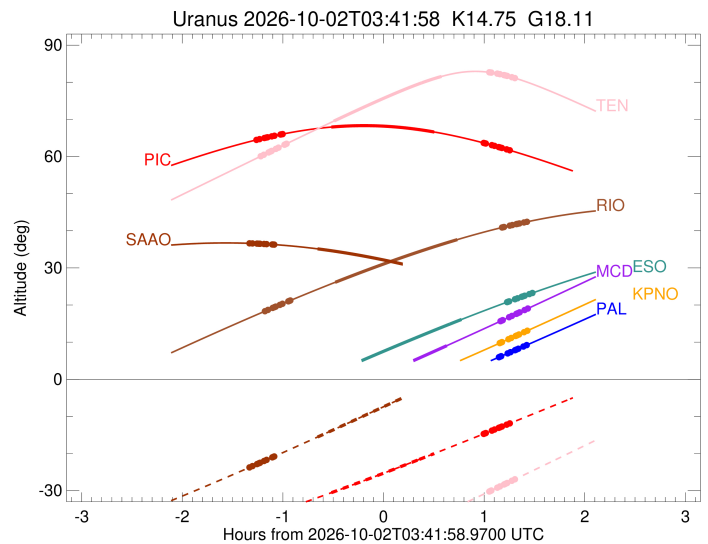
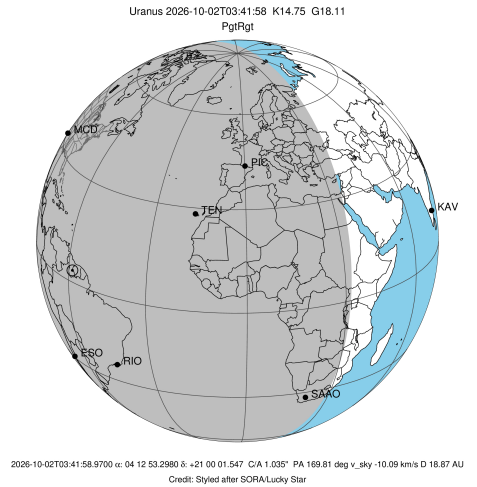


target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2026-10-02T03:41:05.300  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : PIC  
 Location : Pic du Midi  
 Latitude (deg) : 42.93656  
 E. Longitude (deg) : 0.14231  
 Altitude (km) : 2.890  
 Gaia source ID : 52362523286618240  
 2Mass ID (if available) : 04125327+2100019  
 ICRS Star Coord at Epoch: 04h 12m 53.29800s +21:00:01.54741s  
 RUWE (>1.4 is poor) : 1.10  
 K magnitude : 14.748  
 G magnitude : 18.114  
 RP magnitude : 17.096  
 BP magnitude : 19.154  
 DUPflag : 0  
 Distance (au) : 18.871  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -10.09  
 Sun-Target sep (deg) : 123.48  
 Sun-Moon sep (deg) : 15.72  
 B (ring opening deg) : 75.41  
 PA of pole (deg) : -68.81  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 1.198  
 C/A sky separation (km) : 16400.6  
 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	2026-10-02T02:26:45.509		64.54	-37.43	50839.84	-10.04		
lambda	I	2026-10-02T02:28:06.398		64.69	-37.23	50026.71	-10.04		
delta	I	2026-10-02T02:30:58.658		64.99	-36.81	48300.35	-10.00		
gamma	I	2026-10-02T02:32:05.676		65.11	-36.64	47630.78	-9.98		
eta	I	2026-10-02T02:32:51.255		65.19	-36.53	47176.12	-9.97		
beta	I	2026-10-02T02:35:22.805		65.44	-36.15	45667.97	-9.92		
alpha	I	2026-10-02T02:36:59.086		65.60	-35.91	44715.91	-9.89		
4	I	2026-10-02T02:40:40.373		65.94	-35.35	42528.81	-9.81		
5	I	2026-10-02T02:41:10.386		65.99	-35.27	42231.06	-9.80		
6	I	2026-10-02T02:41:48.061		66.04	-35.18	41879.73	-9.78		
Uranus	I	2026-10-02T03:10:51.916		67.94	-30.56	25026.34		14.37	15.02
Uranus	E	2026-10-02T04:12:16.647		66.61	-20.01	25500.12		-4.67	-4.89
6	E	2026-10-02T04:41:39.663		63.67	-14.73	41809.03	9.82		
5	E	2026-10-02T04:42:29.809		63.57	-14.58	42295.73	9.84		
4	E	2026-10-02T04:43:01.489		63.51	-14.48	42612.11	9.85		
alpha	E	2026-10-02T04:46:36.908		63.07	-13.83	44743.78	9.93		
beta	E	2026-10-02T04:48:09.851		62.87	-13.55	45668.98	9.96		
eta	E	2026-10-02T04:50:40.764		62.55	-13.09	47176.12	10.01		
gamma	E	2026-10-02T04:51:25.182		62.46	-12.96	47621.03	10.02		
delta	E	2026-10-02T04:52:32.894		62.31	-12.75	48300.35	10.04		
lambda	E	2026-10-02T04:55:24.418		61.94	-12.23	50026.71	10.09		
epsilon	E	2026-10-02T04:57:23.063		61.67	-11.87	51225.18	10.09		

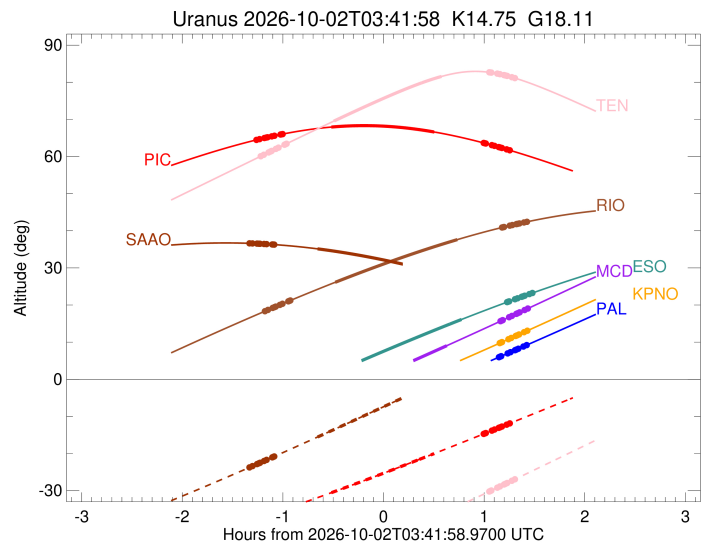
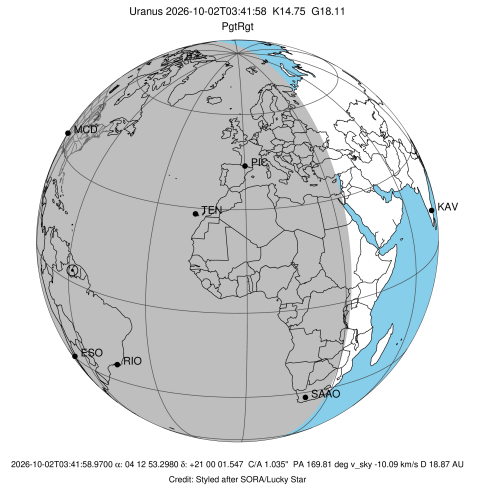
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2026-10-02T03:49:11.060  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : PAL  
 Location : Palomar Mt (200")  
 Latitude (deg) : 33.35622  
 E. Longitude (deg) : 243.13601  
 Altitude (km) : 1.706  
 Gaia source ID : 52362523286618240  
 2Mass ID (if available) : 04125327+2100019  
 ICRS Star Coord at Epoch: 04h 12m 53.29800s +21:00:01.54741s  
 RUWE (>1.4 is poor) : 1.10  
 K magnitude : 14.748  
 G magnitude : 18.114  
 RP magnitude : 17.096  
 BP magnitude : 19.154  
 DUPflag : 0  
 Distance (au) : 18.871  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -10.09  
 Sun-Target sep (deg) : 123.48  
 Sun-Moon sep (deg) : 16.01  
 B (ring opening deg) : 75.41  
 PA of pole (deg) : -68.81  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 1.381  
 C/A sky separation (km) : 18902.9  
 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	2026-10-02T02:32:17.644	-18.75x	-13.51	50826.16	-9.27			
lambda	I	2026-10-02T02:33:43.799	-18.53x	-13.81	50026.71	-9.27			
delta	I	2026-10-02T02:36:50.602	-18.05x	-14.46	48300.35	-9.21			
gamma	I	2026-10-02T02:38:03.373	-17.86x	-14.72	47630.61	-9.19			
eta	I	2026-10-02T02:38:52.860	-17.73x	-14.89	47176.12	-9.18			
beta	I	2026-10-02T02:41:37.502	-17.29x	-15.46	45669.12	-9.12			
alpha	I	2026-10-02T02:43:22.247	-17.01x	-15.82	44718.05	-9.08			
4	I	2026-10-02T02:47:23.733	-16.37x	-16.66	42529.97	-8.98			
5	I	2026-10-02T02:47:56.113	-16.28x	-16.77	42236.48	-8.97			
6	I	2026-10-02T02:48:37.948	-16.17x	-16.92	41879.71	-8.95			
Uranus	I	2026-10-02T03:21:26.972	-10.65x	-23.70	25062.16			13.86	14.49
Uranus	E	2026-10-02T04:17:58.272	-0.37x	-35.03	25536.54			-2.88	-3.01
6	E	2026-10-02T04:50:44.532	5.93	-41.25	41810.95	9.15			
5	E	2026-10-02T04:51:38.334	6.11	-41.42	42298.67	9.18			
4	E	2026-10-02T04:52:11.872	6.22	-41.52	42610.92	9.19			
alpha	E	2026-10-02T04:56:02.504	6.97	-42.23	44744.96	9.31			
beta	E	2026-10-02T04:57:41.573	7.30	-42.53	45669.93	9.35			
eta	E	2026-10-02T05:00:22.059	7.82	-43.01	47176.12	9.42			
gamma	E	2026-10-02T05:01:09.256	7.98	-43.15	47621.07	9.44			
delta	E	2026-10-02T05:02:21.132	8.21	-43.37	48300.35	9.46			
lambda	E	2026-10-02T05:05:22.905	8.81	-43.91	50026.71	9.53			
epsilon	E	2026-10-02T05:07:26.548	9.22	-44.28	51207.51	9.54			

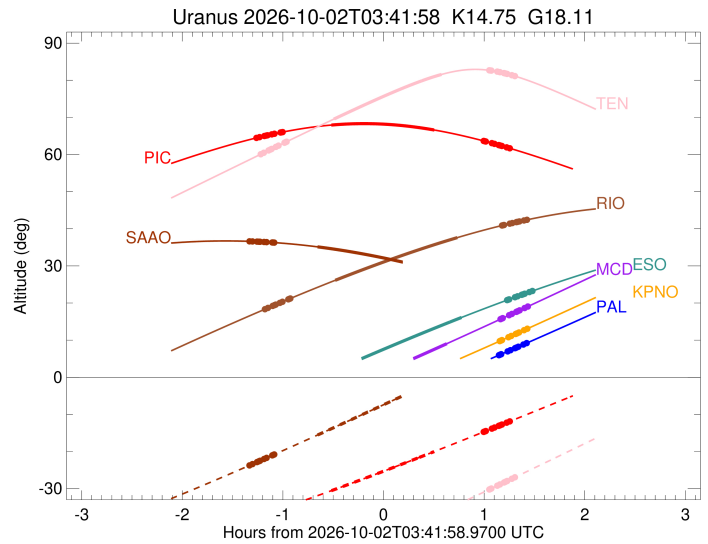
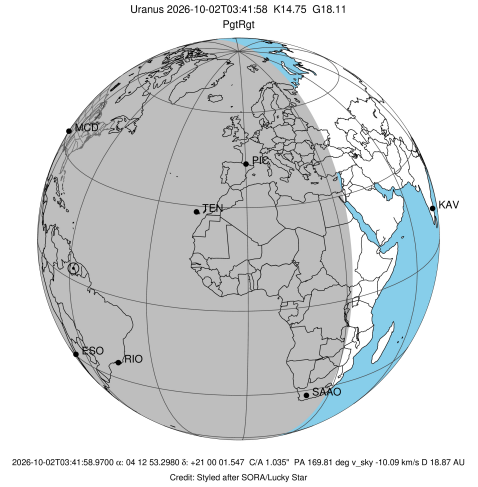
```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch              : 2026-10-02T03:49:42.140
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        : 52362523286618240
2Mass ID (if available) : 04125327+2100019
ICRS Star Coord at Epoch: 04h 12m 53.29800s +21:00:01.54741s
RUWE (>1.4 is poor)  : 1.10
K magnitude           : 14.748
G magnitude           : 18.114
RP magnitude          : 17.096
BP magnitude          : 19.154
DUPflag              : 0
Distance (au)         : 18.871
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : -10.09
Sun-Target sep (deg)  : 123.48
Sun-Moon sep (deg)    : 16.08
B (ring opening deg)  : 75.41
PA of pole (deg)      : -68.81
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.364
C/A sky separation (km) : 18668.4
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_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	2026-10-02T02:32:51.789	-16.18x	-18.19	50827.07	-9.31			
lambda	I	2026-10-02T02:34:17.653	-15.94x	-18.49	50026.71	-9.31			
delta	I	2026-10-02T02:37:23.585	-15.42x	-19.15	48300.35	-9.26			
gamma	I	2026-10-02T02:38:36.004	-15.22x	-19.40	47630.62	-9.24			
eta	I	2026-10-02T02:39:25.249	-15.08x	-19.57	47176.12	-9.22			
beta	I	2026-10-02T02:42:09.071	-14.61x	-20.15	45669.04	-9.17			
alpha	I	2026-10-02T02:43:53.274	-14.32x	-20.51	44717.89	-9.13			
4	I	2026-10-02T02:47:53.426	-13.63x	-21.35	42529.88	-9.03			
5	I	2026-10-02T02:48:25.651	-13.53x	-21.47	42236.08	-9.02			
6	I	2026-10-02T02:49:07.195	-13.41x	-21.61	41879.71	-9.00			
Uranus	I	2026-10-02T03:21:36.997	-7.62x	-28.37	25058.20			13.91	14.55
Uranus	E	2026-10-02T04:18:48.594	3.27x	-39.82	25533.21			-3.08	-3.23
6	E	2026-10-02T04:51:13.811	9.72	-45.88	41810.71	9.21			
5	E	2026-10-02T04:52:07.248	9.90	-46.04	42298.31	9.24			
4	E	2026-10-02T04:52:40.612	10.02	-46.14	42611.07	9.25			
alpha	E	2026-10-02T04:56:29.701	10.79	-46.82	44744.81	9.37			
beta	E	2026-10-02T04:58:08.149	11.12	-47.11	45669.81	9.41			
eta	E	2026-10-02T05:00:47.662	11.66	-47.58	47176.12	9.48			
gamma	E	2026-10-02T05:01:34.574	11.82	-47.71	47621.07	9.49			
delta	E	2026-10-02T05:02:46.023	12.06	-47.92	48300.35	9.52			
lambda	E	2026-10-02T05:05:46.736	12.67	-48.44	50026.71	9.58			
epsilon	E	2026-10-02T05:07:49.924	13.09	-48.79	51209.91	9.59			

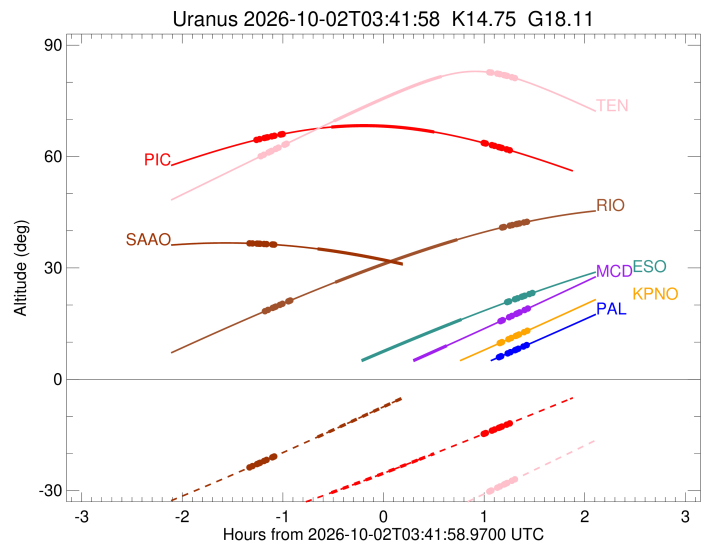
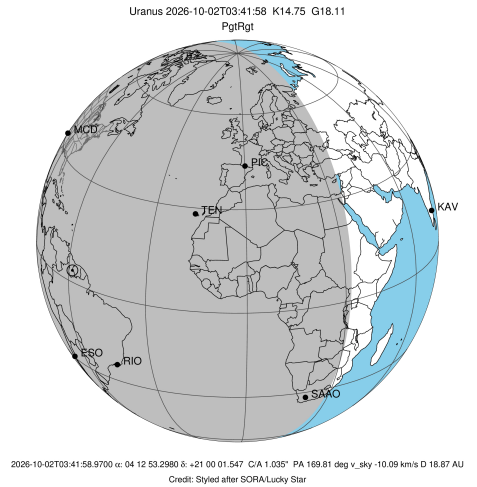
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2026-10-02T03:50:13.960  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : MCD  
 Location : McDonald Obs. 2.7m  
 Latitude (deg) : 30.67158  
 E. Longitude (deg) : 255.97844  
 Altitude (km) : 2.075  
 Gaia source ID : 52362523286618240  
 2Mass ID (if available) : 04125327+2100019  
 ICRS Star Coord at Epoch: 04h 12m 53.29800s +21:00:01.54741s  
 RUWE (>1.4 is poor) : 1.10  
 K magnitude : 14.748  
 G magnitude : 18.114  
 RP magnitude : 17.096  
 BP magnitude : 19.154  
 DUPflag : 0  
 Distance (au) : 18.871  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -10.09  
 Sun-Target sep (deg) : 123.48  
 Sun-Moon sep (deg) : 16.16  
 B (ring opening deg) : 75.41  
 PA of pole (deg) : -68.81  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 1.341  
 C/A sky separation (km) : 18350.6  
 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\_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

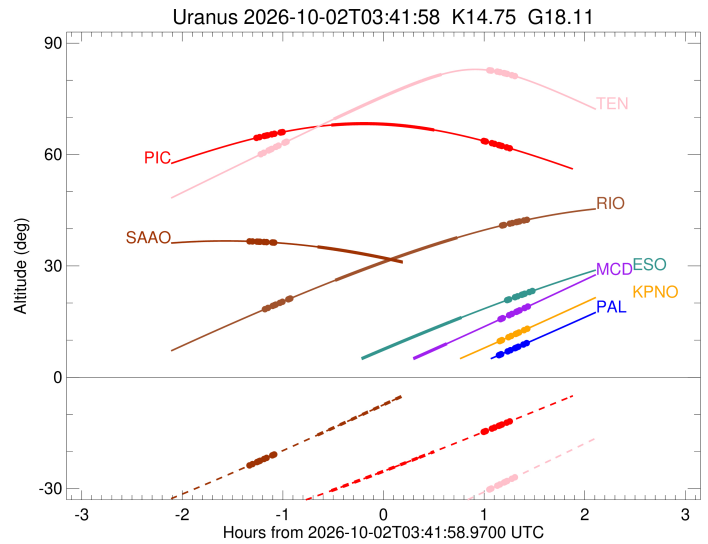
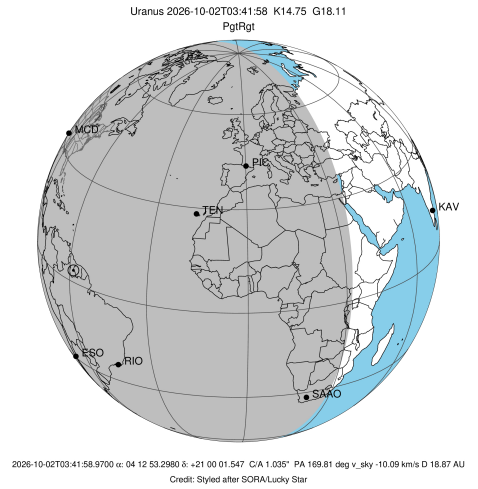
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2026-10-02T02:33:31.714	-11.55x	-24.94	50828.34	-9.38			
lambda	I	2026-10-02T02:34:57.116	-11.29x	-25.24	50026.71	-9.38			
delta	I	2026-10-02T02:38:01.716	-10.73x	-25.89	48300.35	-9.33			
gamma	I	2026-10-02T02:39:13.601	-10.51x	-26.14	47630.64	-9.31			
eta	I	2026-10-02T02:40:02.481	-10.36x	-26.32	47176.12	-9.29			
beta	I	2026-10-02T02:42:45.064	-9.87x	-26.89	45668.92	-9.24			
alpha	I	2026-10-02T02:44:28.453	-9.55x	-27.25	44717.68	-9.21			
4	I	2026-10-02T02:48:26.620	-8.82x	-28.08	42529.75	-9.11			
5	I	2026-10-02T02:48:58.611	-8.72x	-28.19	42235.53	-9.10			
6	I	2026-10-02T02:49:39.733	-8.59x	-28.34	41879.72	-9.08			
Uranus	I	2026-10-02T03:21:42.862	-2.51x	-34.97	25053.14			13.99	14.62
Uranus	E	2026-10-02T04:19:43.994	9.05	-46.33	25528.50			-3.35	-3.51
6	E	2026-10-02T04:51:40.705	15.63	-51.97	41810.39	9.30			
5	E	2026-10-02T04:52:33.631	15.82	-52.11	42297.84	9.33			
4	E	2026-10-02T04:53:06.747	15.93	-52.21	42611.28	9.34			
alpha	E	2026-10-02T04:56:53.682	16.72	-52.83	44744.62	9.45			
beta	E	2026-10-02T04:58:31.261	17.06	-53.09	45669.65	9.49			
eta	E	2026-10-02T05:01:09.408	17.61	-53.51	47176.12	9.56			
gamma	E	2026-10-02T05:01:55.921	17.77	-53.64	47621.06	9.57			
delta	E	2026-10-02T05:03:06.770	18.02	-53.82	48300.35	9.60			
lambda	E	2026-10-02T05:06:05.994	18.64	-54.29	50026.71	9.66			
epsilon	E	2026-10-02T05:08:08.517	19.07	-54.60	51213.07	9.67			

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2026-10-02T03:44:04.690  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : 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 : 52362523286618240  
 2Mass ID (if available) : 04125327+2100019  
 ICRS Star Coord at Epoch: 04h 12m 53.29800s +21:00:01.54741s  
 RUWE (>1.4 is poor) : 1.10  
 K magnitude : 14.748  
 G magnitude : 18.114  
 RP magnitude : 17.096  
 BP magnitude : 19.154  
 DUPflag : 0  
 Distance (au) : 18.871  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -10.09  
 Sun-Target sep (deg) : 123.48  
 Sun-Moon sep (deg) : 16.05  
 B (ring opening deg) : 75.41  
 PA of pole (deg) : -68.81  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 1.108  
 C/A sky separation (km) : 15169.0  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 ural11.bsp  
 IAU\_URANUS\_for\_RINGFIT.tpc  
 vgr2.ural11.bsp  
 ural161.bsp  
 vgr2.ural161.bsp  
 peph.ural160.bsp  
 earthstns\_itr93\_040916.bsp  
 earth\_720101\_070426.bpc  
 earth\_200101\_990628\_predict.bpc  
 pg3f0000r.bsp  
 pg490000r.bsp  
 naif0012.tls  
 earth\_flat\_IAU.spk



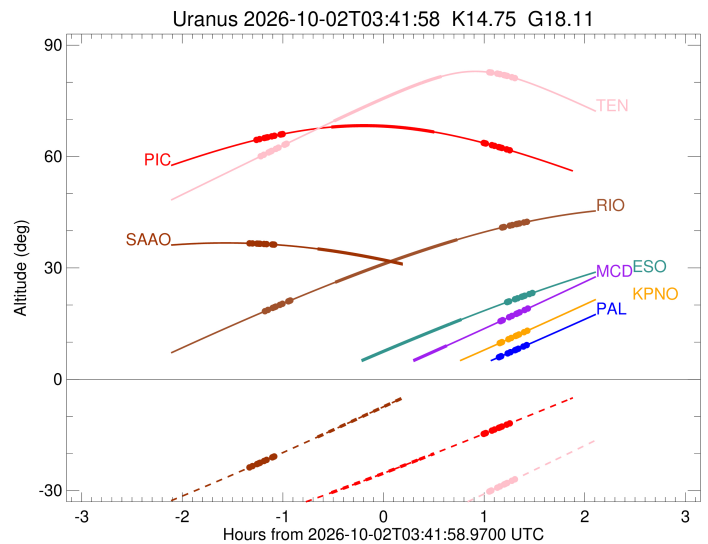
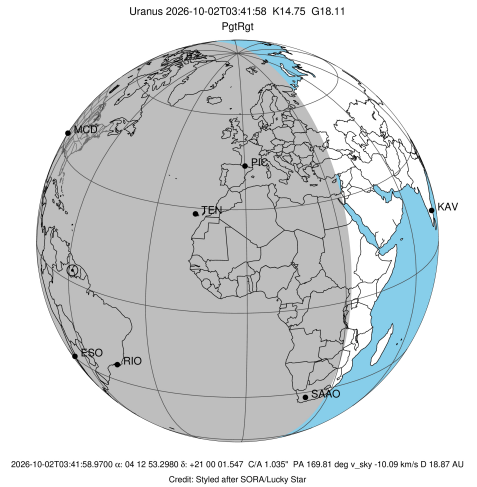
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2026-10-02T02:29:16.849		60.19	-56.78	50845.46	-10.14		
lambda	I	2026-10-02T02:30:37.488		60.48	-56.57	50026.71	-10.15		
delta	I	2026-10-02T02:33:27.933		61.11	-56.10	48300.35	-10.11		
gamma	I	2026-10-02T02:34:34.197		61.35	-55.92	47630.84	-10.10		
eta	I	2026-10-02T02:35:19.260		61.51	-55.80	47176.12	-10.09		
beta	I	2026-10-02T02:37:49.038		62.06	-55.39	45667.50	-10.05		
alpha	I	2026-10-02T02:39:24.119		62.41	-55.12	44715.06	-10.03		
4	I	2026-10-02T02:43:02.318		63.20	-54.50	42528.40	-9.96		
5	I	2026-10-02T02:43:32.048		63.31	-54.42	42228.88	-9.95		
6	I	2026-10-02T02:44:08.929		63.44	-54.31	41879.69	-9.94		
Uranus	I	2026-10-02T03:12:24.123		69.55	-49.19	25017.54		14.50	15.15
Uranus	E	2026-10-02T04:16:35.147		81.57	-36.28	25475.83		-5.55	-5.82
6	E	2026-10-02T04:44:59.860		82.69	-30.25	41807.89	10.03		
5	E	2026-10-02T04:45:48.957		82.64	-30.07	42293.79	10.04		
4	E	2026-10-02T04:46:20.238		82.61	-29.96	42612.79	10.05		
alpha	E	2026-10-02T04:49:51.269		82.34	-29.21	44743.00	10.13		
beta	E	2026-10-02T04:51:22.488		82.19	-28.88	45668.36	10.15		
eta	E	2026-10-02T04:53:50.708		81.94	-28.35	47176.12	10.19		
gamma	E	2026-10-02T04:54:34.333		81.86	-28.19	47621.00	10.20		
delta	E	2026-10-02T04:55:40.856		81.73	-27.95	48300.35	10.22		
lambda	E	2026-10-02T04:58:29.437		81.38	-27.34	50026.71	10.26		
epsilon	E	2026-10-02T05:00:27.266		81.11	-26.92	51237.14	10.26		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2026-10-02T03:49:21.290  
 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 : 52362523286618240  
 2Mass ID (if available) : 04125327+2100019  
 ICRS Star Coord at Epoch: 04h 12m 53.29800s +21:00:01.54741s  
 RUWE (>1.4 is poor) : 1.10  
 K magnitude : 14.748  
 G magnitude : 18.114  
 RP magnitude : 17.096  
 BP magnitude : 19.154  
 DUPflag : 0  
 Distance (au) : 18.871  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -10.09  
 Sun-Target sep (deg) : 123.48  
 Sun-Moon sep (deg) : 16.60  
 B (ring opening deg) : 75.41  
 PA of pole (deg) : -68.81  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.794  
 C/A sky separation (km) : 10868.9  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 ural11.bsp  
 IAU\_URANUS\_for\_RINGFIT.tpc  
 vgr2.ural11.bsp  
 ural161.bsp  
 vgr2.ural161.bsp  
 peph.ural160.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	2026-10-02T02:31:44.915		18.42	-63.58	50869.11	-10.26		
lambda	I	2026-10-02T02:33:06.929		18.69	-63.61	50026.71	-10.27		
delta	I	2026-10-02T02:35:55.162		19.23	-63.66	48300.35	-10.25		
gamma	I	2026-10-02T02:37:00.446		19.43	-63.67	47631.07	-10.25		
eta	I	2026-10-02T02:37:44.846		19.58	-63.68	47176.12	-10.24		
beta	I	2026-10-02T02:40:12.331		20.04	-63.70	45665.66	-10.23		
alpha	I	2026-10-02T02:41:45.764		20.34	-63.70	44711.79	-10.22		
4	I	2026-10-02T02:45:19.254		21.01	-63.69	42527.11	-10.19		
5	I	2026-10-02T02:45:48.919		21.11	-63.69	42220.61	-10.19		
6	I	2026-10-02T02:46:24.075		21.22	-63.68	41879.22	-10.18		
Uranus	I	2026-10-02T03:13:10.105		26.12	-62.64	25014.26		14.54	15.20
Uranus	E	2026-10-02T04:25:59.898		37.62	-53.49	25383.01		-8.12	-8.50
6	E	2026-10-02T04:52:35.641		40.88	-48.72	41804.57	10.37		
5	E	2026-10-02T04:53:23.002		40.96	-48.58	42287.25	10.38		
4	E	2026-10-02T04:53:54.037		41.02	-48.48	42614.56	10.38		
alpha	E	2026-10-02T04:57:18.151		41.39	-47.83	44740.35	10.43		
beta	E	2026-10-02T04:58:46.880		41.54	-47.55	45666.36	10.44		
eta	E	2026-10-02T05:01:11.326		41.79	-47.09	47176.12	10.46		
gamma	E	2026-10-02T05:01:53.832		41.86	-46.95	47620.96	10.47		
delta	E	2026-10-02T05:02:58.700		41.97	-46.74	48300.35	10.48		
lambda	E	2026-10-02T05:05:43.283		42.24	-46.21	50026.71	10.50		
epsilon	E	2026-10-02T05:07:41.956		42.43	-45.82	51273.71	10.50		

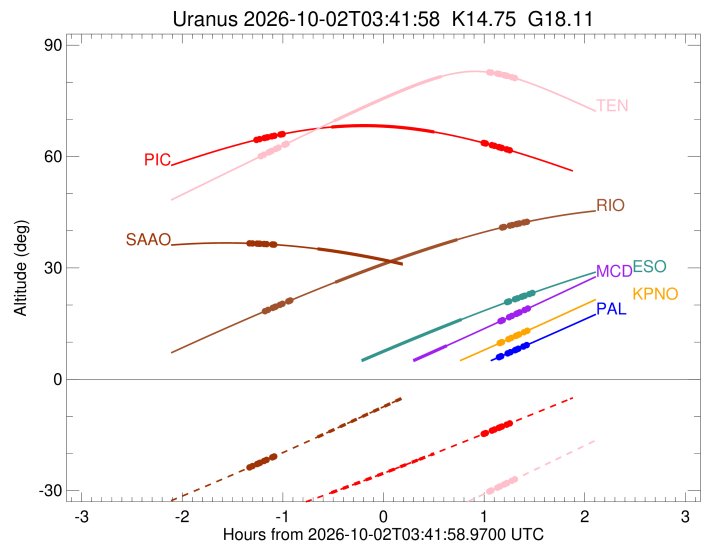
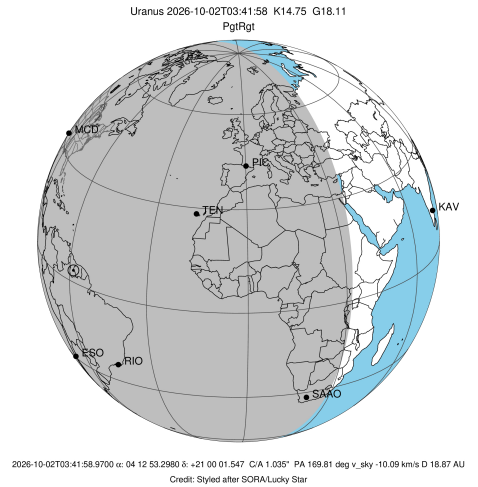
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2026-10-02T03:51:35.960  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : ESO  
 Location : European Southern Obs. (3.6m)  
 Latitude (deg) : -29.26097  
 E. Longitude (deg) : 289.26831  
 Altitude (km) : 2.400  
 Gaia source ID : 52362523286618240  
 2Mass ID (if available) : 04125327+2100019  
 ICRS Star Coord at Epoch: 04h 12m 53.29800s +21:00:01.54741s  
 RUWE (>1.4 is poor) : 1.10  
 K magnitude : 14.748  
 G magnitude : 18.114  
 RP magnitude : 17.096  
 BP magnitude : 19.154  
 DUPflag : 0  
 Distance (au) : 18.871  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -10.09  
 Sun-Target sep (deg) : 123.48  
 Sun-Moon sep (deg) : 16.64  
 B (ring opening deg) : 75.41  
 PA of pole (deg) : -68.81  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.829  
 C/A sky separation (km) : 11341.1  
 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	2026-10-02T02:32:46.057	-6.22x	-46.55	50866.41	-10.04			
lambda	I	2026-10-02T02:34:09.586	-5.93x	-46.77	50026.71	-10.05			
delta	I	2026-10-02T02:37:01.490	-5.35x	-47.21	48300.35	-10.04			
gamma	I	2026-10-02T02:38:08.207	-5.12x	-47.39	47631.05	-10.03			
eta	I	2026-10-02T02:38:53.579	-4.97x	-47.50	47176.12	-10.02			
beta	I	2026-10-02T02:41:24.290	-4.45x	-47.88	45665.87	-10.01			
alpha	I	2026-10-02T02:42:59.780	-4.13x	-48.12	44712.15	-10.00			
4	I	2026-10-02T02:46:38.045	-3.39x	-48.66	42527.23	-9.97			
5	I	2026-10-02T02:47:08.302	-3.29x	-48.74	42221.52	-9.97			
6	I	2026-10-02T02:47:44.342	-3.17x	-48.83	41879.29	-9.96			
Uranus	I	2026-10-02T03:15:09.663	2.32x	-52.46	25012.62	14.57	15.23		
Uranus	E	2026-10-02T04:28:28.475	16.11	-57.32	25392.72	-7.88	-8.25		
6	E	2026-10-02T04:55:36.816	20.77	-56.85	41804.85	10.20			
5	E	2026-10-02T04:56:24.982	20.90	-56.82	42287.85	10.21			
4	E	2026-10-02T04:56:56.463	20.99	-56.80	42614.42	10.22			
alpha	E	2026-10-02T05:00:23.940	21.56	-56.64	44740.59	10.26			
beta	E	2026-10-02T05:01:54.071	21.81	-56.56	45666.53	10.28			
eta	E	2026-10-02T05:04:20.757	22.20	-56.43	47176.12	10.30			
gamma	E	2026-10-02T05:05:03.918	22.32	-56.39	47620.96	10.31			
delta	E	2026-10-02T05:06:09.777	22.50	-56.33	48300.35	10.32			
lambda	E	2026-10-02T05:08:56.834	22.95	-56.16	50026.71	10.35			
epsilon	E	2026-10-02T05:10:56.975	23.27	-56.04	51270.81	10.35			



target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2026-10-02T03:39:59.050  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : 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 : 52362523286618240  
 2Mass ID (if available) : 04125327+2100019  
 ICRS Star Coord at Epoch: 04h 12m 53.29800s +21:00:01.54741s  
 RUWE (>1.4 is poor) : 1.10  
 K magnitude : 14.748  
 G magnitude : 18.114  
 RP magnitude : 17.096  
 BP magnitude : 19.154  
 DUPflag : 0  
 Distance (au) : 18.871  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -10.09  
 Sun-Target sep (deg) : 123.48  
 Sun-Moon sep (deg) : 15.91  
 B (ring opening deg) : 75.41  
 PA of pole (deg) : -68.81  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.648  
 C/A sky separation (km) : 8873.3  
 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\_itrfr93\_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	2026-10-02T02:22:30.445		36.61	-23.66	50884.79	-10.53		
lambda	I	2026-10-02T02:23:51.859		36.59	-23.39	50026.71	-10.54		
delta	I	2026-10-02T02:26:35.793		36.54	-22.85	48300.35	-10.52		
gamma	I	2026-10-02T02:27:39.389		36.52	-22.63	47631.19	-10.52		
eta	I	2026-10-02T02:28:22.657		36.50	-22.49	47176.12	-10.52		
beta	I	2026-10-02T02:30:46.432		36.44	-22.01	45664.54	-10.50		
alpha	I	2026-10-02T02:32:17.476		36.41	-21.71	44709.87	-10.50		
4	I	2026-10-02T02:35:45.217		36.31	-21.02	42526.56	-10.47		
5	I	2026-10-02T02:36:14.463		36.29	-20.92	42215.81	-10.47		
6	I	2026-10-02T02:36:48.199		36.28	-20.81	41878.72	-10.46		
Uranus	I	2026-10-02T03:02:41.759		35.13	-15.55	25028.26		14.35	15.00
Uranus	E	2026-10-02T04:17:50.978		28.28	0.13x	25345.96		-8.95	-9.36
6	E	2026-10-02T04:43:58.544		24.90	5.66x	41803.64	10.43		
5	E	2026-10-02T04:44:45.601		24.79	5.83x	42285.11	10.43		
4	E	2026-10-02T04:45:16.723		24.72	5.94x	42614.99	10.43		
alpha	E	2026-10-02T04:48:39.902		24.25	6.65x	44739.52	10.46		
beta	E	2026-10-02T04:50:08.425		24.04	6.96x	45665.76	10.46		
eta	E	2026-10-02T04:52:32.669		23.70	7.47x	47176.12	10.48		
gamma	E	2026-10-02T04:53:15.128		23.60	7.62x	47620.96	10.48		
delta	E	2026-10-02T04:54:19.951		23.44	7.85x	48300.35	10.48		
lambda	E	2026-10-02T04:57:04.546		23.05	8.43x	50026.71	10.49		
epsilon	E	2026-10-02T04:59:04.272		22.76	8.86x	51283.51	10.49		