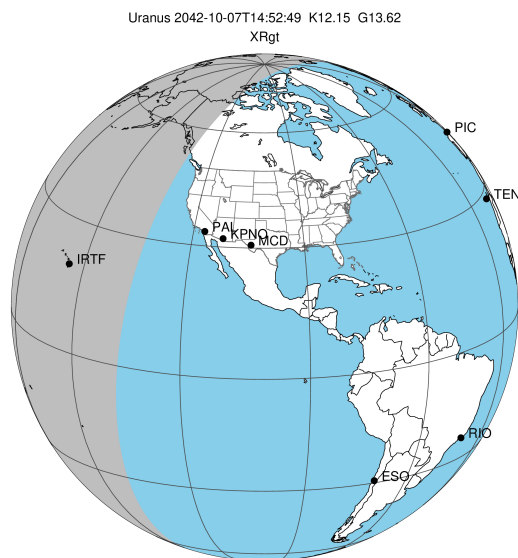


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2042-10-07T14:52:49.830
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 631926514015495424
 2Mass ID (if available) : 09141640+1641077

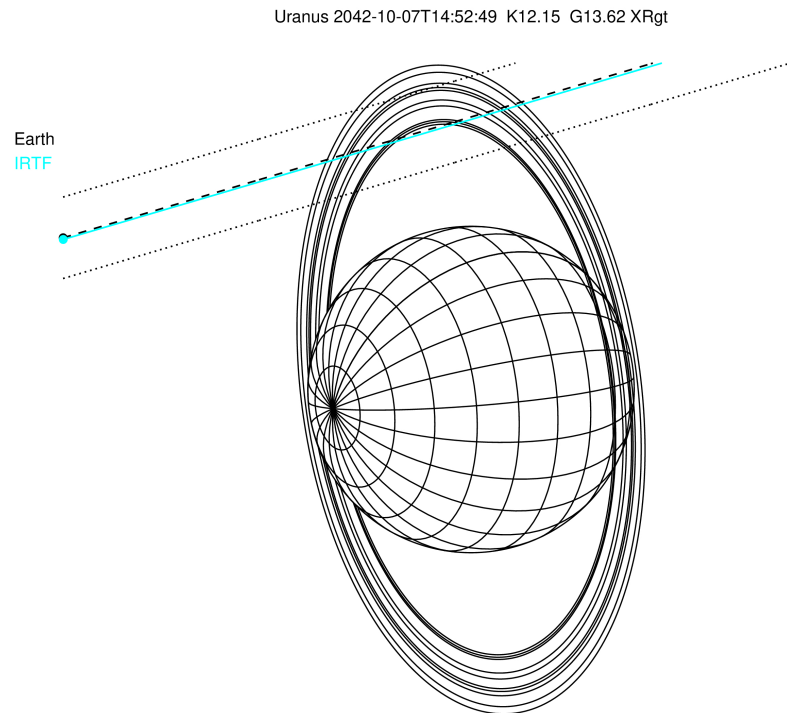
ICRS Star Coord at Epoch: 09h 14m 16.42577s +16:41:07.55434s

RUWE (>1.4 is poor) : 0.98
 K magnitude : 12.153
 G magnitude : 13.617
 RP magnitude : 13.111
 BP magnitude : 13.957
 DUPflag : 0
 Distance (au) : 18.964
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 22.46
 Sun-Target sep (deg) : 57.98
 Sun-Moon sep (deg) : 14.55
 B (ring opening deg) : 31.31
 PA of pole (deg) : 97.90

#	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

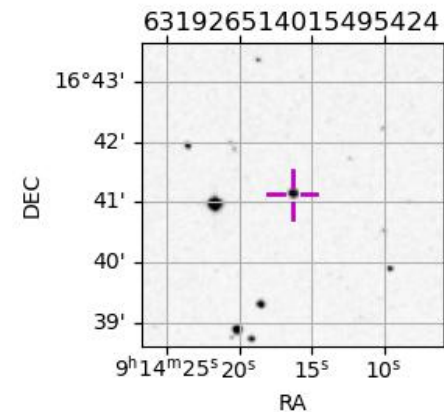


2042-10-07T14:52:49.8300 ex: 09 14 16.4258 s: +16 41 07.554 C/A 2.977 PA 196.50 deg v_sky +22.46 km/s D 18.96 AU
 Credit: Styled after SORA/Lucky Star



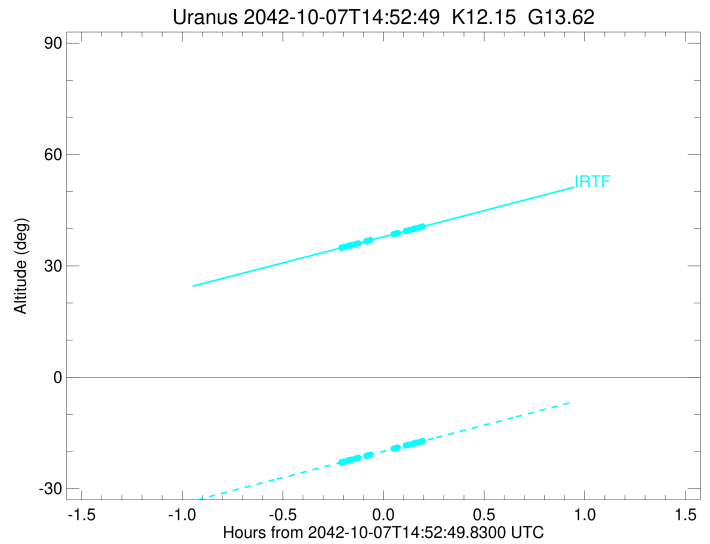
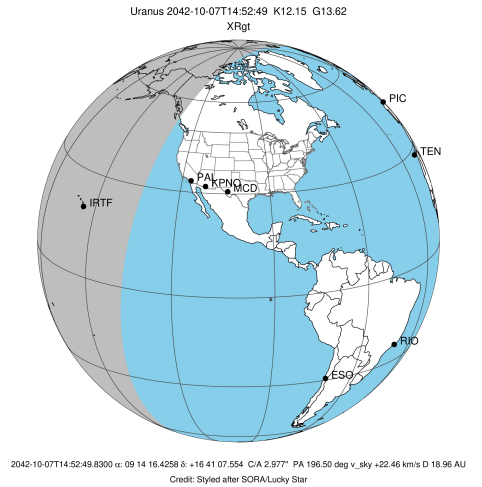
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
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	+++++		+++++	OCT 07 14:40 - OCT 07 15:04	PnnRie
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					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2042-10-07T14:49:05.710
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      : 631926514015495424
2Mass ID (if available) : 09141640+1641077
ICRS Star Coord at Epoch: 09h 14m 16.42577s +16:41:07.55434s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 12.153
G magnitude          : 13.617
RP magnitude         : 13.111
BP magnitude         : 13.957
DUPflag             : 0
Distance (au)       : 18.964
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : 22.46
Sun-Target sep (deg) : 57.98
Sun-Moon sep (deg)  : 14.03
B (ring opening deg) : 31.31
PA of pole (deg)    : 97.90
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.949
C/A sky separation (km) : 40555.9
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	2042-10-07T14:40:35.599		34.96	-22.84	50749.33	-25.05		
lambda	I	2042-10-07T14:41:04.784		35.08	-22.72	50026.71	-24.41		
delta	I	2042-10-07T14:42:18.252		35.36	-22.44	48300.35	-22.55		
gamma	I	2042-10-07T14:42:48.500		35.48	-22.32	47630.68	-21.72		
eta	I	2042-10-07T14:43:09.715		35.56	-22.23	47176.12	-21.12		
beta	I	2042-10-07T14:44:24.328		35.86	-21.94	45679.44	-18.88		
alpha	I	2042-10-07T14:45:19.250		36.07	-21.73	44684.85	-17.07		
4	I	2042-10-07T14:47:49.785		36.66	-21.14	42530.00	-11.60		
5	I	2042-10-07T14:48:24.688		36.80	-21.00	42159.30	-10.22		
6	I	2042-10-07T14:49:00.947		36.94	-20.86	41816.34	-8.84		

No planet occultations

6	E	2042-10-07T14:55:51.876		38.54	-19.25	41833.24	8.84		
5	E	2042-10-07T14:56:26.167		38.68	-19.11	42155.75	10.21		
4	E	2042-10-07T14:56:58.938		38.81	-18.98	42526.30	11.60		
alpha	E	2042-10-07T14:59:29.642		39.40	-18.39	44698.71	17.05		
beta	E	2042-10-07T15:00:24.335		39.61	-18.18	45678.79	18.86		
eta	E	2042-10-07T15:01:39.365		39.90	-17.88	47176.12	21.09		
gamma	E	2042-10-07T15:02:00.386		39.99	-17.80	47625.75	21.69		
delta	E	2042-10-07T15:02:30.910		40.11	-17.68	48300.35	22.51		
lambda	E	2042-10-07T15:03:44.508		40.39	-17.39	50026.71	24.37		
epsilon	E	2042-10-07T15:04:22.263		40.54	-17.24	50963.48	25.01		