

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-04T06:41:52.360
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 52030165833048064
 2Mass ID (if available) : 04085199+2049399

ICRS Star Coord at Epoch: 04h 08m 51.99315s +20:49:39.95441s

RUWE (>1.4 is poor) : 3.28
 K magnitude : 11.725
 G magnitude : 14.329
 RP magnitude : 13.524
 BP magnitude : 14.991
 DUPflag : 0
 Distance (au) : 18.516
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.15
 Sun-Target sep (deg) : 157.32
 Sun-Moon sep (deg) : 97.89
 B (ring opening deg) : 74.58
 PA of pole (deg) : -70.98

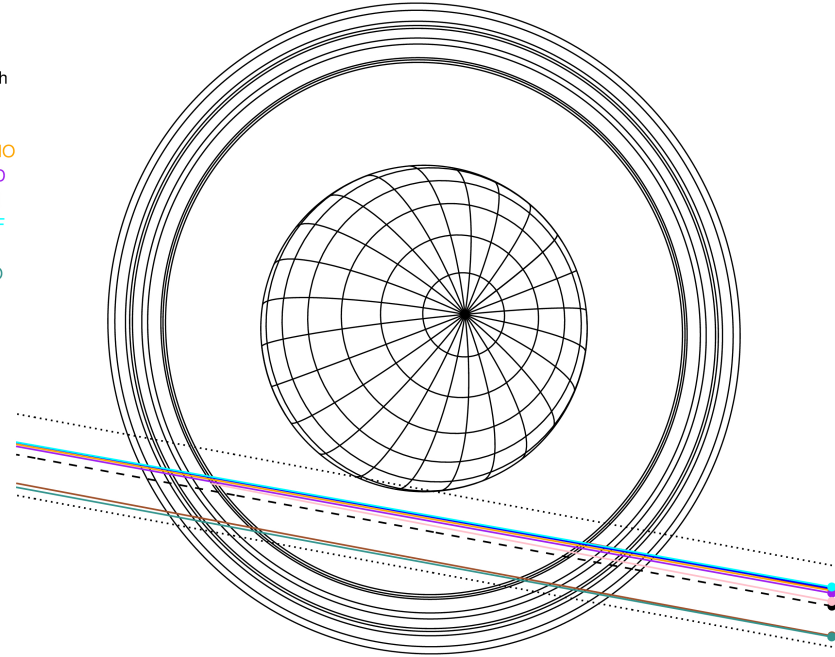
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2026-11-04T06:41:52.3600 ra: 04 08 51.9931 s: +20 49 39.954 C/A 2.311" PA 348.47 deg v_sky -21.15 km/s D 18.52 AU
 Credit: Styled after SORA/Lucky Star

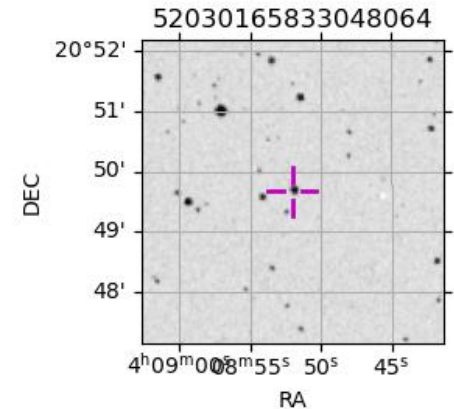
Uranus 2026-11-04T06:41:52 K11.72 G14.33 XRgt

Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO

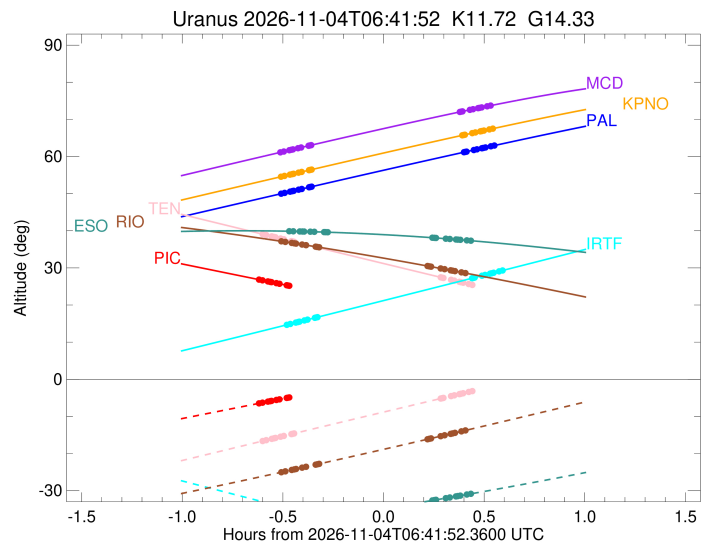
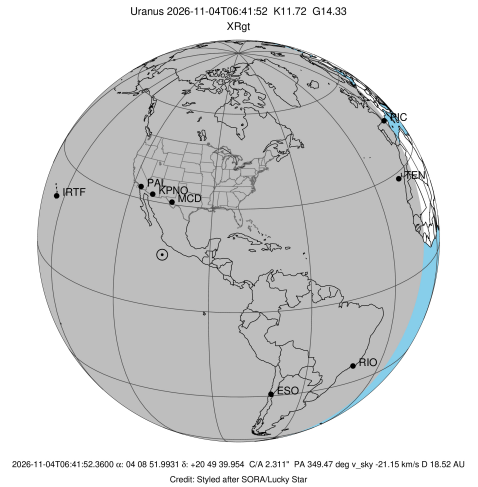


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++++			NOV 04 06:04 - NOV 04 06:13	PnnRin
PAL	Palomar Mt (200")	33.4	243.1	+++++++		+++++++	NOV 04 06:11 - NOV 04 07:15	PnnRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++++		+++++++	NOV 04 06:11 - NOV 04 07:14	PnnRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++++		+++++++	NOV 04 06:10 - NOV 04 07:13	PnnRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++++		+++	NOV 04 06:05 - NOV 04 06:59	PnnRie
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++++		+++++++	NOV 04 06:12 - NOV 04 07:17	PnnRie
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++++		+++++++	NOV 04 06:11 - NOV 04 07:06	PnnRie
ESO	European Southern Obs	-29.3	289.3	+++++++		+++++++	NOV 04 06:13 - NOV 04 07:08	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 : 2026-11-04T06:37:52.420
 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 : 52030165833048064
 2Mass ID (if available) : 04085199+2049399
 ICRS Star Coord at Epoch: 04h 08m 51.99315s +20:49:39.95441s
 RUWE (>1.4 is poor) : 3.28
 K magnitude : 11.725
 G magnitude : 14.329
 RP magnitude : 13.524
 BP magnitude : 14.991
 DUPflag : 0
 Distance (au) : 18.516
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.15
 Sun-Target sep (deg) : 157.32
 Sun-Moon sep (deg) : 98.33
 B (ring opening deg) : 74.58
 PA of pole (deg) : -70.98
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.100
 C/A sky separation (km) : 28206.6
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

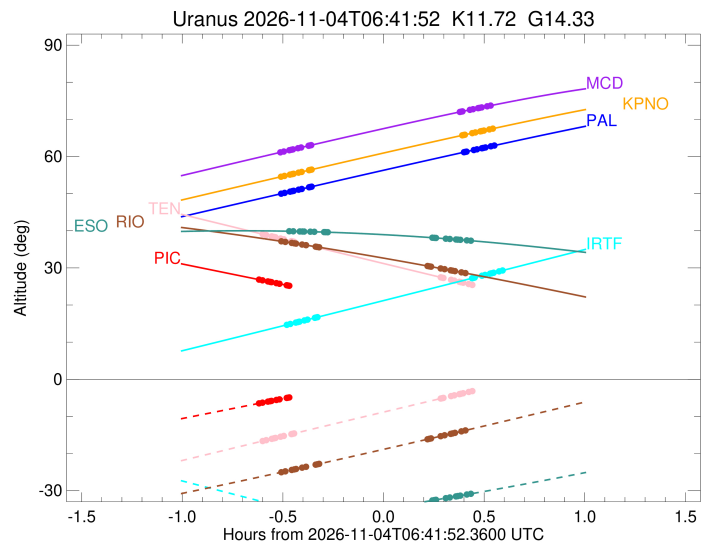
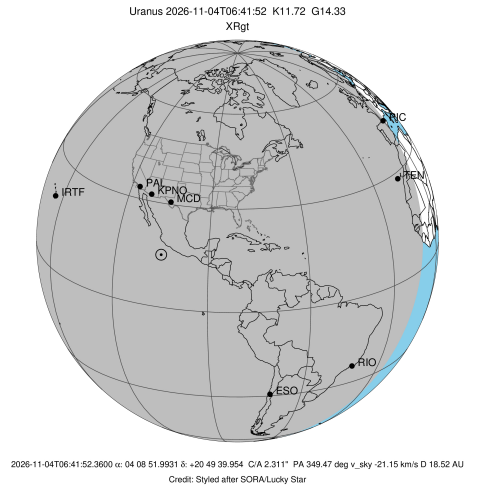


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2026-11-04T06:04:29.330		26.89	-6.54	51454.42	-18.27		
lambda	I	2026-11-04T06:05:48.240		26.65	-6.30	50026.71	-17.97		
delta	I	2026-11-04T06:07:25.133		26.36	-6.02	48300.35	-17.66		
gamma	I	2026-11-04T06:08:03.427		26.24	-5.91	47626.83	-17.52		
eta	I	2026-11-04T06:08:29.221		26.16	-5.83	47176.12	-17.43		
beta	I	2026-11-04T06:09:58.106		25.89	-5.57	45642.03	-17.08		
alpha	I	2026-11-04T06:10:53.927		25.72	-5.40	44696.14	-16.85		
4	I	2026-11-04T06:13:00.318		25.33	-5.03	42600.97	-16.26		
5	I	2026-11-04T06:13:24.826		25.26	-4.96x	42204.09	-16.15		
6	I	2026-11-04T06:13:50.518		25.18	-4.89x	41797.35	-15.99		

No planet occultations

6	E	2026-11-04T07:00:35.401		16.70	3.15x	41825.58	15.95		
5	E	2026-11-04T07:01:05.512		16.61	3.23x	42311.65	16.10		
4	E	2026-11-04T07:01:24.009		16.55	3.28x	42601.97	16.21		
alpha	E	2026-11-04T07:03:33.761		16.17	3.64x	44747.81	16.80		
beta	E	2026-11-04T07:04:28.589		16.00	3.79x	45671.44	17.02		
eta	E	2026-11-04T07:05:56.022		15.74	4.03x	47176.12	17.37		
gamma	E	2026-11-04T07:06:21.576		15.67	4.11x	47621.05	17.46		
delta	E	2026-11-04T07:07:00.339		15.55	4.21x	48300.35	17.59		
lambda	E	2026-11-04T07:08:37.594		15.26	4.48x	50026.71	17.90		
epsilon	E	2026-11-04T07:09:46.817		15.06	4.67x	51273.26	18.20		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-04T06:43:51.480
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 52030165833048064
 2Mass ID (if available) : 04085199+2049399
 ICRS Star Coord at Epoch: 04h 08m 51.99315s +20:49:39.95441s
 RUWE (>1.4 is poor) : 3.28
 K magnitude : 11.725
 G magnitude : 14.329
 RP magnitude : 13.524
 BP magnitude : 14.991
 DUPflag : 0
 Distance (au) : 18.516
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.15
 Sun-Target sep (deg) : 157.32
 Sun-Moon sep (deg) : 98.62
 B (ring opening deg) : 74.58
 PA of pole (deg) : -70.98
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.149
 C/A sky separation (km) : 28855.9
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

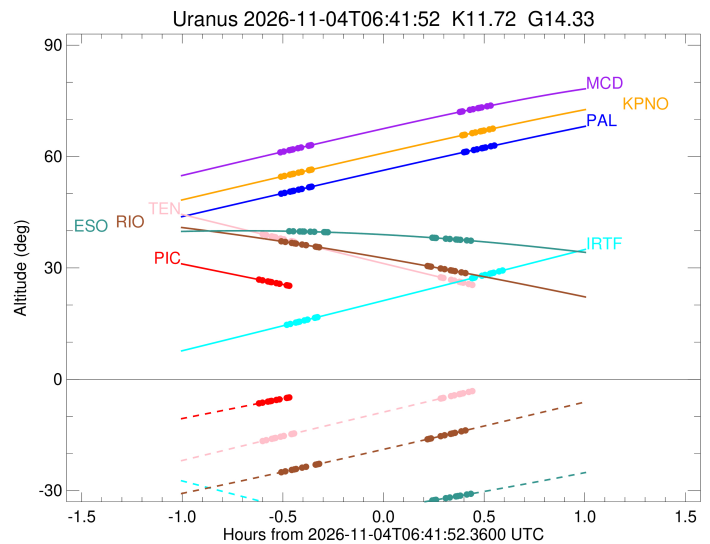
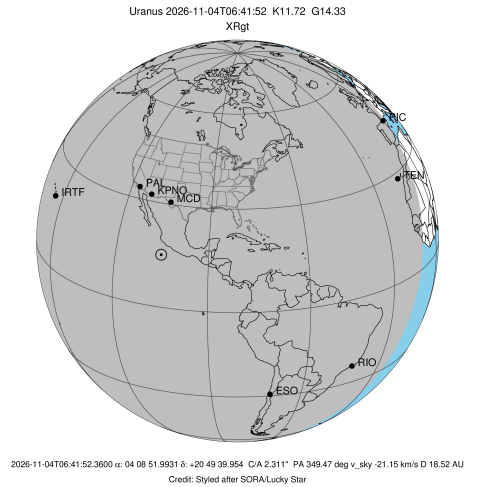


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2026-11-04T06:11:05.472		49.93	-64.63	51455.52	-18.21		
lambda	I	2026-11-04T06:12:24.728		50.21	-64.84	50026.71	-17.90		
delta	I	2026-11-04T06:14:02.059		50.54	-65.10	48300.35	-17.57		
gamma	I	2026-11-04T06:14:40.557		50.68	-65.20	47626.80	-17.42		
eta	I	2026-11-04T06:15:06.497		50.77	-65.27	47176.12	-17.32		
beta	I	2026-11-04T06:16:35.961		51.08	-65.51	45642.07	-16.96		
alpha	I	2026-11-04T06:17:32.200		51.27	-65.65	44696.34	-16.72		
4	I	2026-11-04T06:19:39.790		51.71	-65.98	42601.30	-16.09		
5	I	2026-11-04T06:20:04.546		51.80	-66.04	42204.83	-15.97		
6	I	2026-11-04T06:20:30.589		51.89	-66.10	41797.20	-15.80		

No planet occultations

6	E	2026-11-04T07:05:49.916		61.16	-71.33	41824.27	15.84		
5	E	2026-11-04T07:06:20.217		61.26	-71.36	42310.85	16.01		
4	E	2026-11-04T07:06:38.931		61.32	-71.38	42603.01	16.13		
alpha	E	2026-11-04T07:08:49.086		61.75	-71.52	44747.29	16.76		
beta	E	2026-11-04T07:09:43.996		61.94	-71.58	45670.93	17.01		
eta	E	2026-11-04T07:11:11.474		62.23	-71.66	47176.12	17.38		
gamma	E	2026-11-04T07:11:37.005		62.31	-71.69	47621.02	17.48		
delta	E	2026-11-04T07:12:15.716		62.44	-71.72	48300.35	17.62		
lambda	E	2026-11-04T07:13:52.735		62.76	-71.80	50026.71	17.96		
epsilon	E	2026-11-04T07:15:02.264		62.99	-71.86	51283.36	18.28		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-04T06:43:36.680
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 52030165833048064
 2Mass ID (if available) : 04085199+2049399
 ICRS Star Coord at Epoch: 04h 08m 51.99315s +20:49:39.95441s
 RUWE (>1.4 is poor) : 3.28
 K magnitude : 11.725
 G magnitude : 14.329
 RP magnitude : 13.524
 BP magnitude : 14.991
 DUPflag : 0
 Distance (au) : 18.516
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.15
 Sun-Target sep (deg) : 157.32
 Sun-Moon sep (deg) : 98.66
 B (ring opening deg) : 74.58
 PA of pole (deg) : -70.98
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.171
 C/A sky separation (km) : 29157.8
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

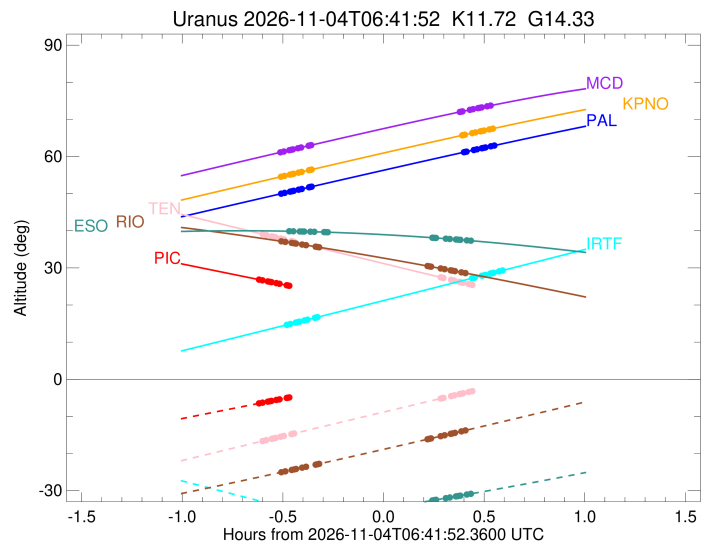
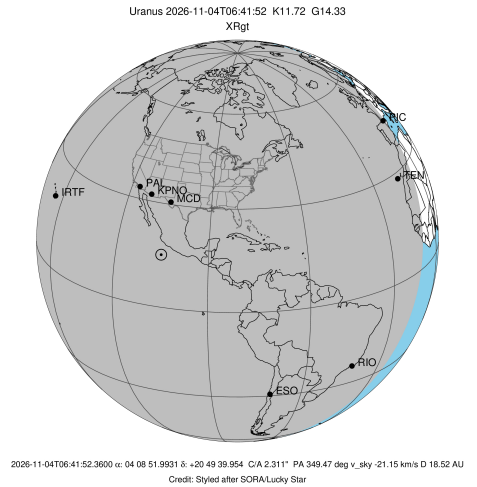


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2026-11-04T06:11:02.097		54.50	-68.80	51457.49	-18.15		
lambda	I	2026-11-04T06:12:21.770		54.78	-68.99	50026.71	-17.83		
delta	I	2026-11-04T06:13:59.531		55.13	-69.22	48300.35	-17.48		
gamma	I	2026-11-04T06:14:38.220		55.26	-69.31	47626.75	-17.33		
eta	I	2026-11-04T06:15:04.291		55.35	-69.37	47176.12	-17.23		
beta	I	2026-11-04T06:16:34.253		55.67	-69.58	45642.13	-16.86		
alpha	I	2026-11-04T06:17:30.832		55.87	-69.71	44696.58	-16.61		
4	I	2026-11-04T06:19:39.347		56.32	-69.99	42601.64	-15.96		
5	I	2026-11-04T06:20:04.279		56.40	-70.04	42205.59	-15.84		
6	I	2026-11-04T06:20:30.592		56.50	-70.10	41797.05	-15.66		

No planet occultations

6	E	2026-11-04T07:05:19.716		65.71	-73.57	41823.86	15.70		
5	E	2026-11-04T07:05:50.282		65.81	-73.58	42310.59	15.87		
4	E	2026-11-04T07:06:09.189		65.87	-73.59	42603.31	15.99		
alpha	E	2026-11-04T07:08:20.301		66.31	-73.61	44747.13	16.65		
beta	E	2026-11-04T07:09:15.569		66.49	-73.61	45670.78	16.90		
eta	E	2026-11-04T07:10:43.573		66.78	-73.61	47176.12	17.28		
gamma	E	2026-11-04T07:11:09.242		66.86	-73.61	47621.02	17.38		
delta	E	2026-11-04T07:11:48.155		66.99	-73.60	48300.35	17.53		
lambda	E	2026-11-04T07:13:25.634		67.31	-73.59	50026.71	17.88		
epsilon	E	2026-11-04T07:14:35.607		67.54	-73.58	51286.02	18.21		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-04T06:43:11.210
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 52030165833048064
 2Mass ID (if available) : 04085199+2049399
 ICRS Star Coord at Epoch: 04h 08m 51.99315s +20:49:39.95441s
 RUWE (>1.4 is poor) : 3.28
 K magnitude : 11.725
 G magnitude : 14.329
 RP magnitude : 13.524
 BP magnitude : 14.991
 DUPflag : 0
 Distance (au) : 18.516
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.15
 Sun-Target sep (deg) : 157.32
 Sun-Moon sep (deg) : 98.72
 B (ring opening deg) : 74.58
 PA of pole (deg) : -70.98
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.198
 C/A sky separation (km) : 29512.4
 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

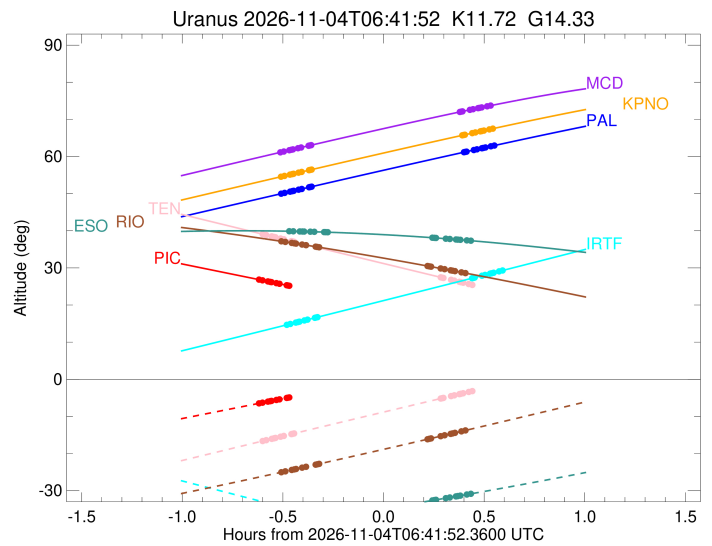
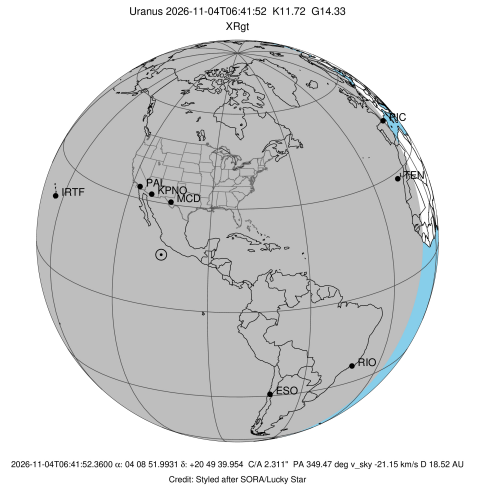


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2026-11-04T06:10:50.235		61.07	-73.50	51459.84	-18.07		
lambda	I	2026-11-04T06:12:10.410		61.35	-73.62	50026.71	-17.74		
delta	I	2026-11-04T06:13:48.689		61.70	-73.77	48300.35	-17.38		
gamma	I	2026-11-04T06:14:27.608		61.84	-73.82	47626.70	-17.23		
eta	I	2026-11-04T06:14:53.836		61.93	-73.86	47176.12	-17.13		
beta	I	2026-11-04T06:16:24.402		62.24	-73.97	45642.20	-16.74		
alpha	I	2026-11-04T06:17:21.393		62.44	-74.05	44696.87	-16.48		
4	I	2026-11-04T06:19:31.040		62.90	-74.20	42602.05	-15.80		
5	I	2026-11-04T06:19:56.186		62.99	-74.23	42206.51	-15.68		
6	I	2026-11-04T06:20:22.831		63.08	-74.25	41796.88	-15.50		

No planet occultations

6	E	2026-11-04T07:04:35.869		72.00	-73.85	41823.39	15.52		
5	E	2026-11-04T07:05:06.763		72.10	-73.81	42310.28	15.70		
4	E	2026-11-04T07:05:25.908		72.16	-73.78	42603.67	15.83		
alpha	E	2026-11-04T07:07:38.202		72.58	-73.59	44746.94	16.51		
beta	E	2026-11-04T07:08:33.912		72.75	-73.51	45670.61	16.77		
eta	E	2026-11-04T07:10:02.563		73.03	-73.37	47176.12	17.16		
gamma	E	2026-11-04T07:10:28.403		73.11	-73.33	47621.01	17.27		
delta	E	2026-11-04T07:11:07.564		73.23	-73.26	48300.35	17.42		
lambda	E	2026-11-04T07:12:45.613		73.53	-73.10	50026.71	17.78		
epsilon	E	2026-11-04T07:13:56.121		73.74	-72.98	51289.07	18.12		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-04T06:37:47.630
 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 : 52030165833048064
 2Mass ID (if available) : 04085199+2049399
 ICRS Star Coord at Epoch: 04h 08m 51.99315s +20:49:39.95441s
 RUWE (>1.4 is poor) : 3.28
 K magnitude : 11.725
 G magnitude : 14.329
 RP magnitude : 13.524
 BP magnitude : 14.991
 DUPflag : 0
 Distance (au) : 18.516
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.15
 Sun-Target sep (deg) : 157.32
 Sun-Moon sep (deg) : 98.50
 B (ring opening deg) : 74.58
 PA of pole (deg) : -70.98
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.241
 C/A sky separation (km) : 30094.6
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



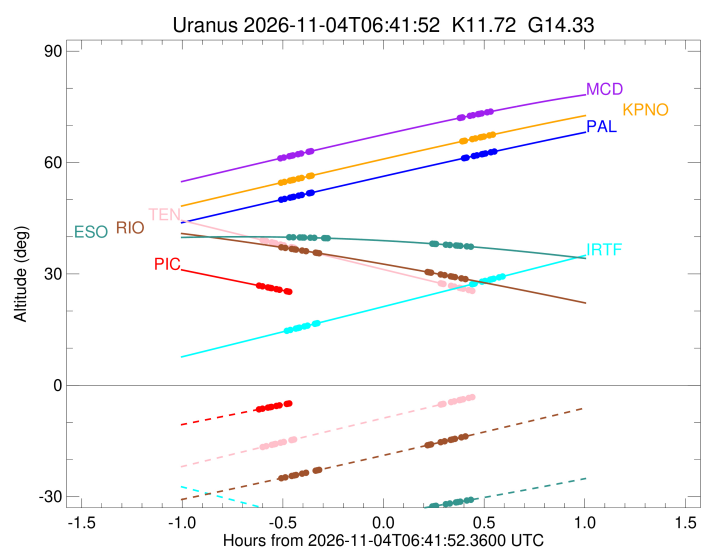
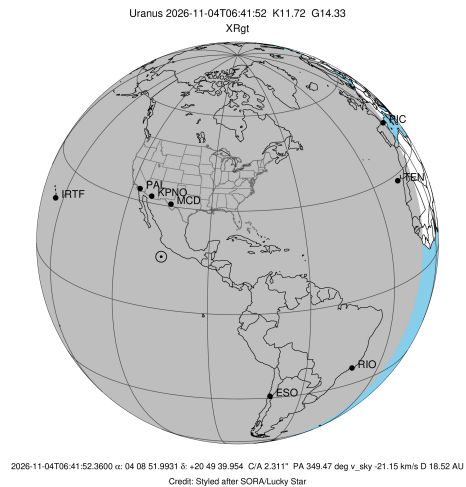
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2026-11-04T06:05:33.109		39.16	-16.70	51466.04	-17.81		
lambda	I	2026-11-04T06:06:54.838		38.86	-16.41	50026.71	-17.47		
delta	I	2026-11-04T06:08:34.723		38.49	-16.04	48300.35	-17.09		
gamma	I	2026-11-04T06:09:14.330		38.34	-15.90	47626.56	-16.93		
eta	I	2026-11-04T06:09:41.024		38.25	-15.80	47176.12	-16.82		
beta	I	2026-11-04T06:11:13.318		37.91	-15.47	45642.39	-16.41		
alpha	I	2026-11-04T06:12:11.453		37.69	-15.26	44697.60	-16.13		
4	I	2026-11-04T06:14:24.104		37.21	-14.78	42603.01	-15.42		
5	I	2026-11-04T06:14:49.804		37.11	-14.69	42208.75	-15.28		
6	I	2026-11-04T06:15:17.289		37.01	-14.59	41796.50	-15.09		

No planet occultations

6	E	2026-11-04T06:58:54.015		27.47	-5.20	41822.96	15.05		
5	E	2026-11-04T06:59:25.865		27.35	-5.09	42309.99	15.24		
4	E	2026-11-04T06:59:45.628		27.28	-5.01	42603.99	15.37		
alpha	E	2026-11-04T07:02:01.644		26.79	-4.53x	44746.79	16.08		
beta	E	2026-11-04T07:02:58.816		26.58	-4.33x	45670.48	16.35		
eta	E	2026-11-04T07:04:29.685		26.25	-4.01x	47176.12	16.76		
gamma	E	2026-11-04T07:04:56.146		26.16	-3.91x	47621.01	16.87		
delta	E	2026-11-04T07:05:36.230		26.01	-3.77x	48300.35	17.03		
lambda	E	2026-11-04T07:07:16.500		25.65	-3.42x	50026.71	17.40		
epsilon	E	2026-11-04T07:08:28.635		25.39	-3.16x	51290.77	17.74		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2026-11-04T06:45:56.930
Event type          : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code       : IRTF
Location            : Mauna Kea/IRTF
Latitude (deg)      : 19.82622
E. Longitude (deg) : 204.52800
Altitude (km)       : 4.168
Gaia source ID      : 52030165833048064
2Mass ID (if available) : 04085199+2049399
ICRS Star Coord at Epoch: 04h 08m 51.99315s +20:49:39.95441s
RUWE (>1.4 is poor) : 3.28
K magnitude         : 11.725
G magnitude         : 14.329
RP magnitude        : 13.524
BP magnitude        : 14.991
DUPflag            : 0
Distance (au)       : 18.516
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -21.15
Sun-Target sep (deg) : 157.32
Sun-Moon sep (deg)  : 98.12
B (ring opening deg) : 74.58
PA of pole (deg)    : -70.98
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.136
C/A sky separation (km) : 28680.7
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.spk
ural11.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.ural11.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
    
```

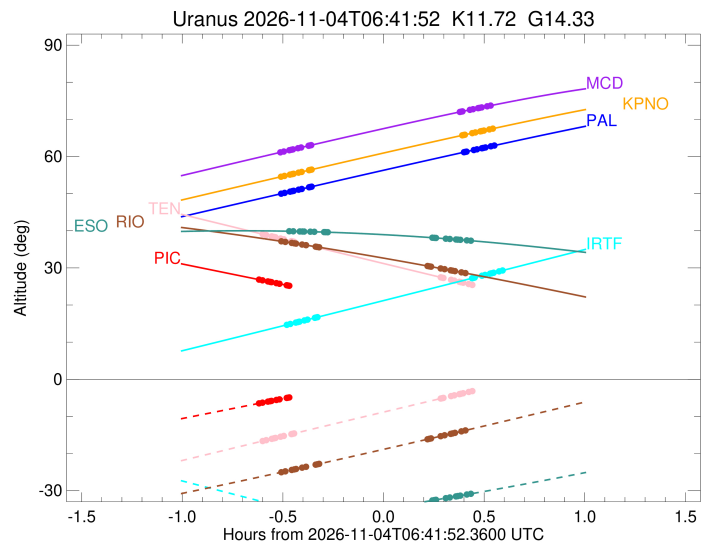
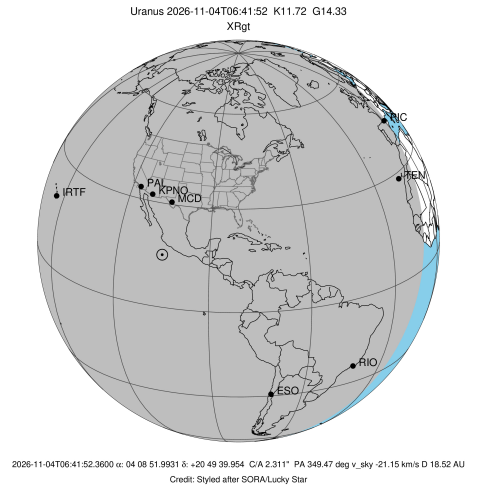


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2026-11-04T06:12:46.600		14.60	-34.62	51454.06	-18.08		
lambda	I	2026-11-04T06:14:06.355		14.90	-34.94	50026.71	-17.77		
delta	I	2026-11-04T06:15:44.363		15.27	-35.32	48300.35	-17.45		
gamma	I	2026-11-04T06:16:23.116		15.42	-35.47	47626.83	-17.31		
eta	I	2026-11-04T06:16:49.226		15.51	-35.57	47176.12	-17.21		
beta	I	2026-11-04T06:18:19.247		15.85	-35.92	45642.03	-16.86		
alpha	I	2026-11-04T06:19:15.821		16.07	-36.14	44696.18	-16.62		
4	I	2026-11-04T06:21:24.072		16.55	-36.65	42601.06	-16.01		
5	I	2026-11-04T06:21:48.961		16.64	-36.74	42204.30	-15.90		
6	I	2026-11-04T06:22:15.085		16.74	-36.85	41797.30	-15.73		

No planet occultations

6	E	2026-11-04T07:08:15.032		27.21	-47.66	41824.43	15.80		
5	E	2026-11-04T07:08:45.412		27.33	-47.77	42310.96	15.96		
4	E	2026-11-04T07:09:04.164		27.40	-47.85	42602.88	16.08		
alpha	E	2026-11-04T07:11:14.750		27.90	-48.36	44747.35	16.70		
beta	E	2026-11-04T07:12:09.866		28.11	-48.58	45670.99	16.94		
eta	E	2026-11-04T07:13:37.696		28.44	-48.92	47176.12	17.30		
gamma	E	2026-11-04T07:14:03.336		28.54	-49.02	47621.02	17.40		
delta	E	2026-11-04T07:14:42.217		28.69	-49.17	48300.35	17.54		
lambda	E	2026-11-04T07:16:19.682		29.06	-49.56	50026.71	17.88		
epsilon	E	2026-11-04T07:17:29.499		29.33	-49.83	51282.47	18.19		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-04T06:39:41.670
 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 : 52030165833048064
 2Mass ID (if available) : 04085199+2049399
 ICRS Star Coord at Epoch: 04h 08m 51.99315s +20:49:39.95441s
 RUWE (>1.4 is poor) : 3.28
 K magnitude : 11.725
 G magnitude : 14.329
 RP magnitude : 13.524
 BP magnitude : 14.991
 DUPflag : 0
 Distance (au) : 18.516
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.15
 Sun-Target sep (deg) : 157.32
 Sun-Moon sep (deg) : 98.47
 B (ring opening deg) : 74.58
 PA of pole (deg) : -70.98
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.653
 C/A sky separation (km) : 35624.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl1.spk
 ural11.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ural11.bsp
 ural61.bsp
 vgr2.ural61.bsp
 peph.ural60.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

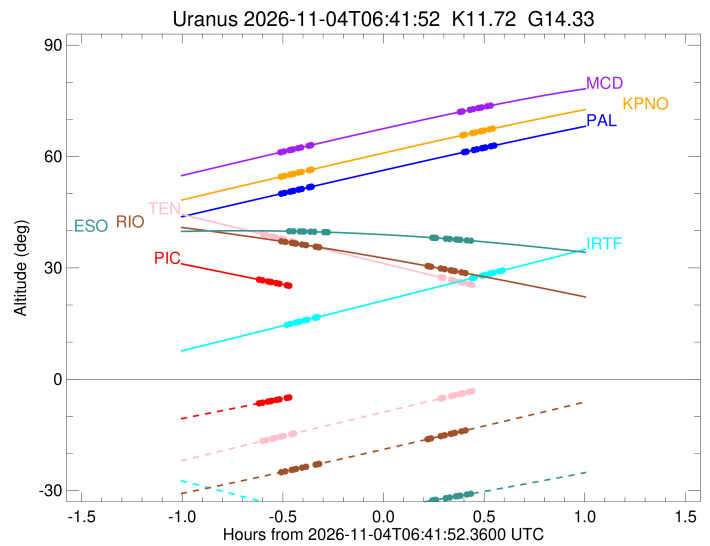
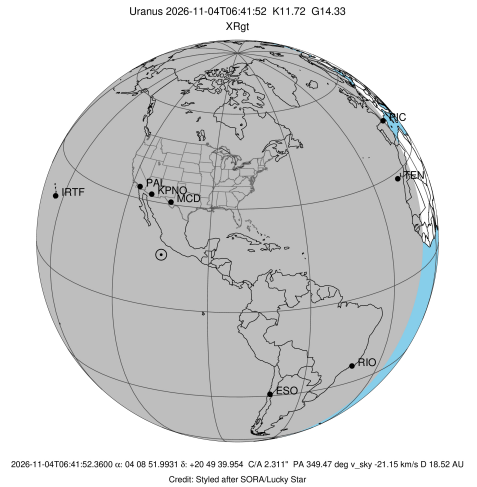


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2026-11-04T06:11:03.095		37.21	-25.11	51498.25	-15.90		
lambda	I	2026-11-04T06:12:37.348		36.99	-24.80	50026.71	-15.38		
delta	I	2026-11-04T06:14:31.822		36.73	-24.42	48300.35	-14.77		
gamma	I	2026-11-04T06:15:17.909		36.62	-24.27	47625.71	-14.50		
eta	I	2026-11-04T06:15:49.103		36.55	-24.17	47176.12	-14.32		
beta	I	2026-11-04T06:17:38.710		36.29	-23.80	45643.94	-13.63		
alpha	I	2026-11-04T06:18:49.037		36.12	-23.57	44702.84	-13.15		
4	I	2026-11-04T06:21:36.247		35.72	-23.01	42609.00	-11.87		
5	I	2026-11-04T06:22:08.948		35.64	-22.90	42225.34	-11.63		
6	I	2026-11-04T06:22:46.666		35.55	-22.77	41794.85	-11.28		

No planet occultations

6	E	2026-11-04T06:54:56.379		30.52	-16.17	41814.39	11.26		
5	E	2026-11-04T06:55:38.307		30.40	-16.02	42302.01	11.61		
4	E	2026-11-04T06:56:05.191		30.33	-15.93	42609.89	11.86		
alpha	E	2026-11-04T06:58:55.580		29.85	-15.33	44742.74	13.13		
beta	E	2026-11-04T07:00:04.909		29.66	-15.09	45667.10	13.60		
eta	E	2026-11-04T07:01:52.984		29.35	-14.71	47176.12	14.29		
gamma	E	2026-11-04T07:02:23.912		29.26	-14.60	47620.96	14.47		
delta	E	2026-11-04T07:03:10.421		29.13	-14.44	48300.35	14.74		
lambda	E	2026-11-04T07:05:05.142		28.81	-14.03	50026.71	15.35		
epsilon	E	2026-11-04T07:06:29.861		28.56	-13.74	51344.41	15.86		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-04T06:41:42.360
 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 : 52030165833048064
 2Mass ID (if available) : 04085199+2049399
 ICRS Star Coord at Epoch: 04h 08m 51.99315s +20:49:39.95441s
 RUWE (>1.4 is poor) : 3.28
 K magnitude : 11.725
 G magnitude : 14.329
 RP magnitude : 13.524
 BP magnitude : 14.991
 DUPflag : 0
 Distance (au) : 18.516
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.15
 Sun-Target sep (deg) : 157.32
 Sun-Moon sep (deg) : 98.49
 B (ring opening deg) : 74.58
 PA of pole (deg) : -70.98
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.683
 C/A sky separation (km) : 36033.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl1.spk
 ural11.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ural11.bsp
 ural61.bsp
 vgr2.ural61.bsp
 peph.ural60.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2026-11-04T06:13:24.551		39.89	-38.57	51499.85	-15.75		
lambda	I	2026-11-04T06:14:59.888		39.86	-38.37	50026.71	-15.21		
delta	I	2026-11-04T06:16:55.744		39.82	-38.14	48300.35	-14.58		
gamma	I	2026-11-04T06:17:42.460		39.81	-38.04	47625.66	-14.30		
eta	I	2026-11-04T06:18:14.099		39.80	-37.97	47176.12	-14.11		
beta	I	2026-11-04T06:20:05.469		39.75	-37.74	45644.05	-13.39		
alpha	I	2026-11-04T06:21:17.097		39.72	-37.59	44703.21	-12.90		
4	I	2026-11-04T06:24:08.258		39.65	-37.22	42609.37	-11.55		
5	I	2026-11-04T06:24:41.827		39.63	-37.15	42226.56	-11.29		
6	I	2026-11-04T06:25:20.803		39.61	-37.06	41794.81	-10.92		

No planet occultations

6	E	2026-11-04T06:56:22.548		38.14	-32.65	41813.57	10.92		
5	E	2026-11-04T06:57:05.679		38.09	-32.54	42301.02	11.29		
4	E	2026-11-04T06:57:33.417		38.06	-32.47	42610.39	11.55		
alpha	E	2026-11-04T07:00:27.505		37.87	-32.03	44742.28	12.89		
beta	E	2026-11-04T07:01:38.027		37.79	-31.84	45666.76	13.39		
eta	E	2026-11-04T07:03:27.690		37.66	-31.56	47176.12	14.11		
gamma	E	2026-11-04T07:03:59.008		37.62	-31.48	47620.96	14.30		
delta	E	2026-11-04T07:04:46.064		37.56	-31.35	48300.35	14.58		
lambda	E	2026-11-04T07:06:41.948		37.42	-31.05	50026.71	15.21		
epsilon	E	2026-11-04T07:08:07.714		37.31	-30.82	51349.60	15.74		