

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2041-02-14T21:48:53.680  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 662998472099870720  
 2Mass ID (if available) : 08282237+1943579

ICRS Star Coord at Epoch: 08h 28m 22.35497s +19:43:57.72488s

RUWE (>1.4 is poor) : 1.00  
 K magnitude : 13.408  
 G magnitude : 15.680  
 RP magnitude : 14.952  
 BP magnitude : 16.273  
 DUPflag : 0  
 Distance (au) : 17.609  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -21.15  
 Sun-Target sep (deg) : 158.57  
 Sun-Moon sep (deg) : 9.50  
 B (ring opening deg) : 42.45  
 PA of pole (deg) : 92.80

# a(km) ring

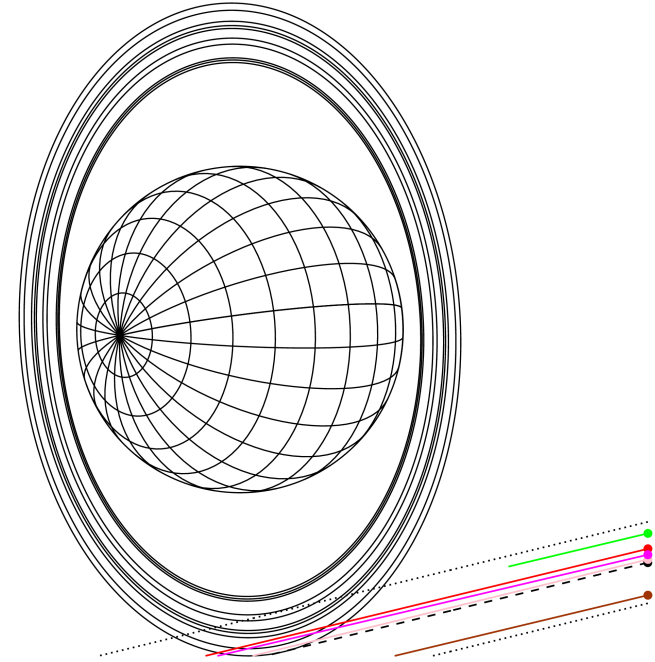
- 1 41837.2 6
- 2 42235.0 5
- 3 42571.2 4
- 4 44718.5 alpha
- 5 45661.1 beta
- 6 47176.1 eta
- 7 47626.3 gamma
- 8 48300.3 delta
- 9 50026.7 lambda
- 10 51149.4 epsilon



2041-02-14T21:48:53.6800 α: 08 28 22.3550 δ: +19 43 57.725 C/A 3.956° PA 13.72 deg v\_sky -21.15 km/s D 17.61 AU  
 Credit: Styled after SORA/Lucky Star

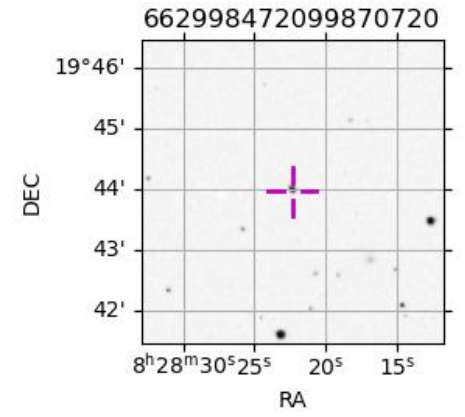
Earth  
 PIC  
 PMO  
 TEN  
 KAV  
 SAAO

Uranus 2041-02-14T21:48:53 K13.41 G15.68 XRgt

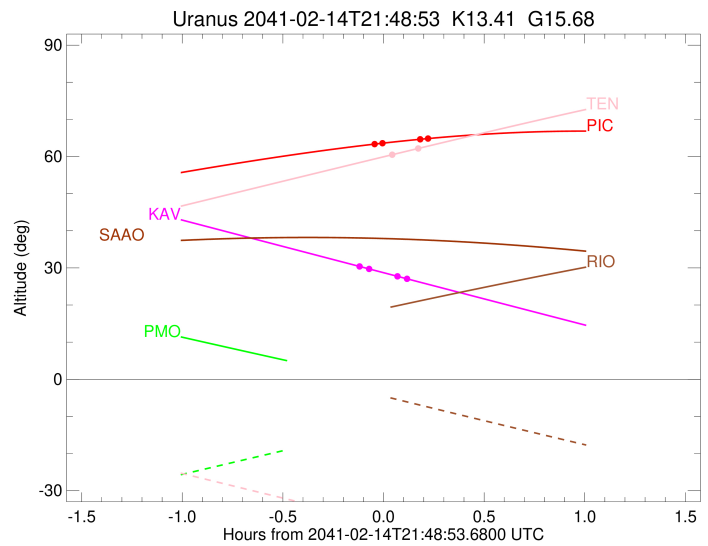
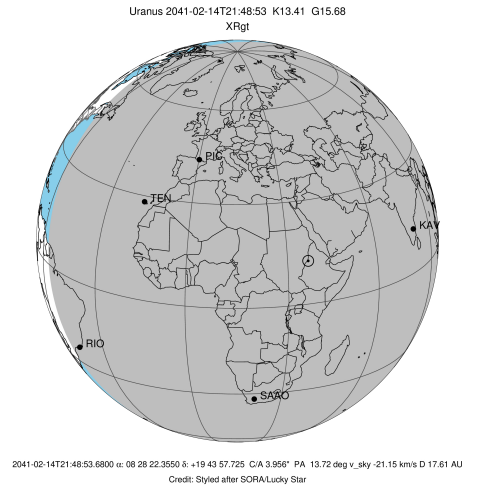


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	++		++	FEB 14 21:46 - FEB 14 22:02	PnnRie
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	+		+	FEB 14 21:51 - FEB 14 21:59	PnnRie
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8	++		++	FEB 14 21:41 - FEB 14 21:56	PnnRie
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 : 2041-02-14T21:50:22.490  
 Event type : XRgt  
 : No Uranus occs  
 : 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 : 662998472099870720  
 2Mass ID (if available) : 08282237+1943579  
 ICRS Star Coord at Epoch: 08h 28m 22.35497s +19:43:57.72488s  
 RUWE (>1.4 is poor) : 1.00  
 K magnitude : 13.408  
 G magnitude : 15.680  
 RP magnitude : 14.952  
 BP magnitude : 16.273  
 DUPflag : 0  
 Distance (au) : 17.609  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -21.15  
 Sun-Target sep (deg) : 158.57  
 Sun-Moon sep (deg) : 9.73  
 B (ring opening deg) : 42.45  
 PA of pole (deg) : 92.80  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.791  
 C/A sky separation (km) : 48415.6  
 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\_itrf93\_040916.bsp  
 earth\_720101\_070426.bpc  
 earth\_200101\_990628\_predict.bpc  
 pg3f0000r.bsp  
 pg490000r.bsp  
 naif0012.tls  
 earth\_flat\_IAU.spk

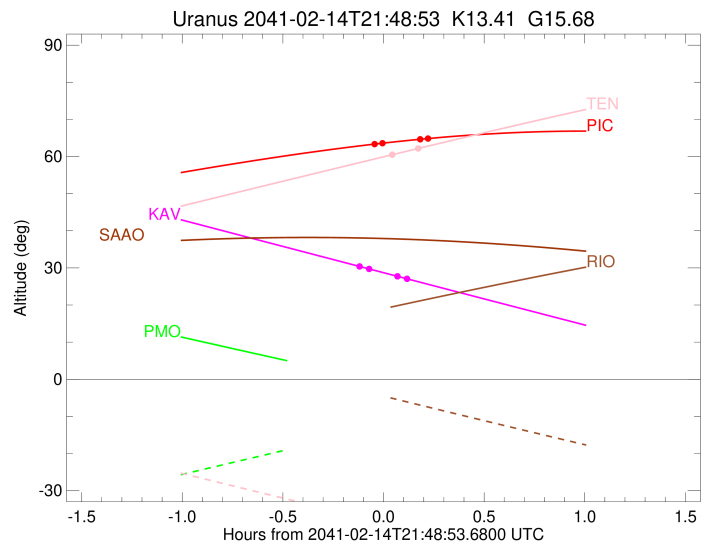
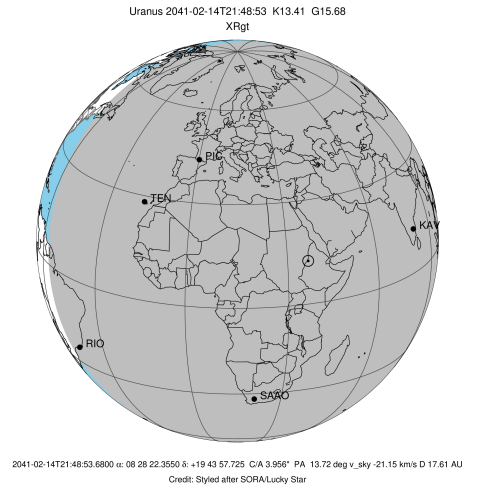


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2041-02-14T21:46:15.556		63.35	-46.26	51156.11	-9.50		
lambda	I	2041-02-14T21:48:37.227		63.59	-46.63	50026.71	-6.66		

No planet occultations

lambda	E	2041-02-14T21:59:48.103		64.64	-48.31	50026.71	6.66		
epsilon	E	2041-02-14T22:02:34.270		64.88	-48.72	51388.35	9.50		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2041-02-14T21:51:22.290  
 Event type : XRgt  
 : No Uranus occs  
 : 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 : 662998472099870720  
 2Mass ID (if available) : 08282237+1943579  
 ICRS Star Coord at Epoch: 08h 28m 22.35497s +19:43:57.72488s  
 RUWE (>1.4 is poor) : 1.00  
 K magnitude : 13.408  
 G magnitude : 15.680  
 RP magnitude : 14.952  
 BP magnitude : 16.273  
 DUPflag : 0  
 Distance (au) : 17.609  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -21.15  
 Sun-Target sep (deg) : 158.57  
 Sun-Moon sep (deg) : 10.00  
 B (ring opening deg) : 42.45  
 PA of pole (deg) : 92.80  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.925  
 C/A sky separation (km) : 50128.1  
 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

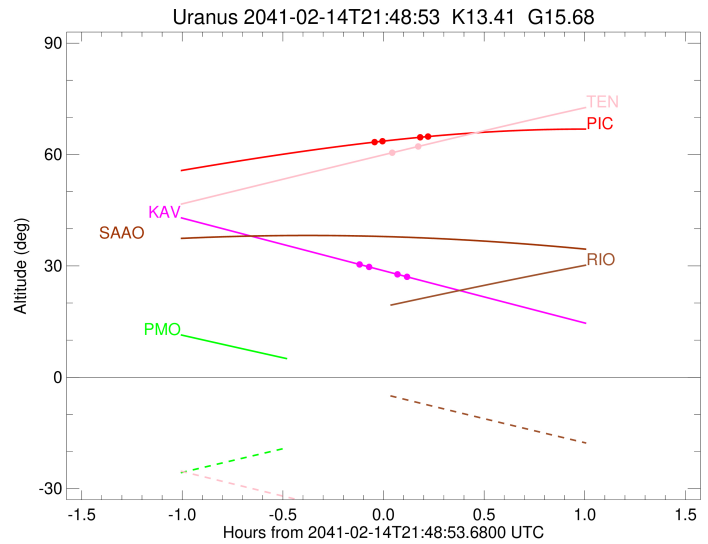
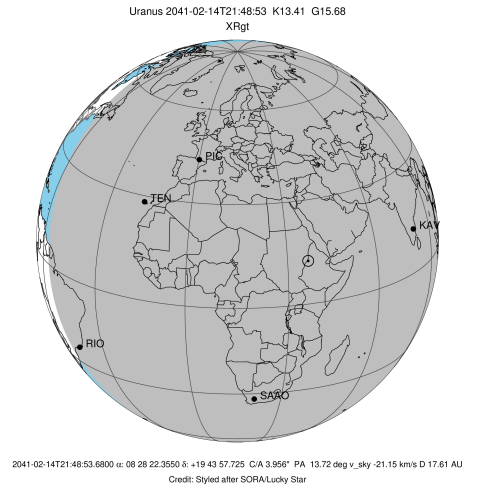


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2041-02-14T21:51:18.432		60.45	-39.12	51215.29	-4.98		

No planet occultations

epsilon	E	2041-02-14T21:59:50.856		62.30	-40.99	51337.18	4.99		
---------	---	-------------------------	--	-------	--------	----------	------	--	--

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2041-02-14T21:45:03.250  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Observer code : KAV  
 Location : Kavalur Observatory  
 Latitude (deg) : 12.57556  
 E. Longitude (deg) : 78.83167  
 Altitude (km) : 0.722  
 Gaia source ID : 662998472099870720  
 2Mass ID (if available) : 08282237+1943579  
 ICRS Star Coord at Epoch: 08h 28m 22.35497s +19:43:57.72488s  
 RUWE (>1.4 is poor) : 1.00  
 K magnitude : 13.408  
 G magnitude : 15.680  
 RP magnitude : 14.952  
 BP magnitude : 16.273  
 DUPflag : 0  
 Distance (au) : 17.609  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -21.15  
 Sun-Target sep (deg) : 158.57  
 Sun-Moon sep (deg) : 8.80  
 B (ring opening deg) : 42.45  
 PA of pole (deg) : 92.80  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.833  
 C/A sky separation (km) : 48950.8  
 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	2041-02-14T21:41:44.511		30.40	-50.26	51171.95	-8.39		
lambda	I	2041-02-14T21:44:39.380		29.71	-49.55	50026.71	-4.91		

No planet occultations

lambda	E	2041-02-14T21:53:00.790		27.74	-47.52	50026.71	4.91		
epsilon	E	2041-02-14T21:56:20.491		26.96	-46.71	51378.07	8.38		