

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2039-02-11T19:53:01.100  
 Event type : XRT  
 : No Uranus occs  
 : Ring occs: topocentric, not geocentric  
 Gaia source ID : 674573954421845376  
 2Mass ID (if available) : 07484510+2138506

ICRS Star Coord at Epoch: 07h 48m 45.09256s +21:38:50.83291s

RUWE (>1.4 is poor) : 1.04  
 K magnitude : 14.144  
 G magnitude : 16.229  
 RP magnitude : 15.576  
 BP magnitude : 16.737  
 DUPflag : 0  
 Distance (au) : 17.758  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -19.96  
 Sun-Target sep (deg) : 152.73  
 Sun-Moon sep (deg) : 61.27  
 B (ring opening deg) : 51.72  
 PA of pole (deg) : 87.23

# a(km) ring

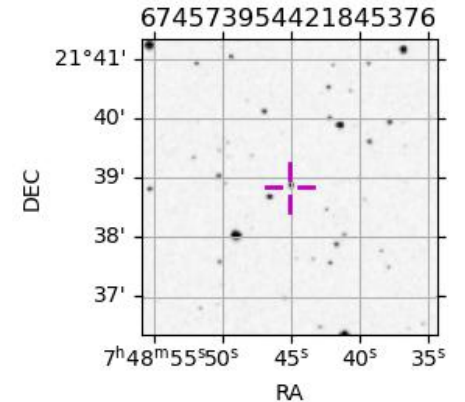
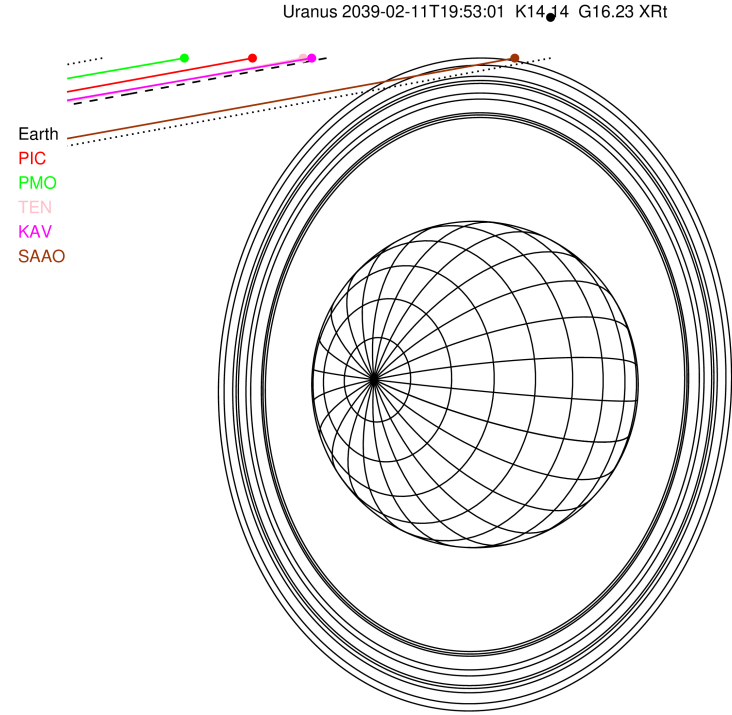
- 1 41837.2 6
- 2 42235.0 5
- 3 42571.2 4
- 4 44718.5 alpha
- 5 45661.1 beta
- 6 47176.1 eta
- 7 47626.3 gamma
- 8 48300.3 delta
- 9 50026.7 lambda
- 10 51149.4 epsilon

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					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					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	++		++	FEB 11 19:43 - FEB 11 19:56	PnnRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn

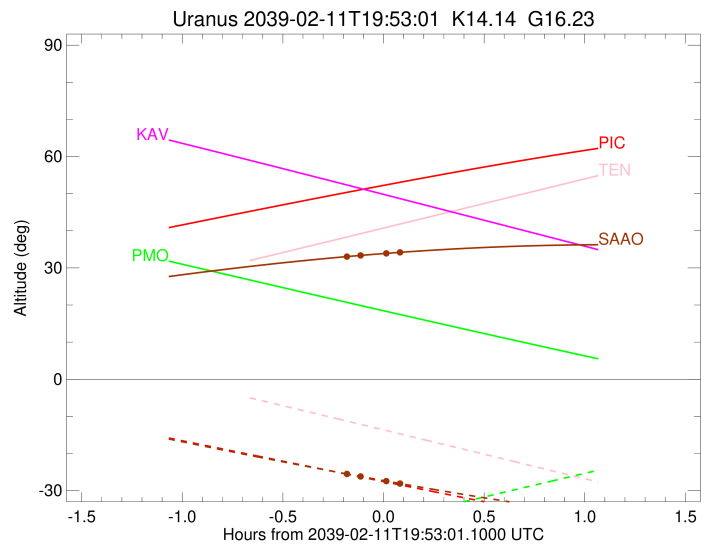
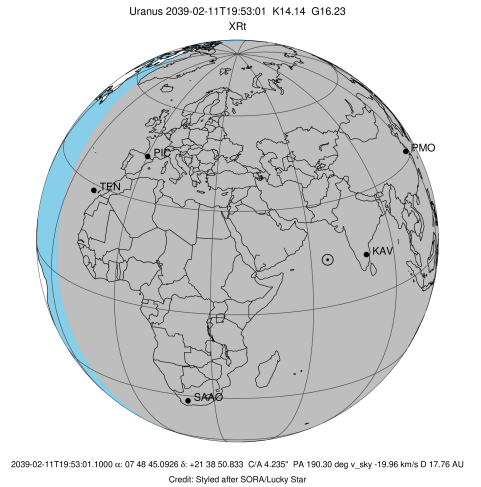


2039-02-11T19:53:01.1000 α: 07 48 45.0926 δ: +21 38 50.833 C/A 4.235° PA 190.30 deg v\_sky -19.96 km/s D 17.76 AU  
 Credit: Styled after SORA/Lucky Star



```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2039-02-11T19:53:28.500
Event type          : XRt
                    : No Uranus occs
                    : Ring occs: topocentric, not geocentric
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      : 674573954421845376
2Mass ID (if available) : 07484510+2138506
ICRS Star Coord at Epoch: 07h 48m 45.09256s +21:38:50.83291s
RUWE (>1.4 is poor) : 1.04
K magnitude          : 14.144
G magnitude          : 16.229
RP magnitude         : 15.576
BP magnitude         : 16.737
DUPflag             : 0
Distance (au)       : 17.758
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -19.96
Sun-Target sep (deg) : 152.73
Sun-Moon sep (deg)  : 61.83
B (ring opening deg) : 51.72
PA of pole (deg)    : 87.23
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.820
C/A sky separation (km) : 49194.0
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_itrf93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
    
```



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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
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epsilon   I 2039-02-11T19:43:16.550  33.14 -25.70  50766.07 -5.18
lambda    I 2039-02-11T19:46:16.189  33.37 -26.19  50026.71 -2.96

No planet occultations

lambda    E 2039-02-11T19:53:46.253  33.91 -27.42  50026.71  2.96
epsilon   E 2039-02-11T19:56:41.783  34.11 -27.89  50744.77  5.19
    
```