

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-08-13T02:34:34.000
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3424867120093520640
 2Mass ID (if available) : 05595163+2336515

Uranus 2032-08-13T02:34:34 K11.93 G13.50 PgtRgt

ICRS Star Coord at Epoch: 05h 59m 51.63615s +23:36:51.61774s

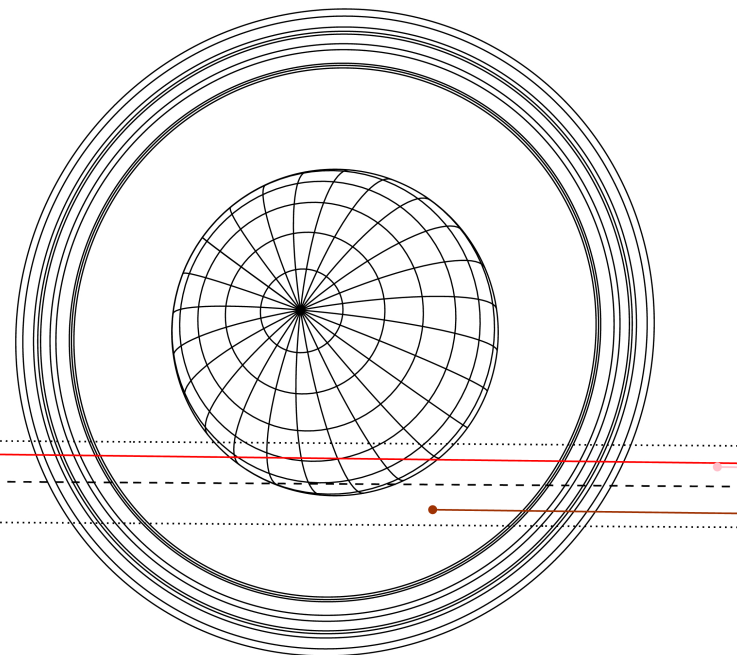
RUWE (>1.4 is poor) : 1.18
 K magnitude : 11.926
 G magnitude : 13.502
 RP magnitude : 12.933
 BP magnitude : 13.880
 DUPflag : 0
 Distance (au) : 19.671
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.31
 Sun-Target sep (deg) : 50.50
 Sun-Moon sep (deg) : 126.28
 B (ring opening deg) : 75.40
 PA of pole (deg) : 56.99

Uranus 2032-08-13T02:34:34 K11.93 G13.50
 PgtRgt



2032-08-13T02:34:34.000000 ex: 05 59 51.6361 8: +23 36 51.618 C/A 1.6577 PA 359.62 deg v_sky +25.31 km/s D 19.67 AU
 Credit: Styled after SORA/Lucky Star

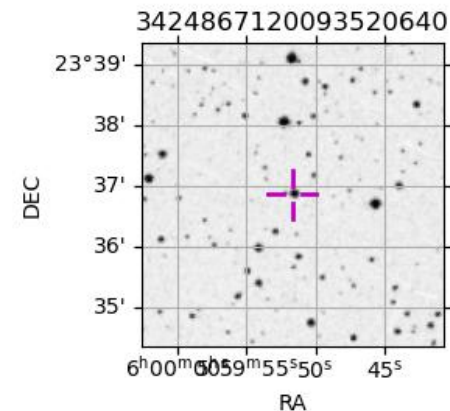
Earth
 PIC
 TEN
 SAAO



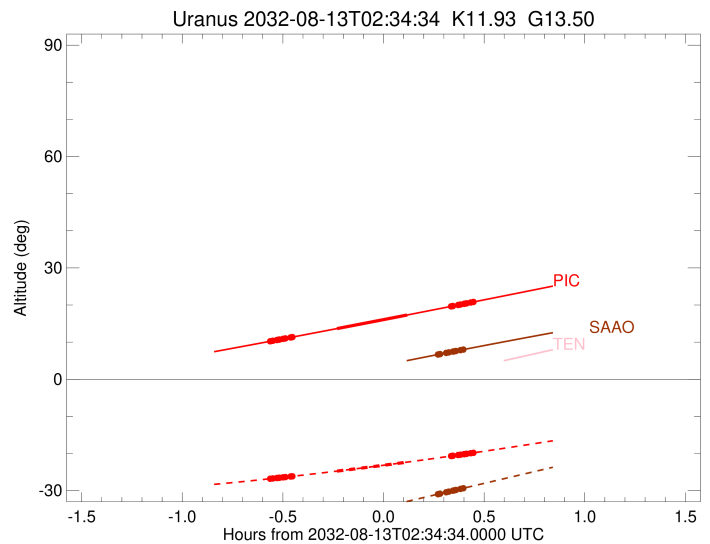
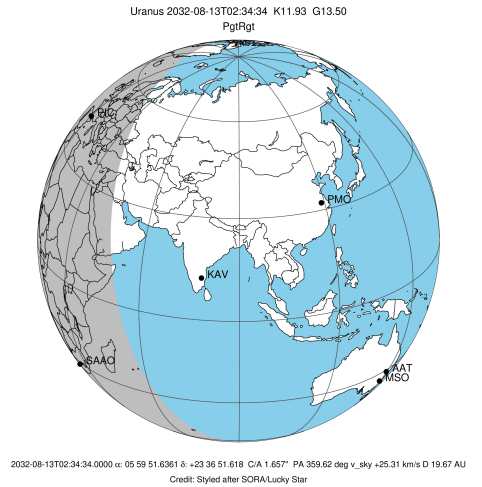
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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	+++++	+ +	+++++	AUG 13 02:00 - AUG 13 03:01	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					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			+++++	AUG 13 02:50 - AUG 13 02:58	PnnRne
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



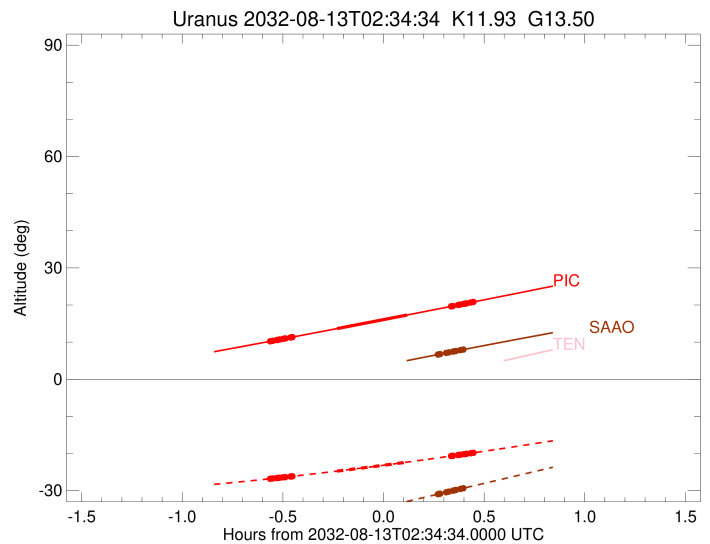
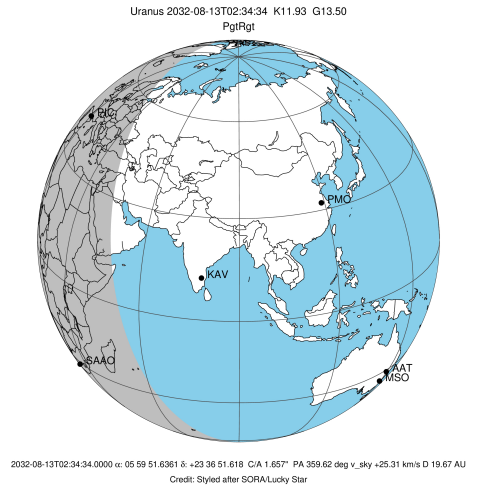
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-08-13T02:31:25.400
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3424867120093520640
 2Mass ID (if available) : 05595163+2336515
 ICRS Star Coord at Epoch: 05h 59m 51.63615s +23:36:51.61774s
 RUWE (>1.4 is poor) : 1.18
 K magnitude : 11.926
 G magnitude : 13.502
 RP magnitude : 12.933
 BP magnitude : 13.880
 DUPflag : 0
 Distance (au) : 19.671
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.31
 Sun-Target sep (deg) : 50.50
 Sun-Moon sep (deg) : 126.09
 B (ring opening deg) : 75.40
 PA of pole (deg) : 56.99
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.383
 C/A sky separation (km) : 19726.0
 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	2032-08-13T02:00:43.848		10.22	-26.80	51228.38	-24.00		
lambda	I	2032-08-13T02:01:34.190		10.37	-26.72	50026.71	-23.82		
delta	I	2032-08-13T02:02:46.926		10.57	-26.60	48300.35	-23.65		
gamma	I	2032-08-13T02:03:15.370		10.65	-26.56	47628.63	-23.58		
eta	I	2032-08-13T02:03:34.581		10.71	-26.52	47176.12	-23.53		
beta	I	2032-08-13T02:04:39.123		10.89	-26.42	45663.44	-23.35		
alpha	I	2032-08-13T02:05:19.596		11.01	-26.35	44719.48	-23.23		
4	I	2032-08-13T02:06:54.082		11.27	-26.19	42536.19	-22.94		
5	I	2032-08-13T02:07:09.758		11.32	-26.17	42184.75	-22.86		
6	I	2032-08-13T02:07:23.137		11.36	-26.14	41875.31	-22.82		
Uranus	I	2032-08-13T02:20:44.028		13.66	-24.74	25550.27		1.79	1.88
Uranus	E	2032-08-13T02:41:36.961		17.31	-22.32	25070.40		-13.74	-14.37
6	E	2032-08-13T02:54:41.487		19.63	-20.68	41800.64	22.74		
5	E	2032-08-13T02:54:58.999		19.68	-20.65	42210.56	22.78		
4	E	2032-08-13T02:55:16.817		19.73	-20.61	42614.69	22.86		
alpha	E	2032-08-13T02:56:47.000		20.00	-20.41	44690.86	23.14		
beta	E	2032-08-13T02:57:28.132		20.12	-20.33	45644.03	23.27		
eta	E	2032-08-13T02:58:33.746		20.32	-20.18	47176.12	23.44		
gamma	E	2032-08-13T02:58:52.712		20.38	-20.14	47621.12	23.49		
delta	E	2032-08-13T02:59:21.588		20.46	-20.08	48300.35	23.56		
lambda	E	2032-08-13T03:00:34.620		20.68	-19.92	50026.71	23.72		
epsilon	E	2032-08-13T03:01:31.312		20.85	-19.80	51374.60	23.90		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2032-08-13T02:31:07.140
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       : 3424867120093520640
2Mass ID (if available) : 05595163+2336515
ICRS Star Coord at Epoch: 05h 59m 51.63615s +23:36:51.61774s
RUWE (>1.4 is poor) : 1.18
K magnitude           : 11.926
G magnitude           : 13.502
RP magnitude          : 12.933
BP magnitude          : 13.880
DUPflag              : 0
Distance (au)        : 19.671
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : 25.31
Sun-Target sep (deg) : 50.50
Sun-Moon sep (deg)   : 125.90
B (ring opening deg) : 75.40
PA of pole (deg)     : 56.99
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.932
C/A sky separation (km) : 27558.7
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall11.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall11.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.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	2032-08-13T02:02:45.284		-2.15x	-41.07	51296.01	-21.80		
lambda	I	2032-08-13T02:03:44.108		-1.97x	-40.87	50026.71	-21.46		
delta	I	2032-08-13T02:05:05.218		-1.71x	-40.59	48300.35	-21.10		
gamma	I	2032-08-13T02:05:37.207		-1.61x	-40.48	47627.68	-20.95		
eta	I	2032-08-13T02:05:58.812		-1.54x	-40.40	47176.12	-20.85		
beta	I	2032-08-13T02:07:12.247		-1.31x	-40.14	45659.37	-20.46		
alpha	I	2032-08-13T02:07:58.767		-1.17x	-39.98	44712.41	-20.19		
4	I	2032-08-13T02:09:47.863		-0.82x	-39.60	42543.47	-19.53		
5	I	2032-08-13T02:10:07.208		-0.76x	-39.53	42171.93	-19.37		
6	I	2032-08-13T02:10:22.742		-0.72x	-39.48	41869.98	-19.27		

No planet occultations

6	E	2032-08-13T02:50:46.561	6.66	-30.96	41806.57	19.21
5	E	2032-08-13T02:51:06.119	6.72	-30.89	42193.87	19.31
4	E	2032-08-13T02:51:27.543	6.78	-30.82	42610.71	19.47
alpha	E	2032-08-13T02:53:12.354	7.09	-30.45	44687.37	20.12
beta	E	2032-08-13T02:53:59.595	7.23	-30.28	45642.25	20.39
eta	E	2032-08-13T02:55:14.129	7.45	-30.02	47176.12	20.77
gamma	E	2032-08-13T02:55:35.495	7.51	-29.94	47620.96	20.87
delta	E	2032-08-13T02:56:07.929	7.61	-29.83	48300.35	21.02
lambda	E	2032-08-13T02:57:29.365	7.84	-29.54	50026.71	21.37
epsilon	E	2032-08-13T02:58:34.627	8.03	-29.31	51429.86	21.71