

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2042-09-28T03:07:10.720
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 631983860418730624
 2Mass ID (if available) : 09123993+1647548

ICRS Star Coord at Epoch: 09h 12m 39.78822s +16:47:53.76452s

RUWE (>1.4 is poor) : 1.84
 K magnitude : 12.426
 G magnitude : 15.353
 RP magnitude : 14.384
 BP magnitude : 16.133
 DUPflag : 0
 Distance (au) : 19.096
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 26.16
 Sun-Target sep (deg) : 49.05
 Sun-Moon sep (deg) : 149.38
 B (ring opening deg) : 31.71
 PA of pole (deg) : 97.75

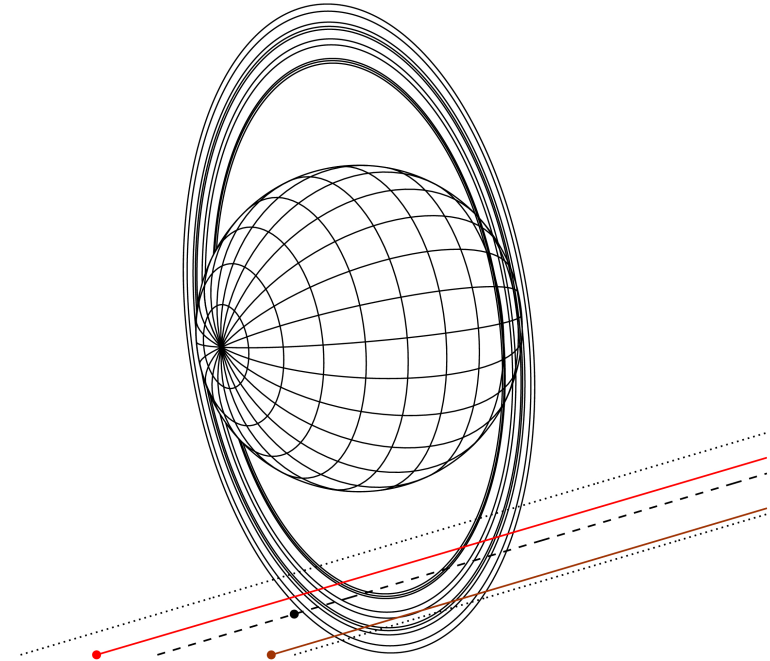
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2042-09-28T03:07:10.7200 ra: 09 12 39.78822 s: +16 47 53.765 C/A 2.883 PA 16.58 deg v_sky +26.16 km/s D 19.10 AU
 Credit: Styled after SORA/Lucky Star

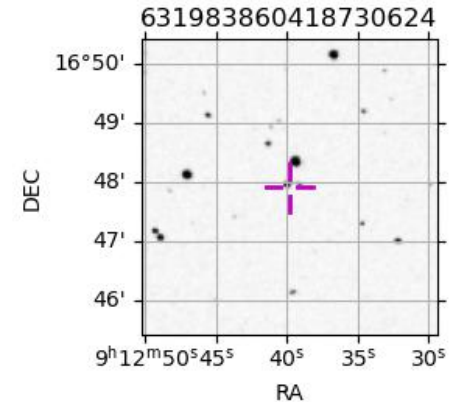
Earth
 PIC
 SAAO

Uranus 2042-09-28T03:07:10 K12.43 G15.35 XRgt

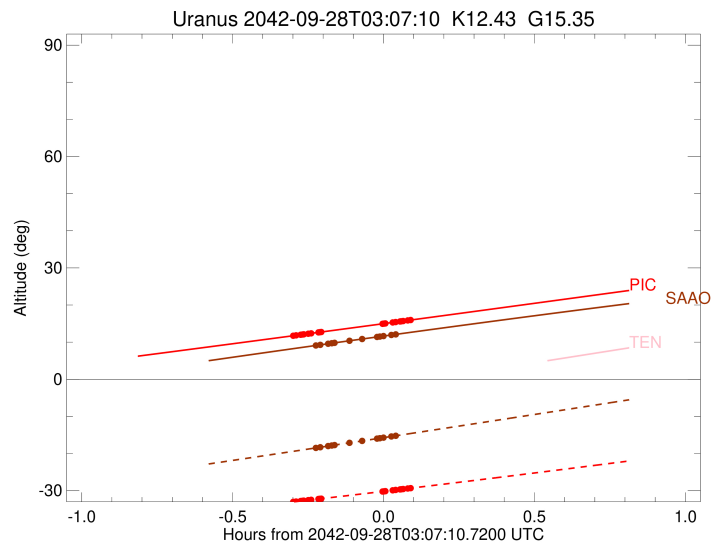
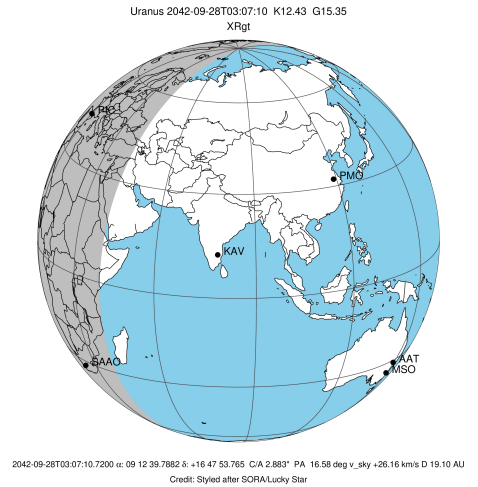


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++		+++++	SEP 28 02:49 - SEP 28 03:12	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					PnnRnn
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					PnnRnn
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	+++++		+++++	SEP 28 02:53 - SEP 28 03:09	PnnRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2042-09-28T03:03:30.730
 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 : 631983860418730624
 2Mass ID (if available) : 09123993+1647548
 ICRS Star Coord at Epoch: 09h 12m 39.78822s +16:47:53.76452s
 RUWE (>1.4 is poor) : 1.84
 K magnitude : 12.426
 G magnitude : 15.353
 RP magnitude : 14.384
 BP magnitude : 16.133
 DUPflag : 0
 Distance (au) : 19.096
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 26.16
 Sun-Target sep (deg) : 49.05
 Sun-Moon sep (deg) : 150.26
 B (ring opening deg) : 31.71
 PA of pole (deg) : 97.75
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.704
 C/A sky separation (km) : 37451.0
 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

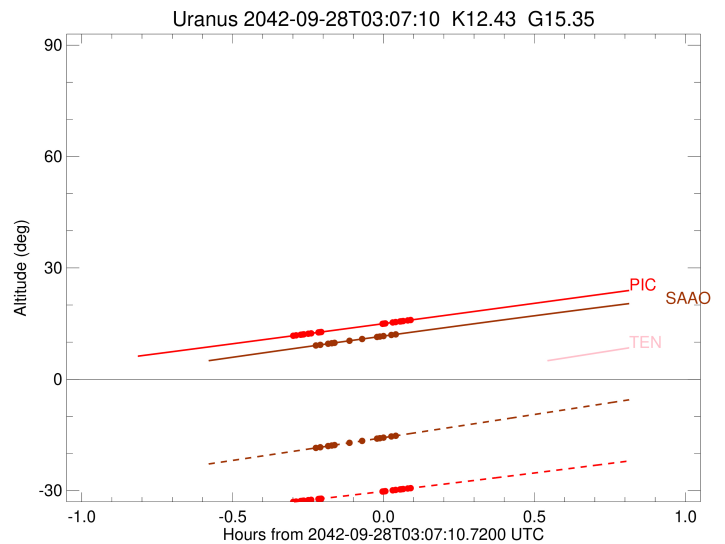
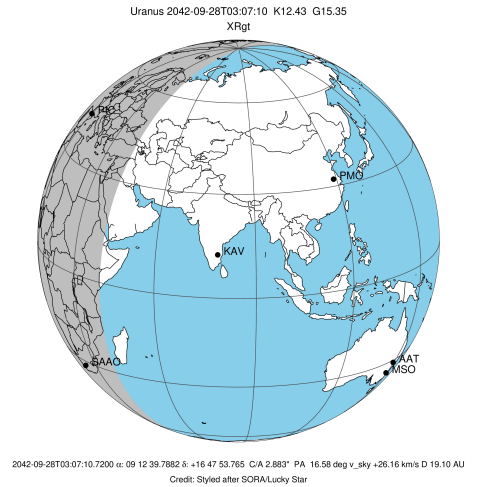


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2042-09-28T02:49:08.012		11.71	-33.05	51373.05	-33.66		
lambda	I	2042-09-28T02:49:48.956		11.83	-32.94	50026.71	-32.33		
delta	I	2042-09-28T02:50:43.687		11.99	-32.80	48300.35	-30.73		
gamma	I	2042-09-28T02:51:05.889		12.06	-32.74	47625.86	-30.02		
eta	I	2042-09-28T02:51:20.990		12.11	-32.70	47176.12	-29.53		
beta	I	2042-09-28T02:52:14.671		12.27	-32.56	45641.92	-27.66		
alpha	I	2042-09-28T02:52:47.898		12.37	-32.48	44743.67	-26.43		
4	I	2042-09-28T02:54:14.540		12.63	-32.25	42616.34	-22.83		
5	I	2042-09-28T02:54:26.381		12.66	-32.22	42315.06	-22.19		
6	I	2042-09-28T02:54:49.167		12.73	-32.16	41850.50	-21.29		

No planet occultations

6	E	2042-09-28T03:06:59.608		14.94	-30.23	41876.98	21.28		
5	E	2042-09-28T03:07:17.805		15.00	-30.19	42278.25	22.17		
4	E	2042-09-28T03:07:33.026		15.04	-30.15	42593.34	22.82		
alpha	E	2042-09-28T03:09:01.170		15.31	-29.91	44749.80	26.41		
beta	E	2042-09-28T03:09:34.118		15.41	-29.82	45648.61	27.64		
eta	E	2042-09-28T03:10:27.409		15.57	-29.68	47176.12	29.50		
gamma	E	2042-09-28T03:10:42.368		15.62	-29.64	47621.05	29.99		
delta	E	2042-09-28T03:11:04.759		15.68	-29.58	48300.35	30.69		
lambda	E	2042-09-28T03:11:59.566		15.85	-29.43	50026.71	32.28		
epsilon	E	2042-09-28T03:12:44.449		15.99	-29.31	51502.65	33.61		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2042-09-28T03:04:52.160
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : SAAO
 Location : So. Afr. Astro. Obs. (Sutherland)
 Latitude (deg) : -32.37953
 E. Longitude (deg) : 20.81070
 Altitude (km) : 1.768
 Gaia source ID : 631983860418730624
 2Mass ID (if available) : 09123993+1647548
 ICRS Star Coord at Epoch: 09h 12m 39.78822s +16:47:53.76452s
 RUWE (>1.4 is poor) : 1.84
 K magnitude : 12.426
 G magnitude : 15.353
 RP magnitude : 14.384
 BP magnitude : 16.133
 DUPflag : 0
 Distance (au) : 19.096
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 26.16
 Sun-Target sep (deg) : 49.05
 Sun-Moon sep (deg) : 150.00
 B (ring opening deg) : 31.71
 PA of pole (deg) : 97.75
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.259
 C/A sky separation (km) : 45131.6
 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	2042-09-28T02:53:31.611		9.07	-18.53	51453.14	-23.08		
lambda	I	2042-09-28T02:54:37.634		9.27	-18.31	50026.71	-20.32		
delta	I	2042-09-28T02:56:11.534		9.57	-17.99	48300.35	-16.37		
gamma	I	2042-09-28T02:56:55.482		9.71	-17.84	47624.03	-14.38		
eta	I	2042-09-28T02:57:28.363		9.81	-17.73	47176.12	-12.85		
beta	I	2042-09-28T03:00:34.709		10.40	-17.09	45641.60	-3.47		

No planet occultations

beta	E	2042-09-28T03:02:46.866		10.81	-16.63	45642.45	3.48		
eta	E	2042-09-28T03:05:52.777		11.39	-16.00	47176.12	12.84		
gamma	E	2042-09-28T03:06:25.516		11.50	-15.88	47621.71	14.38		
delta	E	2042-09-28T03:07:09.655		11.63	-15.73	48300.35	16.37		
lambda	E	2042-09-28T03:08:43.634		11.93	-15.41	50026.71	20.31		
epsilon	E	2042-09-28T03:09:53.614		12.14	-15.17	51542.22	23.05		