

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-04-24T21:34:23.730
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3404527735527193984
 2Mass ID (if available) : 05335416+2327425

ICRS Star Coord at Epoch: 05h 33m 54.16740s +23:27:42.50343s

RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.792
 G magnitude : 16.263
 RP magnitude : 15.499
 BP magnitude : 16.877
 DUPflag : 0
 Distance (au) : 19.705
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.79
 Sun-Target sep (deg) : 49.21
 Sun-Moon sep (deg) : 122.00
 B (ring opening deg) : 79.88
 PA of pole (deg) : 36.14

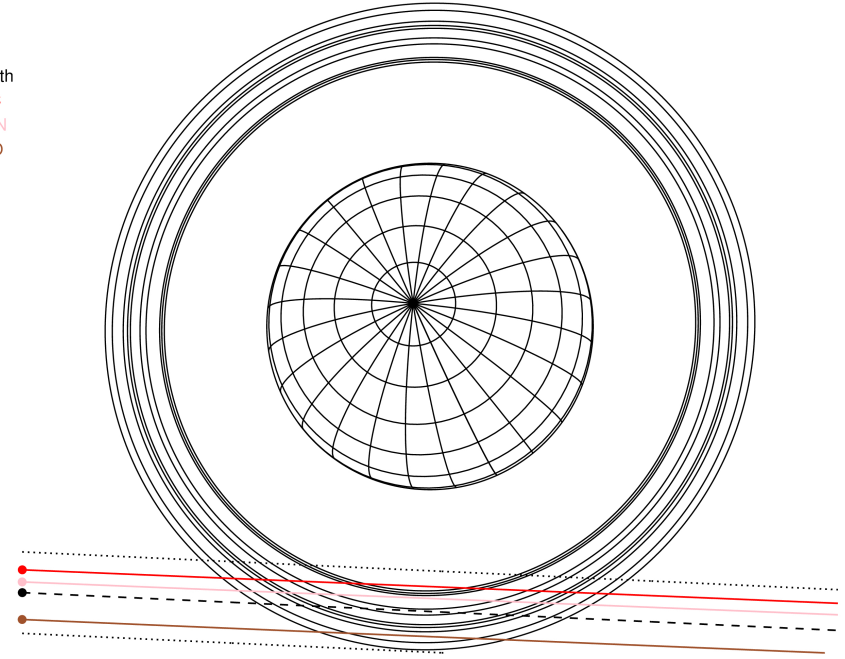
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2032-04-24T21:34:23.7300 ex: 05 33 54.1674 s: +23 27 42.503 C/A 3.114" PA 357.35 deg v_sky +25.79 km/s D 19.70 AU
 Credit: Styled after SORA/Lucky Star

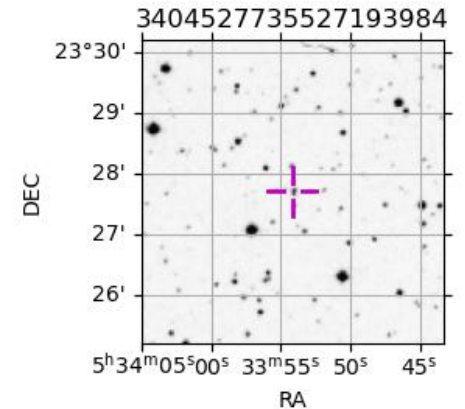
Uranus 2032-04-24T21:34:23 K13.79 G16.26 XRgt

Earth
 PIC
 TEN
 RIO

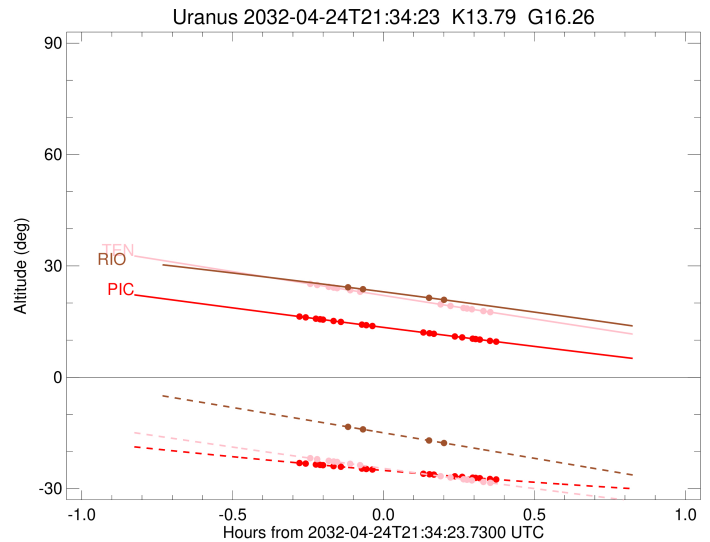
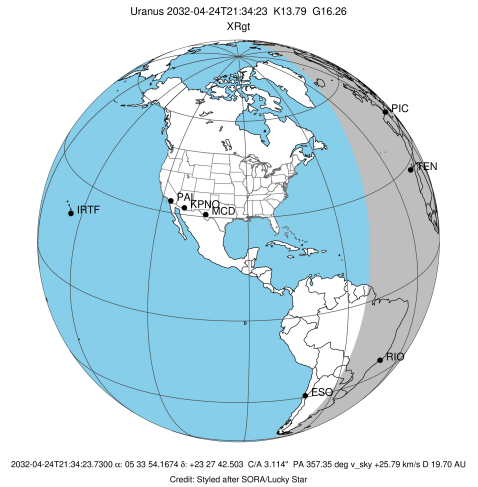


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++		+++++	APR 24 21:17 - APR 24 21:56	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	+++++		+++++	APR 24 21:20 - APR 24 21:55	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	++		++	APR 24 21:27 - APR 24 21:45	PnnRie
ESO	European Southern Obs	-29.3	289.3					PnnRnn
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 : 2032-04-24T21:37:39.640
 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 : 3404527735527193984
 2Mass ID (if available) : 05335416+2327425
 ICRS Star Coord at Epoch: 05h 33m 54.16740s +23:27:42.50343s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.792
 G magnitude : 16.263
 RP magnitude : 15.499
 BP magnitude : 16.877
 DUPflag : 0
 Distance (au) : 19.705
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.79
 Sun-Target sep (deg) : 49.21
 Sun-Moon sep (deg) : 122.56
 B (ring opening deg) : 79.88
 PA of pole (deg) : 36.14
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.848
 C/A sky separation (km) : 40695.2
 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_itrff93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

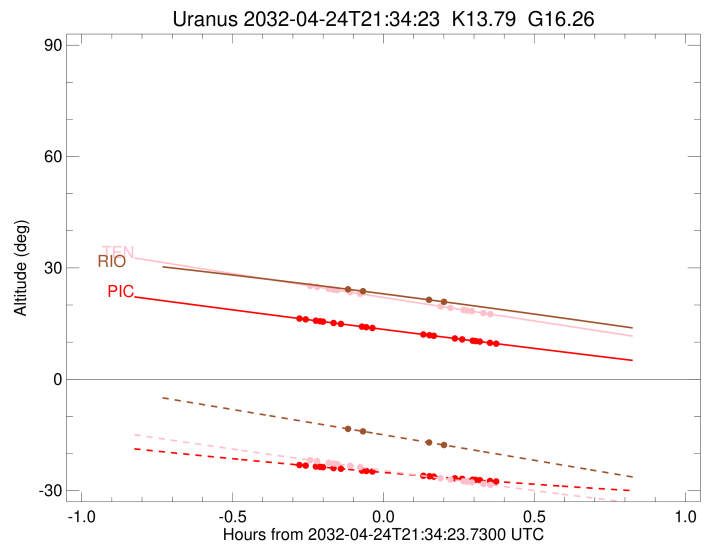
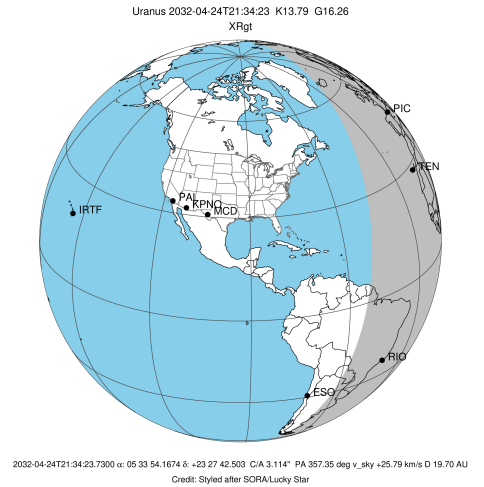


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-04-24T21:17:48.953		16.33	-23.12	51051.11	-15.22		
lambda	I	2032-04-24T21:18:56.853		16.13	-23.26	50026.71	-14.78		
delta	I	2032-04-24T21:20:58.303		15.77	-23.51	48300.35	-13.62		
gamma	I	2032-04-24T21:21:48.581		15.63	-23.61	47628.29	-13.11		
eta	I	2032-04-24T21:22:23.579		15.53	-23.68	47176.12	-12.73		
beta	I	2032-04-24T21:24:27.830		15.16	-23.93	45680.67	-11.32		
alpha	I	2032-04-24T21:25:53.833		14.91	-24.10	44751.88	-10.26		
4	I	2032-04-24T21:30:15.411		14.15	-24.62	42527.23	-6.66		
5	I	2032-04-24T21:31:07.041		14.00	-24.72	42203.84	-5.84		
6	I	2032-04-24T21:32:06.337		13.83	-24.84	41876.59	-4.97		

No planet occultations

6	E	2032-04-24T21:42:22.605		12.06	-26.00	41867.68	4.97		
5	E	2032-04-24T21:43:18.172		11.90	-26.11	42174.63	5.84		
4	E	2032-04-24T21:44:17.214		11.73	-26.21	42538.39	6.67		
alpha	E	2032-04-24T21:48:35.234		10.99	-26.68	44737.04	10.28		
beta	E	2032-04-24T21:50:02.038		10.74	-26.83	45676.95	11.34		
eta	E	2032-04-24T21:52:06.412		10.39	-27.05	47176.12	12.76		
gamma	E	2032-04-24T21:52:41.584		10.29	-27.11	47631.54	13.14		
delta	E	2032-04-24T21:53:31.507		10.15	-27.19	48300.35	13.65		
lambda	E	2032-04-24T21:55:32.670		9.81	-27.40	50026.71	14.82		
epsilon	E	2032-04-24T21:56:20.408		9.67	-27.48	50744.57	15.26		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-04-24T21:38:10.140
 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 : 3404527735527193984
 2Mass ID (if available) : 05335416+2327425
 ICRS Star Coord at Epoch: 05h 33m 54.16740s +23:27:42.50343s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.792
 G magnitude : 16.263
 RP magnitude : 15.499
 BP magnitude : 16.877
 DUPflag : 0
 Distance (au) : 19.705
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.79
 Sun-Target sep (deg) : 49.21
 Sun-Moon sep (deg) : 122.74
 B (ring opening deg) : 79.88
 PA of pole (deg) : 36.14
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.978
 C/A sky separation (km) : 42553.1
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



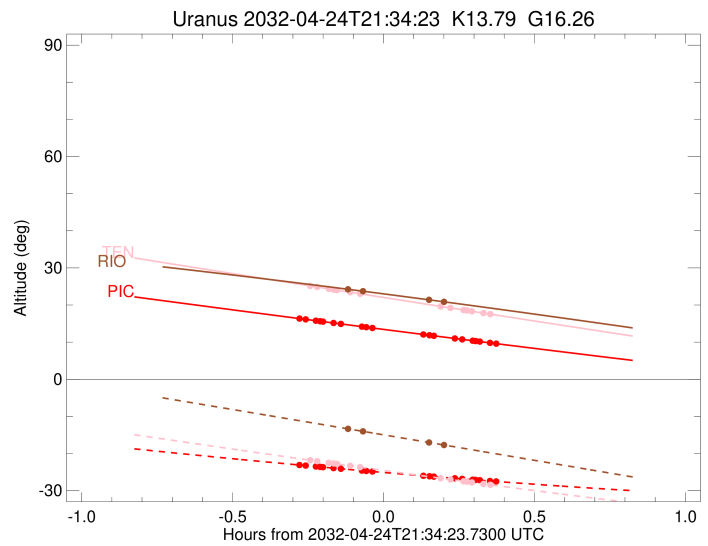
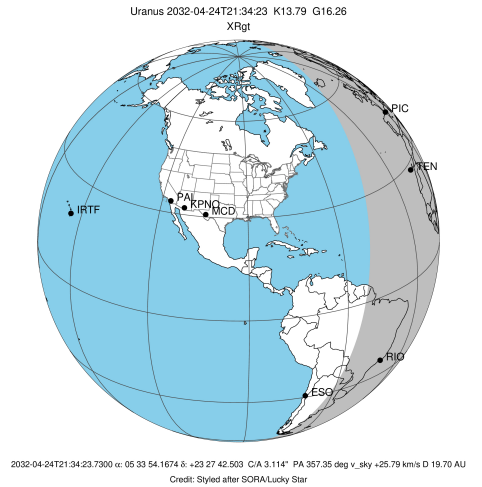
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-04-24T21:20:00.262		25.11	-21.83	51025.29	-13.75		
lambda	I	2032-04-24T21:21:13.857		24.85	-22.07	50026.71	-13.21		
delta	I	2032-04-24T21:23:31.838		24.36	-22.50	48300.35	-11.78		
gamma	I	2032-04-24T21:24:30.450		24.15	-22.69	47628.70	-11.13		
eta	I	2032-04-24T21:25:12.006		24.00	-22.82	47176.12	-10.65		
beta	I	2032-04-24T21:27:45.916		23.45	-23.31	45681.06	-8.75		
alpha	I	2032-04-24T21:29:42.378		23.04	-23.67	44750.86	-7.19		

No planet occultations

alpha	E	2032-04-24T21:45:45.425		19.63	-26.65	44740.40	7.20		
beta	E	2032-04-24T21:47:42.663		19.21	-27.01	45678.17	8.77		
eta	E	2032-04-24T21:50:16.661		18.67	-27.47	47176.12	10.67		
gamma	E	2032-04-24T21:50:58.381		18.53	-27.60	47631.47	11.16		
delta	E	2032-04-24T21:51:56.619		18.32	-27.77	48300.35	11.81		
lambda	E	2032-04-24T21:54:14.268		17.84	-28.19	50026.71	13.25		
epsilon	E	2032-04-24T21:55:07.610		17.65	-28.35	50747.30	13.79		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-04-24T21:37:22.380
 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 : 3404527735527193984
 2Mass ID (if available) : 05335416+2327425
 ICRS Star Coord at Epoch: 05h 33m 54.16740s +23:27:42.50343s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.792
 G magnitude : 16.263
 RP magnitude : 15.499
 BP magnitude : 16.877
 DUPflag : 0
 Distance (au) : 19.705
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.79
 Sun-Target sep (deg) : 49.21
 Sun-Moon sep (deg) : 122.66
 B (ring opening deg) : 79.88
 PA of pole (deg) : 36.14
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.396
 C/A sky separation (km) : 48528.8
 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	2032-04-24T21:27:54.804		24.14	-13.49	50919.27	-6.80		
lambda	I	2032-04-24T21:30:22.072		23.72	-14.05	50026.71	-5.15		

No planet occultations

lambda	E	2032-04-24T21:43:24.093		21.41	-17.02	50026.71	5.15		
epsilon	E	2032-04-24T21:45:30.969		21.03	-17.51	50780.75	6.81		