

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-09-11T02:24:31.690
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3424682475155792512
 2Mass ID (if available) : 06040096+2337120

Uranus 2032-09-11T02:24:31 K14.59 G17.24 PgtRgt

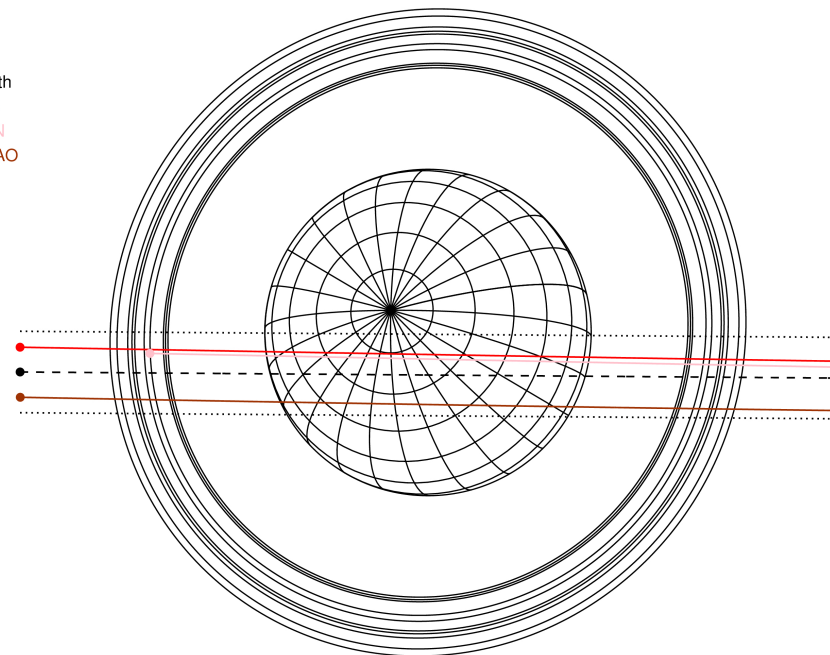
ICRS Star Coord at Epoch: 06h 04m 00.96538s +23:37:12.04896s

RUWE (>1.4 is poor) : 1.06
 K magnitude : 14.590
 G magnitude : 17.235
 RP magnitude : 16.417
 BP magnitude : 17.965
 DUPflag : 0
 Distance (au) : 19.229
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 12.78
 Sun-Target sep (deg) : 77.54
 Sun-Moon sep (deg) : 147.10
 B (ring opening deg) : 74.58
 PA of pole (deg) : 59.26
 # a(km) ring



2032-09-11T02:24:31.6900 ex: 06 04 00.9654 s: +23 37 12.049 C/A 0.474° PA 359.57 deg v_sky +12.78 km/s D 19.23 AU
 Credit: Styled after SORA/Lucky Star

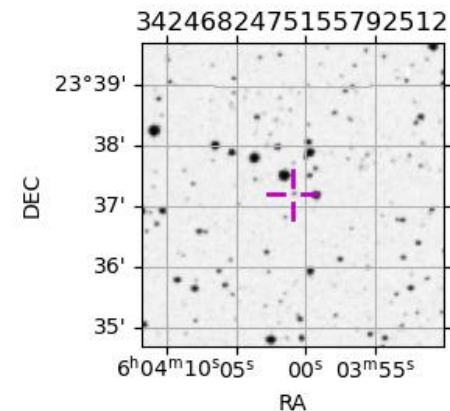
Earth
 PIC
 TEN
 SAAO



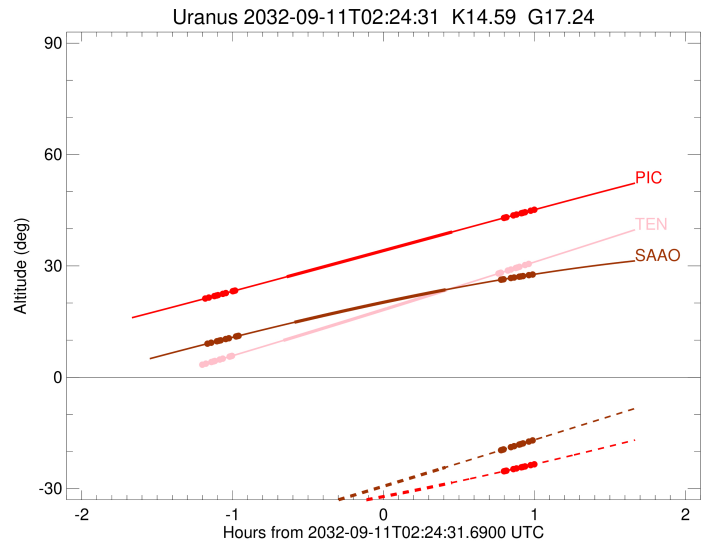
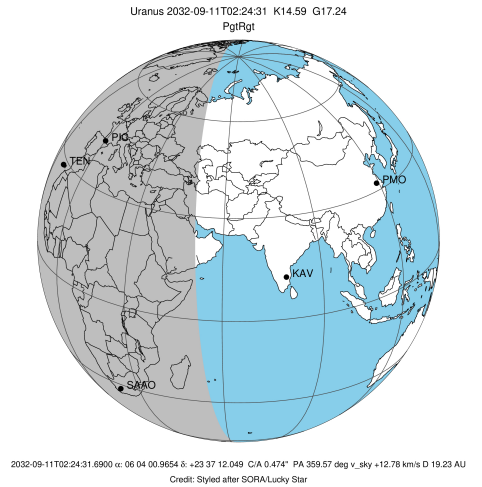
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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	+++++	+ +	+++++	SEP 11 01:14 - SEP 11 03:24	PieRie
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	++++	+ +	+++++	SEP 11 01:20 - SEP 11 03:22	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					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 11 01:14 - SEP 11 03:24	PieRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn

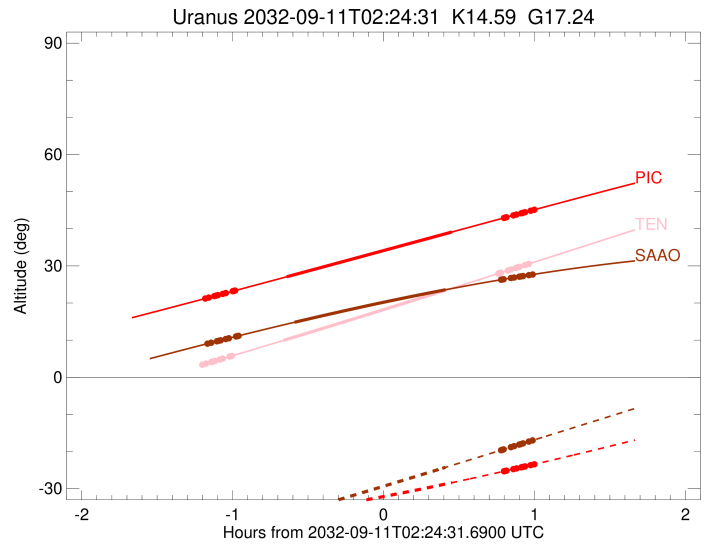
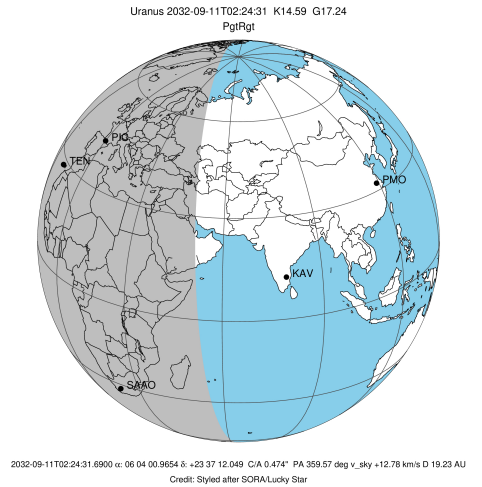


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-09-11T02:18:55.670
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3424682475155792512
 2Mass ID (if available) : 06040096+2337120
 ICRS Star Coord at Epoch: 06h 04m 00.96538s +23:37:12.04896s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 14.590
 G magnitude : 17.235
 RP magnitude : 16.417
 BP magnitude : 17.965
 DUPflag : 0
 Distance (au) : 19.229
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 12.78
 Sun-Target sep (deg) : 77.54
 Sun-Moon sep (deg) : 146.89
 B (ring opening deg) : 74.58
 PA of pole (deg) : 59.26
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.247
 C/A sky separation (km) : 3445.6
 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	2032-09-11T01:14:03.869		21.29	-39.65	50848.58	-13.09		
lambda	I	2032-09-11T01:15:06.688		21.47	-39.57	50026.71	-13.08		
delta	I	2032-09-11T01:17:18.690		21.87	-39.39	48300.35	-13.07		
gamma	I	2032-09-11T01:18:09.849		22.02	-39.32	47631.52	-13.07		
eta	I	2032-09-11T01:18:44.689		22.13	-39.27	47176.12	-13.07		
beta	I	2032-09-11T01:20:39.157		22.47	-39.11	45681.22	-13.06		
alpha	I	2032-09-11T01:21:50.015		22.68	-39.01	44752.40	-13.06		
4	I	2032-09-11T01:24:38.608		23.19	-38.76	42548.47	-13.05		
5	I	2032-09-11T01:24:58.136		23.25	-38.74	42306.38	-13.05		
6	I	2032-09-11T01:25:33.590		23.35	-38.68	41846.03	-13.05		
Uranus	I	2032-09-11T01:46:04.591		27.08	-36.69	25213.21		12.16	12.72
Uranus	E	2032-09-11T02:51:45.534		39.14	-28.39	25088.28		-14.28	-14.93
6	E	2032-09-11T03:12:23.232		42.92	-25.32	41835.50	12.86		
5	E	2032-09-11T03:12:48.418		43.00	-25.26	42158.55	12.86		
4	E	2032-09-11T03:13:22.908		43.10	-25.17	42587.16	12.86		
alpha	E	2032-09-11T03:16:05.746		43.60	-24.75	44684.85	12.86		
beta	E	2032-09-11T03:17:19.855		43.82	-24.56	45641.18	12.86		
eta	E	2032-09-11T03:19:19.290		44.19	-24.25	47176.12	12.86		
gamma	E	2032-09-11T03:19:53.900		44.29	-24.16	47621.19	12.86		
delta	E	2032-09-11T03:20:46.715		44.45	-24.03	48300.35	12.86		
lambda	E	2032-09-11T03:23:00.971		44.86	-23.68	50026.71	12.86		
epsilon	E	2032-09-11T03:24:54.183		45.20	-23.38	51482.37	12.86		

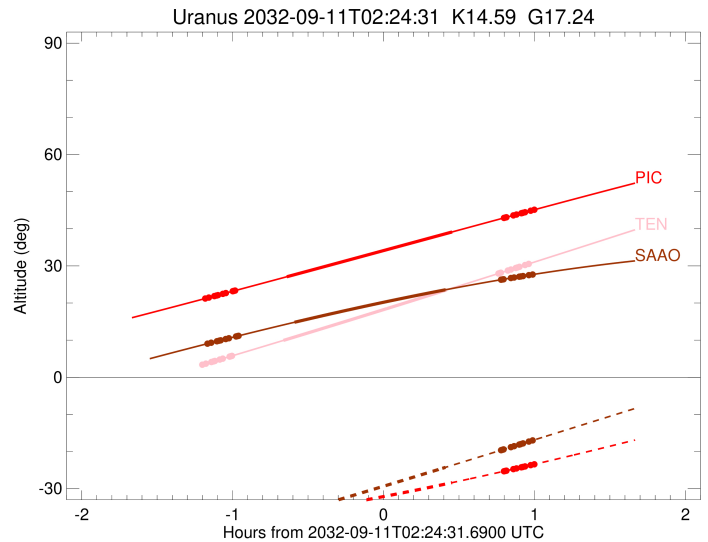
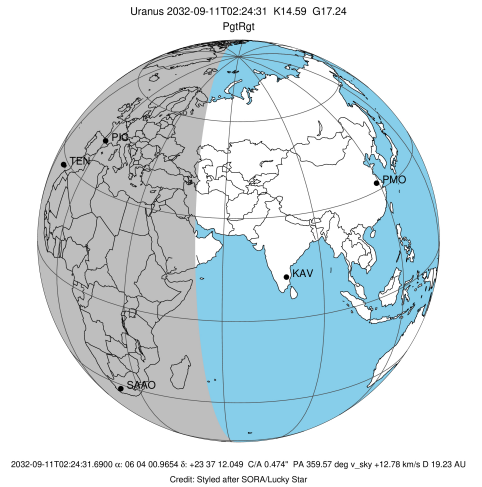
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-09-11T02:17:11.610
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 3424682475155792512
 2Mass ID (if available) : 06040096+2337120
 ICRS Star Coord at Epoch: 06h 04m 00.96538s +23:37:12.04896s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 14.590
 G magnitude : 17.235
 RP magnitude : 16.417
 BP magnitude : 17.965
 DUPflag : 0
 Distance (au) : 19.229
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 12.78
 Sun-Target sep (deg) : 77.54
 Sun-Moon sep (deg) : 146.60
 B (ring opening deg) : 74.58
 PA of pole (deg) : 59.26
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.298
 C/A sky separation (km) : 4158.0
 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	2032-09-11T01:12:53.478		3.46x	-57.37	50851.80	-13.19		
lambda	I	2032-09-11T01:13:56.055		3.67x	-57.35	50026.71	-13.18		
delta	I	2032-09-11T01:16:07.049		4.11x	-57.31	48300.35	-13.17		
gamma	I	2032-09-11T01:16:57.820		4.28x	-57.29	47631.53	-13.17		
eta	I	2032-09-11T01:17:32.399		4.39x	-57.27	47176.12	-13.17		
beta	I	2032-09-11T01:19:26.016		4.78x	-57.22	45681.20	-13.16		
alpha	I	2032-09-11T01:20:36.357		5.01	-57.18	44752.38	-13.16		
4	I	2032-09-11T01:23:23.783		5.58	-57.09	42547.90	-13.14		
5	I	2032-09-11T01:23:43.155		5.64	-57.08	42305.84	-13.14		
6	I	2032-09-11T01:24:18.280		5.76	-57.05	41846.64	-13.14		
Uranus	I	2032-09-11T01:44:42.930		9.92	-55.93	25226.77		11.91	12.46
Uranus	E	2032-09-11T02:49:38.935		23.54	-48.51	25076.96		-14.46	-15.12
6	E	2032-09-11T03:10:12.085		27.94	-45.27	41836.36	12.91		
5	E	2032-09-11T03:10:37.054		28.03	-45.20	42158.08	12.91		
4	E	2032-09-11T03:11:11.399		28.16	-45.11	42586.31	12.91		
alpha	E	2032-09-11T03:13:53.669		28.74	-44.66	44684.93	12.91		
beta	E	2032-09-11T03:15:07.485		29.00	-44.45	45641.23	12.91		
eta	E	2032-09-11T03:17:06.449		29.43	-44.12	47176.12	12.91		
gamma	E	2032-09-11T03:17:40.925		29.56	-44.02	47621.21	12.91		
delta	E	2032-09-11T03:18:33.530		29.75	-43.87	48300.35	12.91		
lambda	E	2032-09-11T03:20:47.258		30.23	-43.49	50026.71	12.91		
epsilon	E	2032-09-11T03:22:40.333		30.63	-43.16	51486.33	12.91		

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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2032-09-11T02:19:22.980
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       : 3424682475155792512
2Mass ID (if available) : 06040096+2337120
ICRS Star Coord at Epoch: 06h 04m 00.96538s +23:37:12.04896s
RUWE (>1.4 is poor) : 1.06
K magnitude           : 14.590
G magnitude           : 17.235
RP magnitude          : 16.417
BP magnitude          : 17.965
DUPflag              : 0
Distance (au)        : 19.229
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : 12.78
Sun-Target sep (deg) : 77.54
Sun-Moon sep (deg)   : 146.77
B (ring opening deg) : 74.58
PA of pole (deg)     : 59.26
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.809
C/A sky separation (km) : 11281.7
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	2032-09-11T01:14:54.154		9.11	-43.11	50894.75	-12.66		
lambda	I	2032-09-11T01:16:02.876		9.31	-42.90	50026.71	-12.62		
delta	I	2032-09-11T01:18:19.786		9.70	-42.47	48300.35	-12.59		
gamma	I	2032-09-11T01:19:12.912		9.85	-42.30	47631.58	-12.58		
eta	I	2032-09-11T01:19:49.123		9.96	-42.19	47176.12	-12.57		
beta	I	2032-09-11T01:21:48.247		10.30	-41.81	45680.76	-12.54		
alpha	I	2032-09-11T01:23:02.142		10.51	-41.58	44751.61	-12.52		
4	I	2032-09-11T01:25:58.809		11.00	-41.02	42541.50	-12.47		
5	I	2032-09-11T01:26:19.101		11.06	-40.95	42298.13	-12.46		
6	I	2032-09-11T01:26:55.032		11.16	-40.84	41853.83	-12.46		
Uranus	I	2032-09-11T01:49:07.429		14.81	-36.50	25386.39		8.51	8.91
Uranus	E	2032-09-11T02:49:12.271		23.57	-24.26	25016.32		-15.39	-16.09
6	E	2032-09-11T03:11:14.810		26.28	-19.65	41843.59	12.30		
5	E	2032-09-11T03:11:40.072		26.33	-19.56	42155.37	12.30		
4	E	2032-09-11T03:12:15.863		26.40	-19.44	42578.96	12.30		
alpha	E	2032-09-11T03:15:06.475		26.72	-18.84	44686.08	12.35		
beta	E	2032-09-11T03:16:23.590		26.86	-18.57	45641.88	12.36		
eta	E	2032-09-11T03:18:27.663		27.09	-18.14	47176.12	12.39		
gamma	E	2032-09-11T03:19:03.613		27.16	-18.01	47621.51	12.39		
delta	E	2032-09-11T03:19:58.370		27.26	-17.82	48300.35	12.40		
lambda	E	2032-09-11T03:22:17.444		27.51	-17.33	50026.71	12.42		
epsilon	E	2032-09-11T03:24:17.085		27.72	-16.91	51514.18	12.45		