

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2024-11-15T09:59:14.470  
 Event type : XRT  
 : No Uranus occs  
 : Ring occs: topocentric, not geocentric  
 Gaia source ID : 56716387470845824  
 2Mass ID (if available) : 033042226+1844561

ICRS Star Coord at Epoch: 03h 30m 42.24199s +18:44:55.86497s

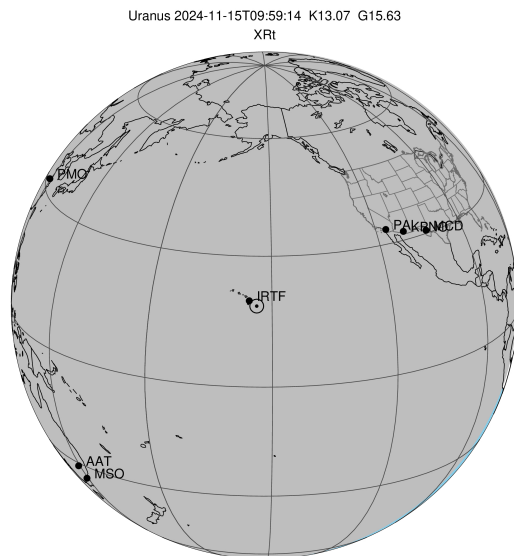
RUWE (>1.4 is poor) : 1.81  
 K magnitude : 13.069  
 G magnitude : 15.633  
 RP magnitude : 14.816  
 BP magnitude : 16.283  
 DUPflag : 0  
 Distance (au) : 18.573  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.41  
 Sun-Target sep (deg) : 178.21  
 Sun-Moon sep (deg) : 9.20  
 B (ring opening deg) : 66.19  
 PA of pole (deg) : -85.16

# 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

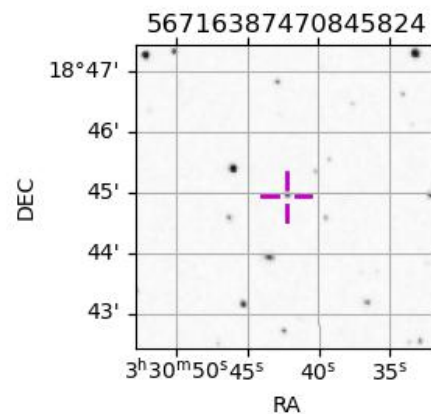
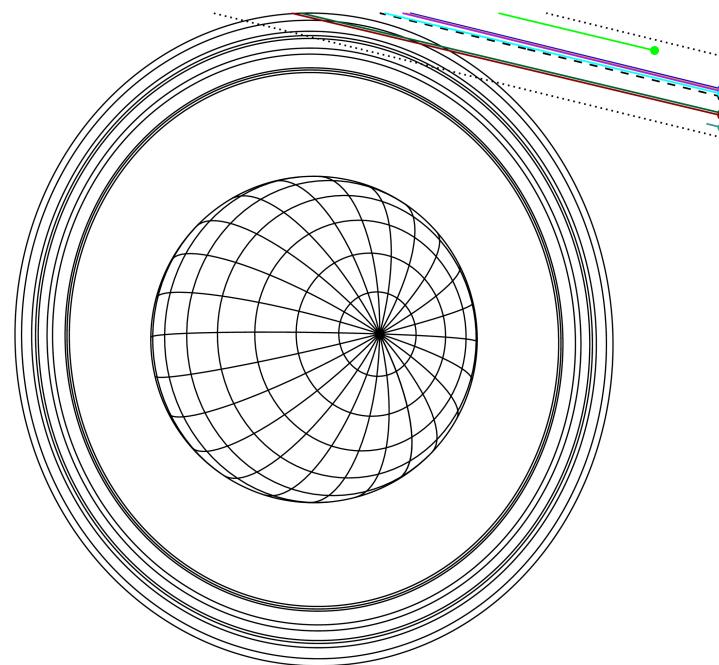
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide 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	++			NOV 15 09:56 - NOV 15 10:13	PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	++			NOV 15 09:55 - NOV 15 10:13	PnnRie



2024-11-15T09:59:14.4700 ra: 03 30 42.2420 s: +18 44 55.865 C/A 3.870° PA 166.25 deg v\_sky -23.41 km/s D 18.57 AU  
 Credit: Styled after SORA/Lucky Star

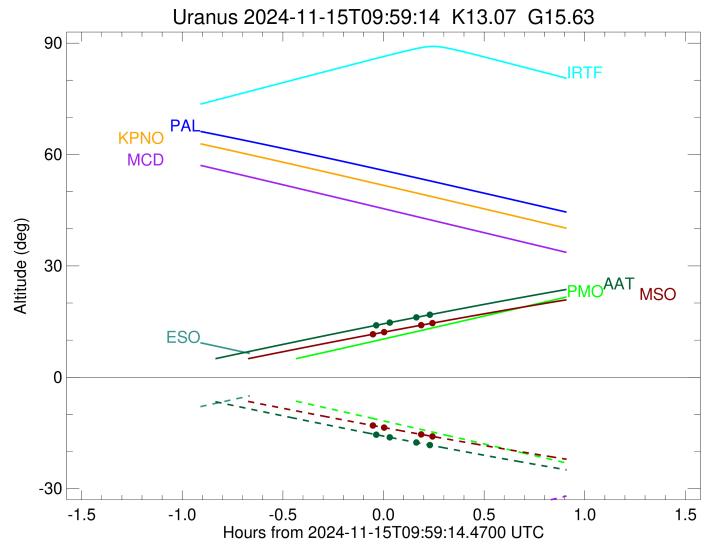
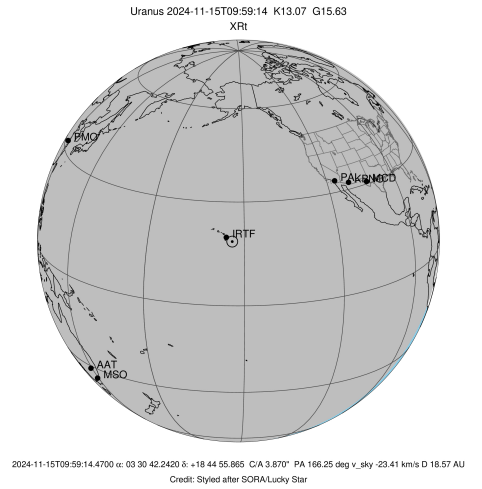
Earth  
 PAL  
 PMO  
 KPNO  
 MCD  
 IRTF  
 ESO  
 AAT  
 MSO

Uranus 2024-11-15T09:59:14 K13.07 G15.63 XRT



```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2024-11-15T10:03:21.480
Event type          : XRt
                    : No Uranus occs
                    : Ring occs: topocentric, not geocentric
Observer code       : AAT
Location            : Siding Spring (AAT)
Latitude (deg)      : -31.27703
E. Longitude (deg)  : 149.06608
Altitude (km)       : 1.164
Gaia source ID      : 56716387470845824
2Mass ID (if available) : 03304226+1844561
ICRS Star Coord at Epoch: 03h 30m 42.24199s +18:44:55.86497s
RUWE (>1.4 is poor) : 1.81
K magnitude         : 13.069
G magnitude         : 15.633
RP magnitude        : 14.816
BP magnitude        : 16.283
DUPflag            : 0
Distance (au)       : 18.573
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : -23.41
Sun-Target sep (deg) : 178.21
Sun-Moon sep (deg)  : 8.65
B (ring opening deg) : 66.19
PA of pole (deg)    : -85.16
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.657
C/A sky separation (km) : 49257.6
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
  
```

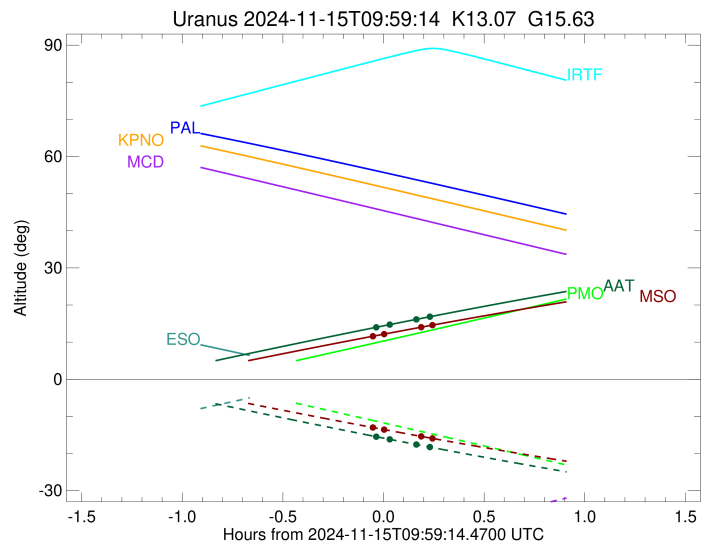
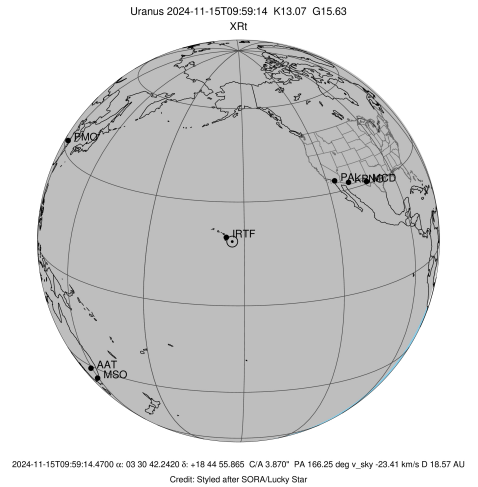


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2024-11-15T09:56:26.088		13.88	-15.35	51406.77	-6.44		
lambda	I	2024-11-15T10:01:10.898		14.74	-16.19	50026.71	-3.05		

No planet occultations

lambda	E	2024-11-15T10:08:57.512		16.12	-17.56	50026.71	3.05		
epsilon	E	2024-11-15T10:13:13.202		16.87	-18.29	51221.16	6.45		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2024-11-15T10:03:15.360  
 Event type : XRt  
 : No Uranus occs  
 : Ring occs: topocentric, not geocentric  
 Observer code : MSO  
 Location : Mt. Stromlo Observatory  
 Latitude (deg) : -35.32000  
 E. Longitude (deg) : 149.00833  
 Altitude (km) : 0.770  
 Gaia source ID : 56716387470845824  
 2Mass ID (if available) : 03304226+1844561  
 ICRS Star Coord at Epoch: 03h 30m 42.24199s +18:44:55.86497s  
 RUWE (>1.4 is poor) : 1.81  
 K magnitude : 13.069  
 G magnitude : 15.633  
 RP magnitude : 14.816  
 BP magnitude : 16.283  
 DUPflag : 0  
 Distance (au) : 18.573  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.41  
 Sun-Target sep (deg) : 178.21  
 Sun-Moon sep (deg) : 8.69  
 B (ring opening deg) : 66.19  
 PA of pole (deg) : -85.16  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.631  
 C/A sky separation (km) : 48907.5  
 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



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	2024-11-15T09:55:28.903		11.49	-12.90	51414.93	-7.08		
lambda	I	2024-11-15T09:59:29.154		12.17	-13.57	50026.71	-4.29		

No planet occultations

lambda	E	2024-11-15T10:10:25.753		14.02	-15.38	50026.71	4.29		
epsilon	E	2024-11-15T10:13:56.887		14.60	-15.96	51210.84	7.09		