

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-10-02T06:58:04.480
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 145031356140040576
 2Mass ID (if available) : 04310769+2146057

Uranus 2027-10-02T06:58:04 K13.71 G16.33 PgtRgt

ICRS Star Coord at Epoch: 04h 31m 07.69005s +21:46:05.56190s

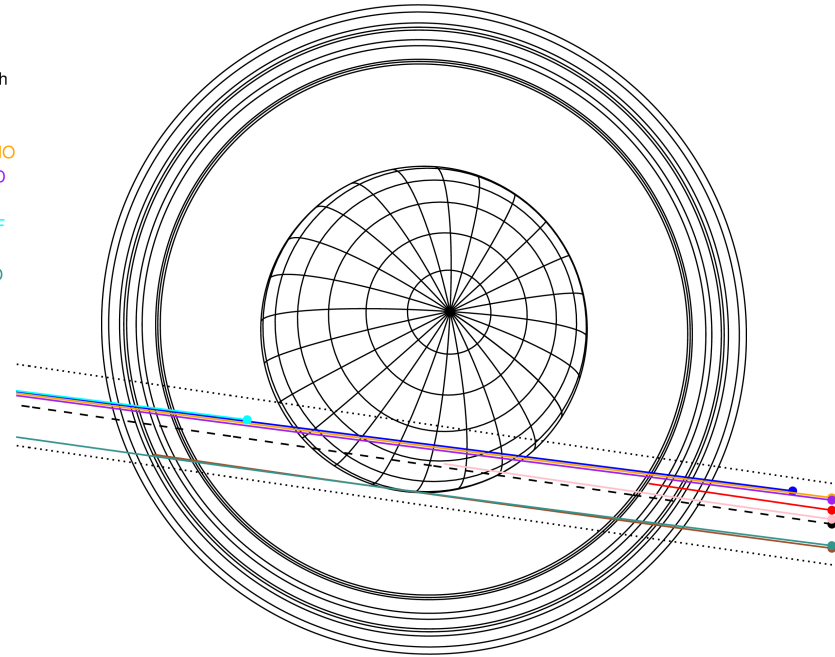
RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.707
 G magnitude : 16.325
 RP magnitude : 15.485
 BP magnitude : 17.047
 DUPflag : 0
 Distance (au) : 18.868
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -8.14
 Sun-Target sep (deg) : 119.04
 Sun-Moon sep (deg) : 147.44
 B (ring opening deg) : 78.82
 PA of pole (deg) : -55.48

Uranus 2027-10-02T06:58:04 K13.71 G16.33
 PgtRgt



2027-10-02T06:58:04.4800 α: 04 31 07.6901 δ: +21 46 05.562 C/A 1.524° PA 351.68 deg v_sky - 8.14 km/s D 18.87 AU
 Credit: Styled after SORA/Lucky Star

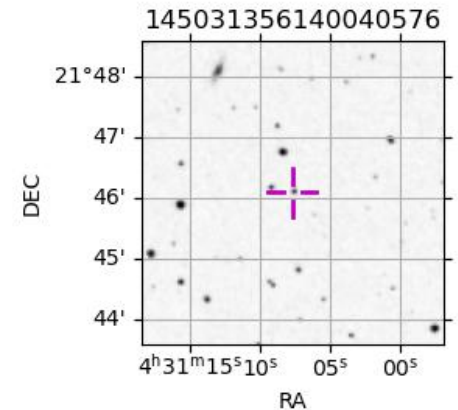
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO



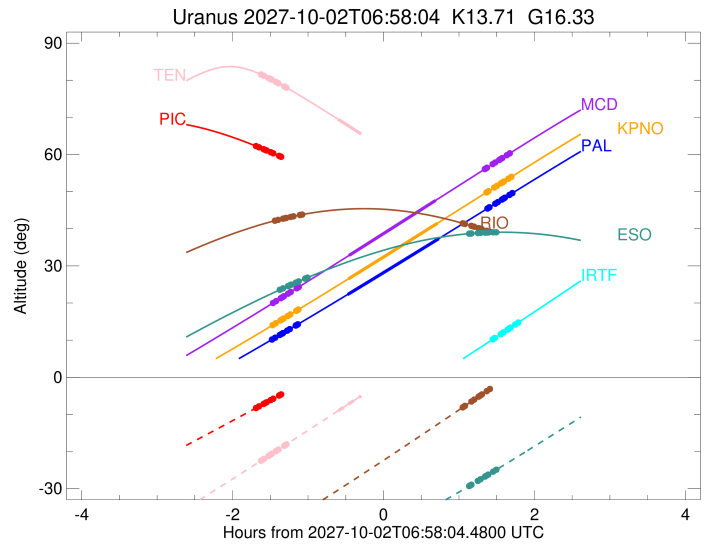
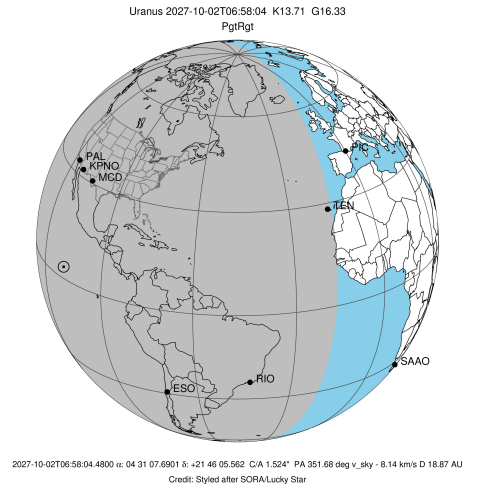
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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 05:16 - OCT 02 05:30	PnnRin
PAL	Palomar Mt (200")	33.4	243.1	+++++++	+ +	+++++++	OCT 02 05:28 - OCT 02 08:39	PieRie
PNO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++++	+ +	+++++++	OCT 02 05:29 - OCT 02 08:38	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++++	+ +	+++++++	OCT 02 05:29 - OCT 02 08:37	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++++	+		OCT 02 05:20 - OCT 02 06:22	PinRin
IRTF	Mauna Kea/IRTF	19.8	204.5			+++++++	OCT 02 08:24 - OCT 02 08:44	PnnRne
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++++		+++++	OCT 02 05:31 - OCT 02 08:13	PnnRie
ESO	European Southern Obs	-29.3	289.3	+++++++		+++++++	OCT 02 05:35 - OCT 02 08:26	PnnRie
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

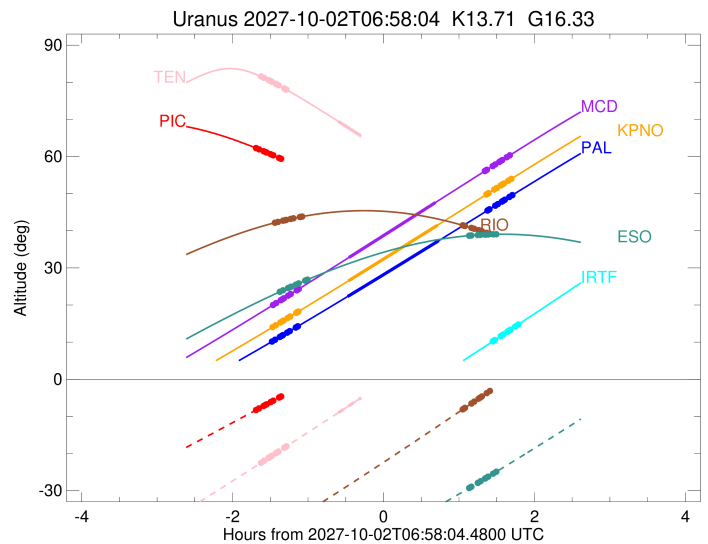
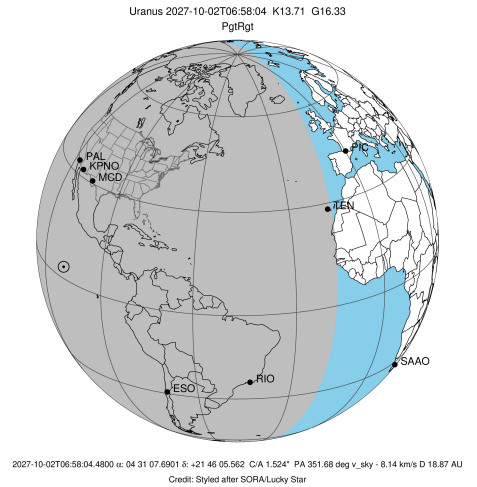


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-10-02T06:50:45.830
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 145031356140040576
 2Mass ID (if available) : 04310769+2146057
 ICRS Star Coord at Epoch: 04h 31m 07.69005s +21:46:05.56190s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.707
 G magnitude : 16.325
 RP magnitude : 15.485
 BP magnitude : 17.047
 DUPflag : 0
 Distance (au) : 18.868
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -8.14
 Sun-Target sep (deg) : 119.04
 Sun-Moon sep (deg) : 148.24
 B (ring opening deg) : 78.82
 PA of pole (deg) : -55.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.361
 C/A sky separation (km) : 18627.1
 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



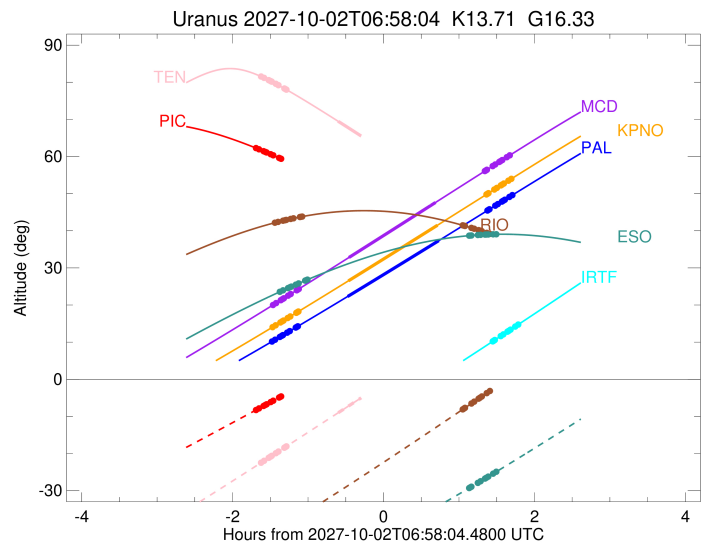
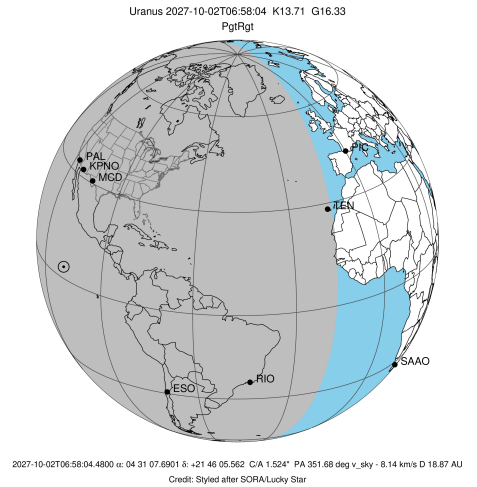
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2027-10-02T05:16:04.497		62.36	-8.40	51462.70	-7.90		
lambda	I	2027-10-02T05:19:06.225		61.95	-7.85	50026.71	-7.88		
delta	I	2027-10-02T05:22:45.869		61.43	-7.18	48300.35	-7.84		
gamma	I	2027-10-02T05:24:11.761		61.23	-6.91	47628.22	-7.82		
eta	I	2027-10-02T05:25:09.664		61.09	-6.74	47176.12	-7.80		
beta	I	2027-10-02T05:28:26.392		60.62	-6.14	45646.32	-7.75		
alpha	I	2027-10-02T05:30:29.884		60.32	-5.76	44692.25	-7.72		
4	I	2027-10-02T05:35:05.163		59.63	-4.92x	42580.97	-7.63		
5	I	2027-10-02T05:35:42.289		59.54	-4.80x	42298.17	-7.61		
6	I	2027-10-02T05:36:36.998		59.40	-4.64x	41877.24	-7.60		
Uranus	I	2027-10-02T06:16:00.477		53.03	2.57x	25559.00		0.01	0.01
Uranus	E	2027-10-02T07:23:57.886		40.97	14.69x	24999.26		-11.14	-11.65
6	E	2027-10-02T08:03:48.648		33.65	21.41x	41824.48	7.51		
5	E	2027-10-02T08:04:32.769		33.52	21.53x	42157.30	7.52		
4	E	2027-10-02T08:05:21.530		33.37	21.67x	42530.39	7.54		
alpha	E	2027-10-02T08:10:14.843		32.47	22.46x	44751.92	7.62		
beta	E	2027-10-02T08:12:14.275		32.10	22.78x	45660.94	7.65		
eta	E	2027-10-02T08:15:31.615		31.50	23.31x	47176.12	7.70		
gamma	E	2027-10-02T08:16:30.332		31.32	23.46x	47628.46	7.71		
delta	E	2027-10-02T08:17:57.372		31.05	23.70x	48300.35	7.73		
lambda	E	2027-10-02T08:21:40.112		30.37	24.28x	50026.71	7.77		
epsilon	E	2027-10-02T08:23:12.338		30.08	24.53x	50744.24	7.79		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-10-02T07:06:40.160
 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 : 145031356140040576
 2Mass ID (if available) : 04310769+2146057
 ICRS Star Coord at Epoch: 04h 31m 07.69005s +21:46:05.56190s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.707
 G magnitude : 16.325
 RP magnitude : 15.485
 BP magnitude : 17.047
 DUPflag : 0
 Distance (au) : 18.868
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -8.14
 Sun-Target sep (deg) : 119.04
 Sun-Moon sep (deg) : 147.05
 B (ring opening deg) : 78.82
 PA of pole (deg) : -55.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.298
 C/A sky separation (km) : 17764.0
 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



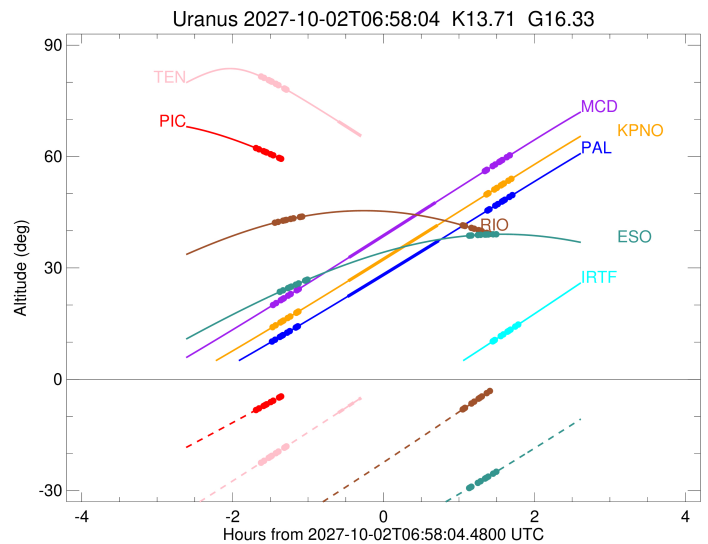
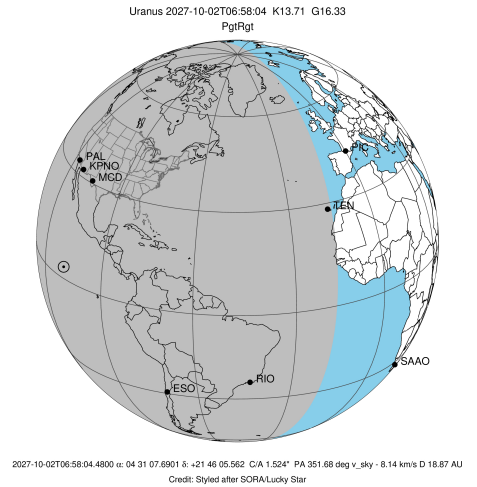
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2027-10-02T05:28:45.108		10.04	-47.85	51472.77	-7.65		
lambda	I	2027-10-02T05:31:54.226		10.66	-48.37	50026.71	-7.63		
delta	I	2027-10-02T05:35:40.880		11.41	-48.98	48300.35	-7.60		
gamma	I	2027-10-02T05:37:09.438		11.70	-49.22	47628.02	-7.58		
eta	I	2027-10-02T05:38:09.059		11.90	-49.38	47176.12	-7.57		
beta	I	2027-10-02T05:41:31.426		12.57	-49.91	45646.91	-7.54		
alpha	I	2027-10-02T05:43:38.557		13.00	-50.24	44691.35	-7.51		
4	I	2027-10-02T05:48:20.595		13.94	-50.96	42582.95	-7.44		
5	I	2027-10-02T05:48:58.583		14.06	-51.06	42300.34	-7.43		
6	I	2027-10-02T05:49:54.933		14.25	-51.20	41876.55	-7.42		
Uranus	I	2027-10-02T06:29:30.406		22.29	-56.41	25555.89		0.81	0.85
Uranus	E	2027-10-02T07:41:57.243		37.33	-60.33	24997.32		-11.16	-11.68
6	E	2027-10-02T08:20:40.366		45.45	-58.65	41824.60	7.67		
5	E	2027-10-02T08:21:23.534		45.60	-58.59	42157.36	7.69		
4	E	2027-10-02T08:22:11.221		45.77	-58.53	42530.33	7.70		
alpha	E	2027-10-02T08:26:58.169		46.77	-58.14	44751.89	7.79		
beta	E	2027-10-02T08:28:54.977		47.18	-57.97	45660.83	7.82		
eta	E	2027-10-02T08:32:07.970		47.85	-57.68	47176.12	7.87		
gamma	E	2027-10-02T08:33:05.381		48.05	-57.59	47628.49	7.89		
delta	E	2027-10-02T08:34:30.464		48.35	-57.46	48300.35	7.91		
lambda	E	2027-10-02T08:38:08.140		49.11	-57.10	50026.71	7.95		
epsilon	E	2027-10-02T08:39:38.263		49.42	-56.94	50744.45	7.97		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-10-02T07:06:28.530
 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 : 145031356140040576
 2Mass ID (if available) : 04310769+2146057
 ICRS Star Coord at Epoch: 04h 31m 07.69005s +21:46:05.56190s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.707
 G magnitude : 16.325
 RP magnitude : 15.485
 BP magnitude : 17.047
 DUPflag : 0
 Distance (au) : 18.868
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -8.14
 Sun-Target sep (deg) : 119.04
 Sun-Moon sep (deg) : 147.10
 B (ring opening deg) : 78.82
 PA of pole (deg) : -55.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.321
 C/A sky separation (km) : 18078.2
 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



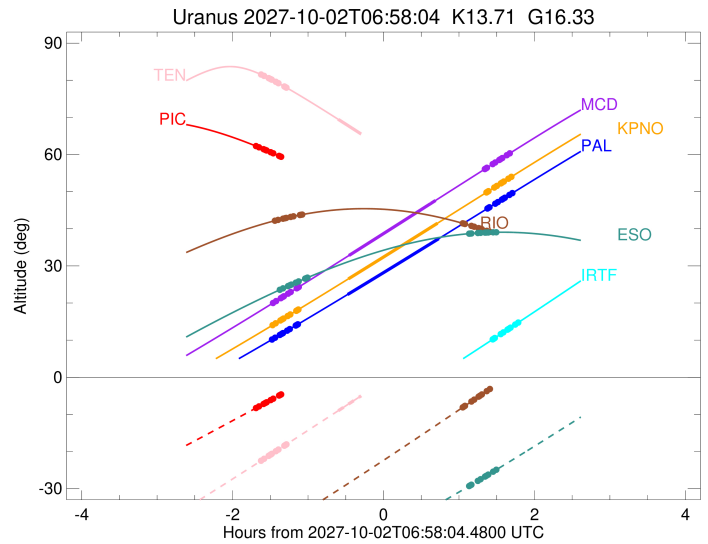
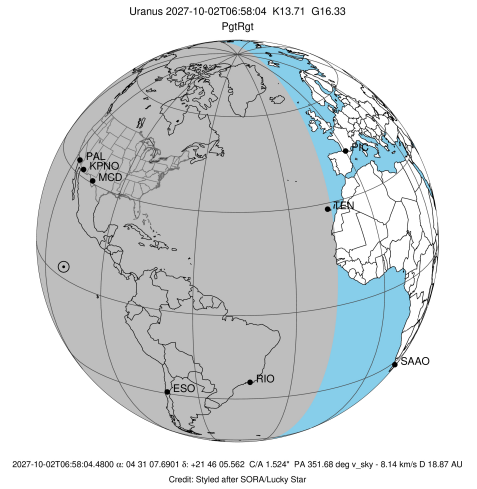
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2027-10-02T05:29:12.447		13.90	-52.21	51471.25	-7.66		
lambda	I	2027-10-02T05:32:21.020		14.54	-52.69	50026.71	-7.65		
delta	I	2027-10-02T05:36:07.301		15.31	-53.26	48300.35	-7.61		
gamma	I	2027-10-02T05:37:35.722		15.61	-53.48	47628.05	-7.60		
eta	I	2027-10-02T05:38:35.263		15.81	-53.63	47176.12	-7.58		
beta	I	2027-10-02T05:41:57.389		16.50	-54.12	45646.81	-7.54		
alpha	I	2027-10-02T05:44:04.349		16.94	-54.42	44691.49	-7.52		
4	I	2027-10-02T05:48:46.233		17.90	-55.08	42582.61	-7.45		
5	I	2027-10-02T05:49:24.209		18.03	-55.17	42299.97	-7.44		
6	I	2027-10-02T05:50:20.476		18.23	-55.30	41876.68	-7.42		
Uranus	I	2027-10-02T06:30:05.372		26.49	-59.74	25557.16		0.62	0.65
Uranus	E	2027-10-02T07:40:58.863		41.49	-61.13	24998.69		-11.15	-11.66
6	E	2027-10-02T08:19:53.399		49.78	-58.00	41824.93	7.67		
5	E	2027-10-02T08:20:36.587		49.93	-57.92	42157.53	7.68		
4	E	2027-10-02T08:21:24.249		50.10	-57.83	42530.17	7.70		
alpha	E	2027-10-02T08:26:11.291		51.12	-57.28	44751.85	7.79		
beta	E	2027-10-02T08:28:08.088		51.53	-57.04	45660.68	7.82		
eta	E	2027-10-02T08:31:21.068		52.22	-56.65	47176.12	7.87		
gamma	E	2027-10-02T08:32:18.467		52.42	-56.53	47628.52	7.89		
delta	E	2027-10-02T08:33:43.516		52.72	-56.35	48300.35	7.91		
lambda	E	2027-10-02T08:37:21.084		53.49	-55.88	50026.71	7.96		
epsilon	E	2027-10-02T08:38:51.175		53.81	-55.68	50744.64	7.98		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-10-02T07:05:57.370
 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 : 145031356140040576
 2Mass ID (if available) : 04310769+2146057
 ICRS Star Coord at Epoch: 04h 31m 07.69005s +21:46:05.56190s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.707
 G magnitude : 16.325
 RP magnitude : 15.485
 BP magnitude : 17.047
 DUPflag : 0
 Distance (au) : 18.868
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -8.14
 Sun-Target sep (deg) : 119.04
 Sun-Moon sep (deg) : 147.18
 B (ring opening deg) : 78.82
 PA of pole (deg) : -55.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.350
 C/A sky separation (km) : 18471.0
 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	2027-10-02T05:29:33.750		19.87	-57.57	51469.24	-7.68		
lambda	I	2027-10-02T05:32:41.483		20.52	-57.97	50026.71	-7.67		
delta	I	2027-10-02T05:36:27.128		21.31	-58.44	48300.35	-7.63		
gamma	I	2027-10-02T05:37:55.314		21.62	-58.62	47628.09	-7.62		
eta	I	2027-10-02T05:38:54.712		21.83	-58.74	47176.12	-7.60		
beta	I	2027-10-02T05:42:16.394		22.54	-59.13	45646.68	-7.57		
alpha	I	2027-10-02T05:44:23.052		22.98	-59.37	44691.69	-7.53		
4	I	2027-10-02T05:49:04.562		23.97	-59.88	42582.16	-7.46		
5	I	2027-10-02T05:49:42.499		24.10	-59.95	42299.48	-7.44		
6	I	2027-10-02T05:50:38.624		24.30	-60.04	41876.84	-7.43		
Uranus	I	2027-10-02T06:30:34.911		32.80	-62.78	25558.32		0.38	0.40
Uranus	E	2027-10-02T07:39:27.196		47.63	-60.18	25000.90		-11.12	-11.64
6	E	2027-10-02T08:18:36.946		56.08	-55.22	41825.34	7.66		
5	E	2027-10-02T08:19:20.165		56.23	-55.12	42157.73	7.68		
4	E	2027-10-02T08:20:07.805		56.40	-55.00	42529.99	7.69		
alpha	E	2027-10-02T08:24:55.002		57.43	-54.27	44751.79	7.79		
beta	E	2027-10-02T08:26:51.804		57.85	-53.97	45660.50	7.82		
eta	E	2027-10-02T08:30:04.796		58.53	-53.46	47176.12	7.88		
gamma	E	2027-10-02T08:31:02.189		58.74	-53.31	47628.56	7.89		
delta	E	2027-10-02T08:32:27.207		59.04	-53.08	48300.35	7.91		
lambda	E	2027-10-02T08:36:04.678		59.82	-52.49	50026.71	7.96		
epsilon	E	2027-10-02T08:37:34.745		60.14	-52.25	50744.88	7.99		

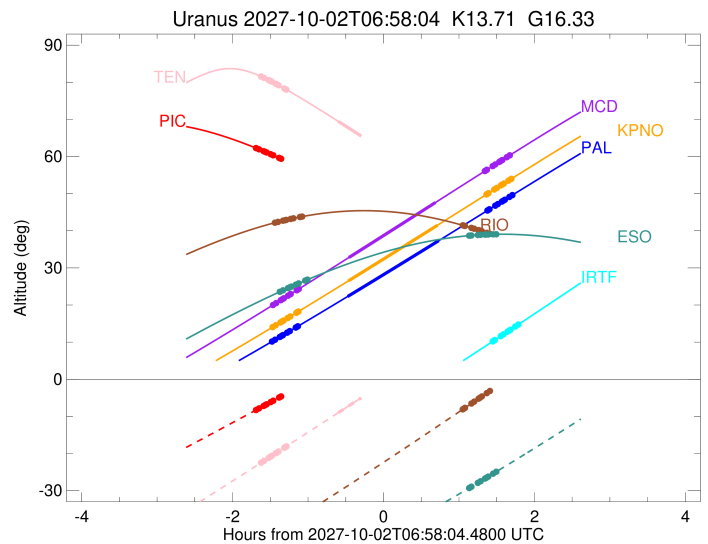
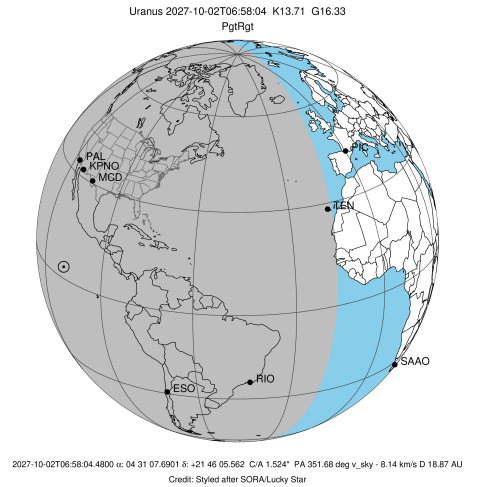
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-10-02T06:52:21.210
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 145031356140040576
 2Mass ID (if available) : 04310769+2146057
 ICRS Star Coord at Epoch: 04h 31m 07.69005s +21:46:05.56190s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.707
 G magnitude : 16.325
 RP magnitude : 15.485
 BP magnitude : 17.047
 DUPflag : 0
 Distance (au) : 18.868
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -8.14
 Sun-Target sep (deg) : 119.04
 Sun-Moon sep (deg) : 148.26
 B (ring opening deg) : 78.82
 PA of pole (deg) : -55.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.487
 C/A sky separation (km) : 20352.1
 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	2027-10-02T05:20:07.222		81.65	-22.62	51454.19	-7.86		
lambda	I	2027-10-02T05:23:08.892		81.18	-21.96	50026.71	-7.84		
delta	I	2027-10-02T05:26:50.010		80.58	-21.15	48300.35	-7.78		
gamma	I	2027-10-02T05:28:16.535		80.33	-20.84	47628.40	-7.75		
eta	I	2027-10-02T05:29:14.929		80.17	-20.63	47176.12	-7.74		
beta	I	2027-10-02T05:32:33.494		79.58	-19.90	45645.82	-7.67		
alpha	I	2027-10-02T05:34:38.058		79.20	-19.45	44693.11	-7.64		
4	I	2027-10-02T05:39:16.983		78.33	-18.43	42579.12	-7.52		
5	I	2027-10-02T05:39:54.662		78.21	-18.29	42296.03	-7.51		
6	I	2027-10-02T05:40:49.832		78.03	-18.09	41877.82	-7.49		
Uranus	I	2027-10-02T06:22:03.142		69.49	-9.02	25553.24		-1.11	-1.16
Uranus	E	2027-10-02T07:20:55.543		56.59	3.93x	25016.57		-10.96	-11.46
6	E	2027-10-02T08:02:30.910		47.40	12.99x	41826.54	7.43		
5	E	2027-10-02T08:03:15.450		47.24	13.15x	42158.38	7.45		
4	E	2027-10-02T08:04:04.368		47.06	13.32x	42529.47	7.47		
alpha	E	2027-10-02T08:09:00.055		45.97	14.39x	44751.61	7.57		
beta	E	2027-10-02T08:11:00.116		45.53	14.82x	45660.03	7.61		
eta	E	2027-10-02T08:14:18.478		44.80	15.53x	47176.12	7.67		
gamma	E	2027-10-02T08:15:17.433		44.58	15.74x	47628.66	7.68		
delta	E	2027-10-02T08:16:44.713		44.26	16.05x	48300.35	7.71		
lambda	E	2027-10-02T08:20:27.909		43.44	16.85x	50026.71	7.76		
epsilon	E	2027-10-02T08:22:00.400		43.10	17.18x	50745.54	7.78		

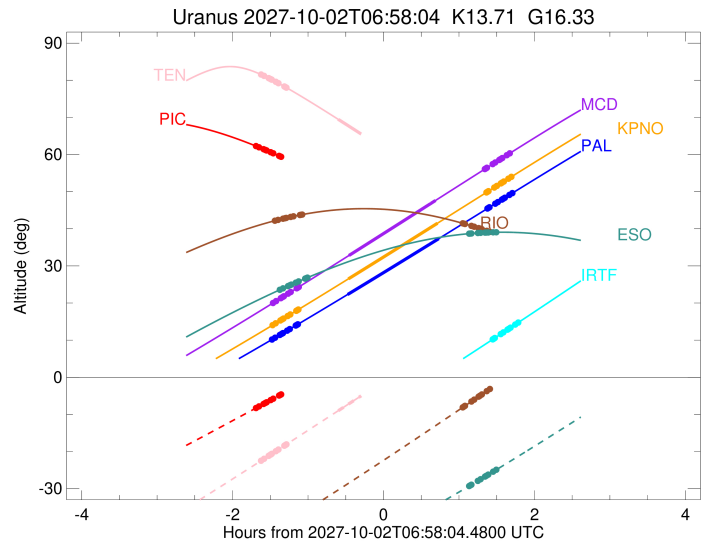
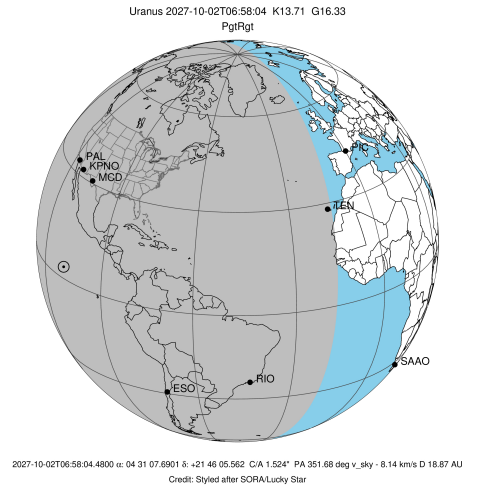
```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch              : 2027-10-02T07:08:24.340
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        : 145031356140040576
2Mass ID (if available) : 04310769+2146057
ICRS Star Coord at Epoch: 04h 31m 07.69005s +21:46:05.56190s
RUWE (>1.4 is poor)  : 0.95
K magnitude            : 13.707
G magnitude           : 16.325
RP magnitude          : 15.485
BP magnitude          : 17.047
DUPflag              : 0
Distance (au)         : 18.868
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : -8.14
Sun-Target sep (deg)  : 119.04
Sun-Moon sep (deg)    : 146.63
B (ring opening deg)  : 78.82
PA of pole (deg)     : -55.48
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.280
C/A sky separation (km) : 17522.6
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	2027-10-02T05:27:01.890	-26.76x	-18.97	51472.98	-7.41			
lambda	I	2027-10-02T05:30:17.007	-26.16x	-19.74	50026.71	-7.40			
delta	I	2027-10-02T05:34:10.802	-25.43x	-20.65	48300.35	-7.37			
gamma	I	2027-10-02T05:35:42.144	-25.14x	-21.01	47628.01	-7.35			
eta	I	2027-10-02T05:36:43.635	-24.95x	-21.25	47176.12	-7.34			
beta	I	2027-10-02T05:40:12.335	-24.29x	-22.07	45646.94	-7.31			
alpha	I	2027-10-02T05:42:23.442	-23.88x	-22.58	44691.30	-7.29			
4	I	2027-10-02T05:47:14.204	-22.95x	-23.72	42583.07	-7.22			
5	I	2027-10-02T05:47:53.362	-22.82x	-23.87	42300.47	-7.21			
6	I	2027-10-02T05:48:51.468	-22.64x	-24.10	41876.50	-7.20			
Uranus	I	2027-10-02T06:29:32.194	-14.55x	-33.60	25554.92			0.93	0.97
Uranus	E	2027-10-02T07:45:17.513	1.49x	-50.89	24996.51			-11.17	-11.68
6	E	2027-10-02T08:24:52.780	10.20	-59.42	41824.37	7.49			
5	E	2027-10-02T08:25:37.002	10.36	-59.57	42157.25	7.51			
4	E	2027-10-02T08:26:25.880	10.54	-59.74	42530.43	7.52			
alpha	E	2027-10-02T08:31:19.775	11.63	-60.74	44751.92	7.61			
beta	E	2027-10-02T08:33:19.415	12.08	-61.14	45660.93	7.64			
eta	E	2027-10-02T08:36:37.047	12.81	-61.81	47176.12	7.69			
gamma	E	2027-10-02T08:37:35.835	13.03	-62.00	47628.47	7.70			
delta	E	2027-10-02T08:39:02.962	13.36	-62.29	48300.35	7.72			
lambda	E	2027-10-02T08:42:45.835	14.19	-63.02	50026.71	7.77			
epsilon	E	2027-10-02T08:44:18.087	14.53	-63.32	50744.35	7.79			

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-10-02T06:58:15.330
 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 : 145031356140040576
 2Mass ID (if available) : 04310769+2146057
 ICRS Star Coord at Epoch: 04h 31m 07.69005s +21:46:05.56190s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.707
 G magnitude : 16.325
 RP magnitude : 15.485
 BP magnitude : 17.047
 DUPflag : 0
 Distance (au) : 18.868
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -8.14
 Sun-Target sep (deg) : 119.04
 Sun-Moon sep (deg) : 147.87
 B (ring opening deg) : 78.82
 PA of pole (deg) : -55.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.856
 C/A sky separation (km) : 25400.5
 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

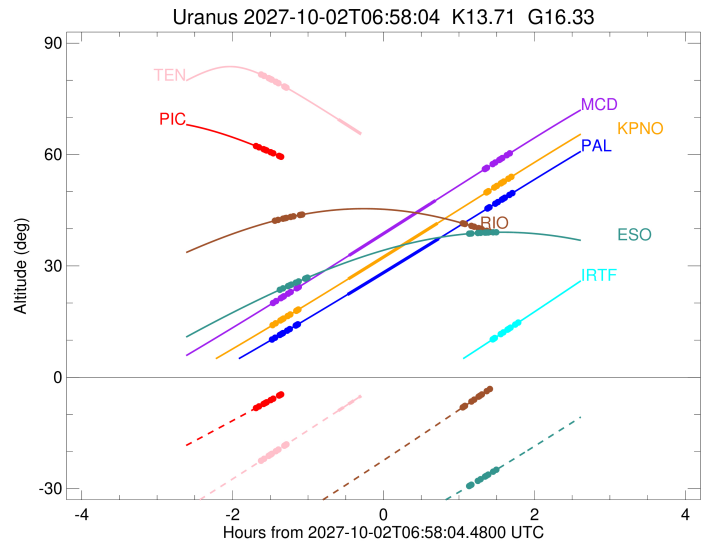
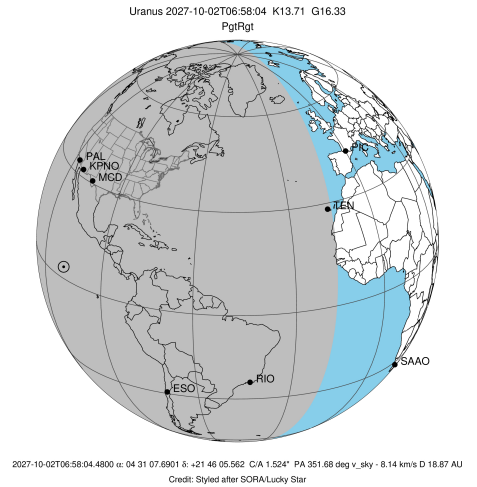


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2027-10-02T05:31:08.252		42.12	-41.18	51424.78	-7.42		
lambda	I	2027-10-02T05:34:16.887		42.39	-40.54	50026.71	-7.38		
delta	I	2027-10-02T05:38:12.365		42.72	-39.72	48300.35	-7.28		
gamma	I	2027-10-02T05:39:44.793		42.85	-39.40	47628.94	-7.24		
eta	I	2027-10-02T05:40:47.421		42.93	-39.18	47176.12	-7.22		
beta	I	2027-10-02T05:44:21.156		43.20	-38.44	45644.35	-7.11		
alpha	I	2027-10-02T05:46:35.135		43.36	-37.97	44696.11	-7.05		
4	I	2027-10-02T05:51:40.240		43.71	-36.90	42573.04	-6.86		
5	I	2027-10-02T05:52:21.810		43.76	-36.75	42288.37	-6.84		
6	I	2027-10-02T05:53:21.373		43.82	-36.54	41879.18	-6.80		

No planet occultations

6	E	2027-10-02T08:01:01.636		41.48	-8.12	41833.02	6.83		
5	E	2027-10-02T08:01:50.112		41.40	-7.94	42162.88	6.86		
4	E	2027-10-02T08:02:42.067		41.31	-7.74	42527.30	6.89		
alpha	E	2027-10-02T08:08:00.324		40.78	-6.53	44750.23	7.08		
beta	E	2027-10-02T08:10:08.246		40.55	-6.04	45657.28	7.15		
eta	E	2027-10-02T08:13:39.106		40.18	-5.23	47176.12	7.25		
gamma	E	2027-10-02T08:14:41.486		40.06	-4.99x	47629.26	7.28		
delta	E	2027-10-02T08:16:13.431		39.89	-4.64x	48300.35	7.32		
lambda	E	2027-10-02T08:20:07.752		39.45	-3.74x	50026.71	7.41		
epsilon	E	2027-10-02T08:21:45.504		39.26	-3.37x	50753.31	7.46		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-10-02T07:03:05.400
 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 : 145031356140040576
 2Mass ID (if available) : 04310769+2146057
 ICRS Star Coord at Epoch: 04h 31m 07.69005s +21:46:05.56190s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.707
 G magnitude : 16.325
 RP magnitude : 15.485
 BP magnitude : 17.047
 DUPflag : 0
 Distance (au) : 18.868
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -8.14
 Sun-Target sep (deg) : 119.04
 Sun-Moon sep (deg) : 147.46
 B (ring opening deg) : 78.82
 PA of pole (deg) : -55.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.853
 C/A sky separation (km) : 25364.4
 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	2027-10-02T05:35:02.427		23.47	-54.11	51426.84	-7.32		
lambda	I	2027-10-02T05:38:13.832		23.96	-53.79	50026.71	-7.28		
delta	I	2027-10-02T05:42:12.338		24.57	-53.36	48300.35	-7.19		
gamma	I	2027-10-02T05:43:45.935		24.80	-53.19	47628.91	-7.16		
eta	I	2027-10-02T05:44:49.340		24.96	-53.07	47176.12	-7.13		
beta	I	2027-10-02T05:48:25.680		25.50	-52.65	45644.43	-7.03		
alpha	I	2027-10-02T05:50:41.300		25.83	-52.39	44695.93	-6.97		
4	I	2027-10-02T05:55:49.860		26.58	-51.75	42573.37	-6.79		
5	I	2027-10-02T05:56:31.881		26.68	-51.67	42288.81	-6.76		
6	I	2027-10-02T05:57:32.166		26.83	-51.54	41879.13	-6.73		

No planet occultations

6	E	2027-10-02T08:06:08.185		38.68	-29.31	41833.28	6.83		
5	E	2027-10-02T08:06:56.644		38.71	-29.15	42163.10	6.87		
4	E	2027-10-02T08:07:48.520		38.73	-28.98	42527.23	6.90		
alpha	E	2027-10-02T08:13:06.516		38.86	-27.91	44750.15	7.09		
beta	E	2027-10-02T08:15:14.293		38.91	-27.47	45657.15	7.15		
eta	E	2027-10-02T08:18:44.899		38.97	-26.76	47176.12	7.26		
gamma	E	2027-10-02T08:19:47.192		38.98	-26.55	47629.29	7.29		
delta	E	2027-10-02T08:21:18.990		39.00	-26.24	48300.35	7.33		
lambda	E	2027-10-02T08:25:12.895		39.05	-25.44	50026.71	7.43		
epsilon	E	2027-10-02T08:26:50.534		39.06	-25.10	50753.92	7.47		