

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-08-15T03:21:02.060
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 144669414954006912
 2Mass ID (if available) : 04295499+2143220

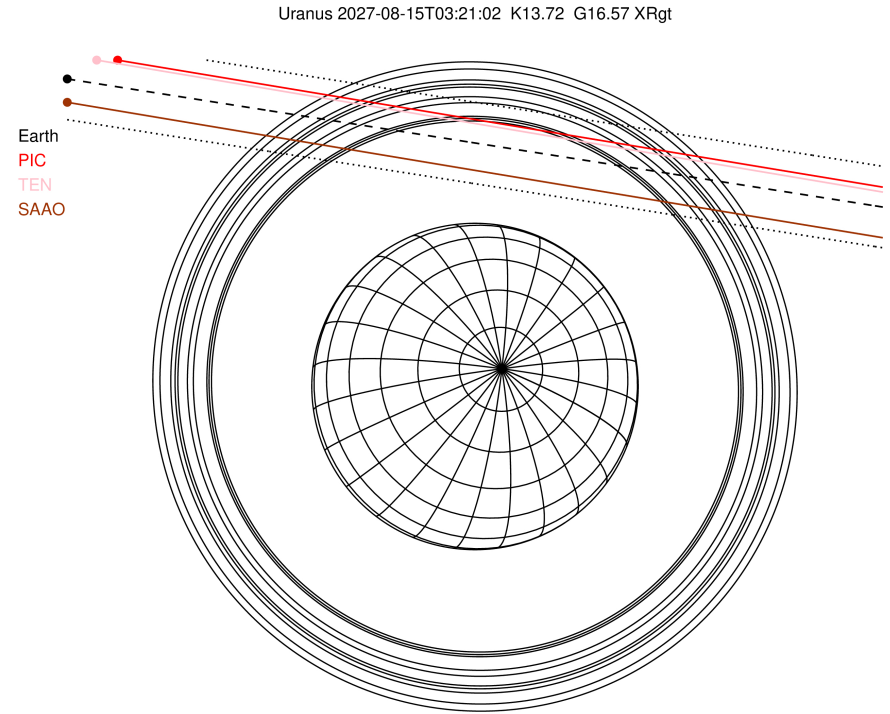
ICRS Star Coord at Epoch: 04h 29m 55.00287s +21:43:21.96256s

RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.717
 G magnitude : 16.575
 RP magnitude : 15.643
 BP magnitude : 17.266
 DUPflag : 0
 Distance (au) : 19.662
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 15.24
 Sun-Target sep (deg) : 72.57
 Sun-Moon sep (deg) : 131.00
 B (ring opening deg) : 78.61
 PA of pole (deg) : -56.57

#	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

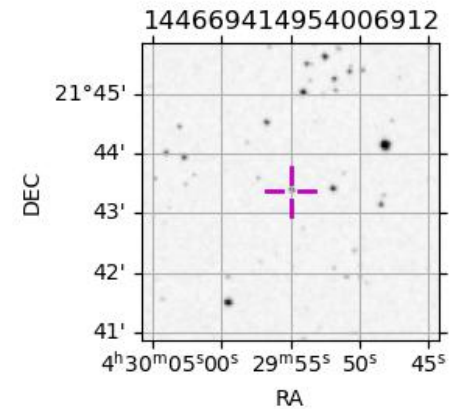


2027-08-15T03:21:02.0600 ex: 04 29 55.00287 s: +21 43 21.963 C/A 2.645° PA 171.07 deg v_sky +15.24 km/s D 19.66 AU
 Credit: Styled after SORA/Lucky Star

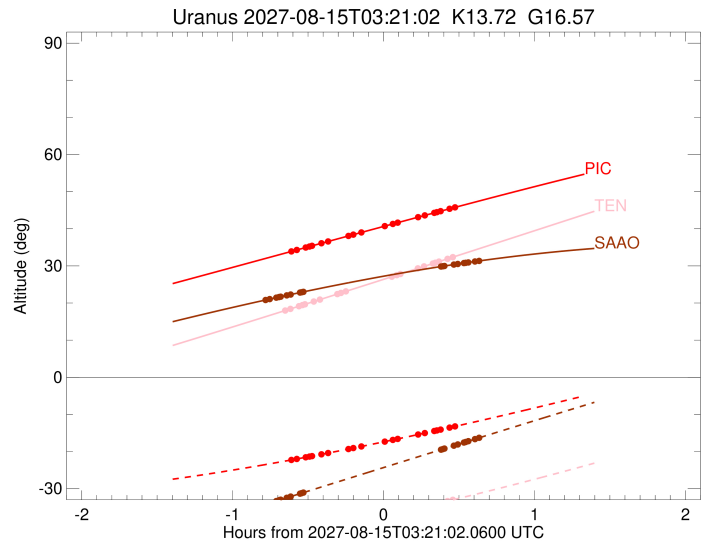
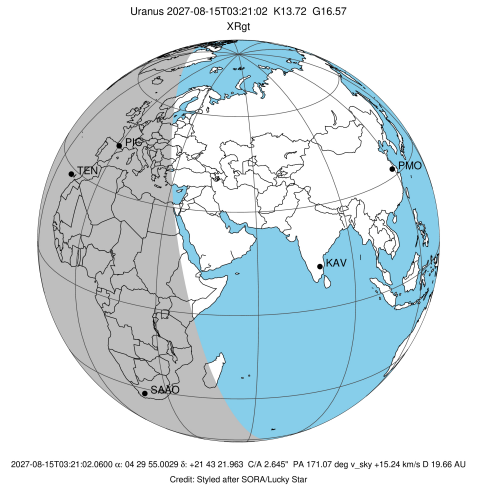


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEncode
PIC	Pic du Midi	42.9	0.1	+++++		+++++	AUG 15 02:45 - AUG 15 03:49	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	+++++		+++++	AUG 15 02:42 - AUG 15 03:48	PnnRie
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 15 02:34 - AUG 15 03:59	PnnRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-08-15T03:17:47.570
 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 : 144669414954006912
 2Mass ID (if available) : 04295499+2143220
 ICRS Star Coord at Epoch: 04h 29m 55.00287s +21:43:21.96256s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.717
 G magnitude : 16.575
 RP magnitude : 15.643
 BP magnitude : 17.266
 DUPflag : 0
 Distance (au) : 19.662
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 15.24
 Sun-Target sep (deg) : 72.57
 Sun-Moon sep (deg) : 131.74
 B (ring opening deg) : 78.61
 PA of pole (deg) : -56.57
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.892
 C/A sky separation (km) : 41243.0
 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_itrfr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

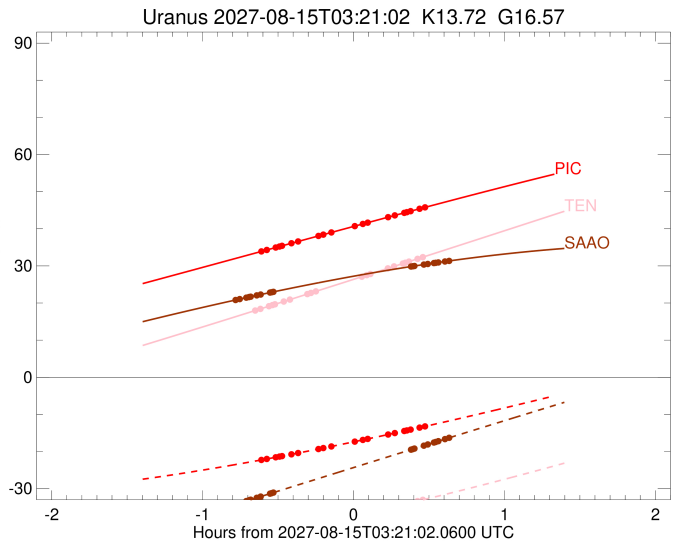
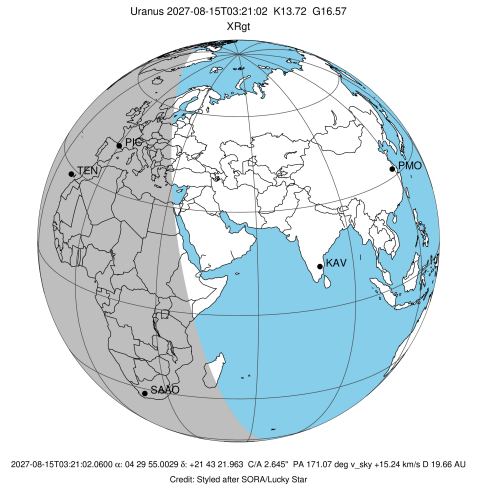


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2027-08-15T02:45:12.187		34.04	-22.17	50747.51	-8.75		
lambda	I	2027-08-15T02:46:35.953		34.30	-22.00	50026.71	-8.47		
delta	I	2027-08-15T02:50:08.755		34.95	-21.55	48300.35	-7.74		
gamma	I	2027-08-15T02:51:37.401		35.23	-21.37	47628.44	-7.41		
eta	I	2027-08-15T02:52:39.380		35.42	-21.23	47176.12	-7.18		
beta	I	2027-08-15T02:56:24.910		36.11	-20.75	45658.36	-6.27		
alpha	I	2027-08-15T02:58:58.249		36.58	-20.42	44750.07	-5.59		
4	I	2027-08-15T03:07:27.000		38.13	-19.29	42526.13	-3.10		
5	I	2027-08-15T03:09:36.885		38.53	-18.99	42169.44	-2.39		
6	I	2027-08-15T03:12:20.482		39.03	-18.62	41840.34	-1.50		

No planet occultations

6	E	2027-08-15T03:21:21.556		40.68	-17.36	41831.96	1.50		
5	E	2027-08-15T03:24:04.424		41.18	-16.98	42158.37	2.38		
4	E	2027-08-15T03:26:21.827		41.59	-16.65	42531.57	3.09		
alpha	E	2027-08-15T03:34:50.340		43.13	-15.42	44750.05	5.57		
beta	E	2027-08-15T03:37:26.913		43.61	-15.04	45674.22	6.24		
eta	E	2027-08-15T03:41:10.957		44.28	-14.48	47176.12	7.14		
gamma	E	2027-08-15T03:42:12.556		44.47	-14.33	47623.30	7.38		
delta	E	2027-08-15T03:43:42.376		44.74	-14.10	48300.35	7.70		
lambda	E	2027-08-15T03:47:16.434		45.38	-13.57	50026.71	8.42		
epsilon	E	2027-08-15T03:49:17.059		45.74	-13.26	51064.80	8.69		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-08-15T03:16:05.290
 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 : 144669414954006912
 2Mass ID (if available) : 04295499+2143220
 ICRS Star Coord at Epoch: 04h 29m 55.00287s +21:43:21.96256s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.717
 G magnitude : 16.575
 RP magnitude : 15.643
 BP magnitude : 17.266
 DUPflag : 0
 Distance (au) : 19.662
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 15.24
 Sun-Target sep (deg) : 72.57
 Sun-Moon sep (deg) : 131.75
 B (ring opening deg) : 78.61
 PA of pole (deg) : -56.57
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.848
 C/A sky separation (km) : 40614.5
 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

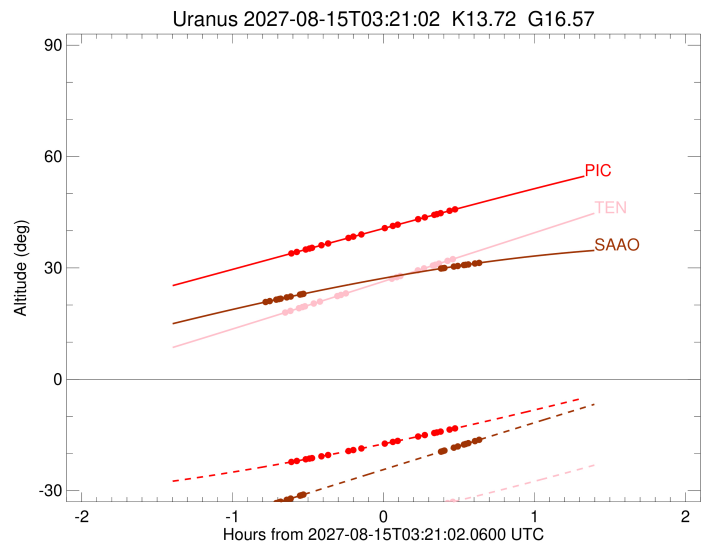
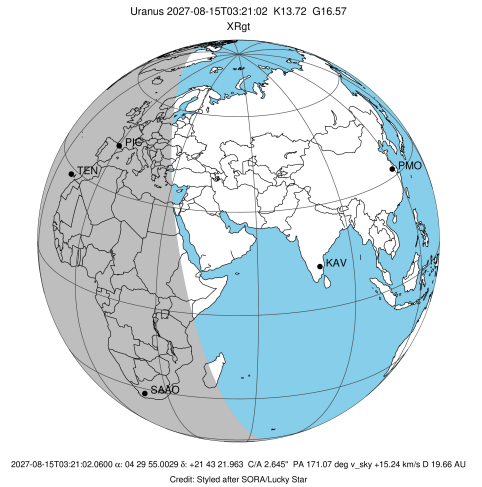


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2027-08-15T02:42:43.268		18.14	-42.21	50746.47	-9.07		
lambda	I	2027-08-15T02:44:03.868		18.43	-42.05	50026.71	-8.80		
delta	I	2027-08-15T02:47:27.786		19.15	-41.66	48300.35	-8.12		
gamma	I	2027-08-15T02:48:52.122		19.45	-41.50	47628.56	-7.81		
eta	I	2027-08-15T02:49:50.859		19.66	-41.38	47176.12	-7.59		
beta	I	2027-08-15T02:53:22.373		20.41	-40.95	45657.75	-6.76		
alpha	I	2027-08-15T02:55:43.347		20.92	-40.66	44749.62	-6.15		
4	I	2027-08-15T03:02:57.415		22.47	-39.74	42525.96	-4.06		
5	I	2027-08-15T03:04:29.930		22.80	-39.54	42173.09	-3.55		
6	I	2027-08-15T03:06:06.888		23.15	-39.32	41844.55	-3.04		

No planet occultations

6	E	2027-08-15T03:24:13.258		27.06	-36.78	41827.63	3.04		
5	E	2027-08-15T03:25:49.596		27.41	-36.55	42156.75	3.54		
4	E	2027-08-15T03:27:29.641		27.77	-36.30	42533.09	4.04		
alpha	E	2027-08-15T03:34:43.849		29.34	-35.20	44749.55	6.11		
beta	E	2027-08-15T03:37:08.220		29.86	-34.83	45674.74	6.72		
eta	E	2027-08-15T03:40:38.544		30.62	-34.28	47176.12	7.54		
gamma	E	2027-08-15T03:41:36.991		30.84	-34.13	47623.17	7.76		
delta	E	2027-08-15T03:43:02.629		31.15	-33.90	48300.35	8.06		
lambda	E	2027-08-15T03:46:28.146		31.89	-33.36	50026.71	8.73		
epsilon	E	2027-08-15T03:48:25.707		32.32	-33.04	51074.10	8.99		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-08-15T03:17:15.380
 Event type : XRgt
 : No Uranus occs
 : 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 : 144669414954006912
 2Mass ID (if available) : 04295499+2143220
 ICRS Star Coord at Epoch: 04h 29m 55.00287s +21:43:21.96256s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.717
 G magnitude : 16.575
 RP magnitude : 15.643
 BP magnitude : 17.266
 DUPflag : 0
 Distance (au) : 19.662
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 15.24
 Sun-Target sep (deg) : 72.57
 Sun-Moon sep (deg) : 131.66
 B (ring opening deg) : 78.61
 PA of pole (deg) : -56.57
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.341
 C/A sky separation (km) : 33391.0
 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	2027-08-15T02:34:45.611		20.91	-34.12	50745.28	-11.33		
lambda	I	2027-08-15T02:35:49.376		21.06	-33.90	50026.71	-11.20		
delta	I	2027-08-15T02:38:25.862		21.45	-33.34	48300.35	-10.86		
gamma	I	2027-08-15T02:39:28.067		21.60	-33.13	47629.68	-10.71		
eta	I	2027-08-15T02:40:10.637		21.71	-32.98	47176.12	-10.60		
beta	I	2027-08-15T02:42:36.988		22.06	-32.46	45652.30	-10.22		
alpha	I	2027-08-15T02:44:07.010		22.28	-32.14	44744.06	-9.97		
4	I	2027-08-15T02:47:57.698		22.83	-31.33	42528.78	-9.22		
5	I	2027-08-15T02:48:33.680		22.92	-31.20	42198.64	-9.08		
6	I	2027-08-15T02:49:10.862		23.00	-31.07	41861.55	-8.97		

No planet occultations

6	E	2027-08-15T03:43:50.439		29.82	-19.51	41811.17	8.92		
5	E	2027-08-15T03:44:27.228		29.89	-19.38	42156.24	9.04		
4	E	2027-08-15T03:45:10.587		29.97	-19.23	42545.08	9.18		
alpha	E	2027-08-15T03:49:00.833		30.36	-18.42	44744.03	9.91		
beta	E	2027-08-15T03:50:34.026		30.52	-18.10	45678.32	10.16		
eta	E	2027-08-15T03:52:58.750		30.76	-17.59	47176.12	10.53		
gamma	E	2027-08-15T03:53:40.899		30.83	-17.44	47622.21	10.63		
delta	E	2027-08-15T03:54:44.228		30.93	-17.22	48300.35	10.78		
lambda	E	2027-08-15T03:57:21.824		31.18	-16.66	50026.71	11.12		
epsilon	E	2027-08-15T03:59:02.718		31.34	-16.31	51158.96	11.24		