

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2025-02-23T17:05:43.790
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 55969166240040832
 2Mass ID (if available) : 03231993+1820036

Uranus 2025-02-23T17:05:43 K14.81 G18.15 PgtRgt

ICRS Star Coord at Epoch: 03h 23m 19.93112s +18:20:03.78280s

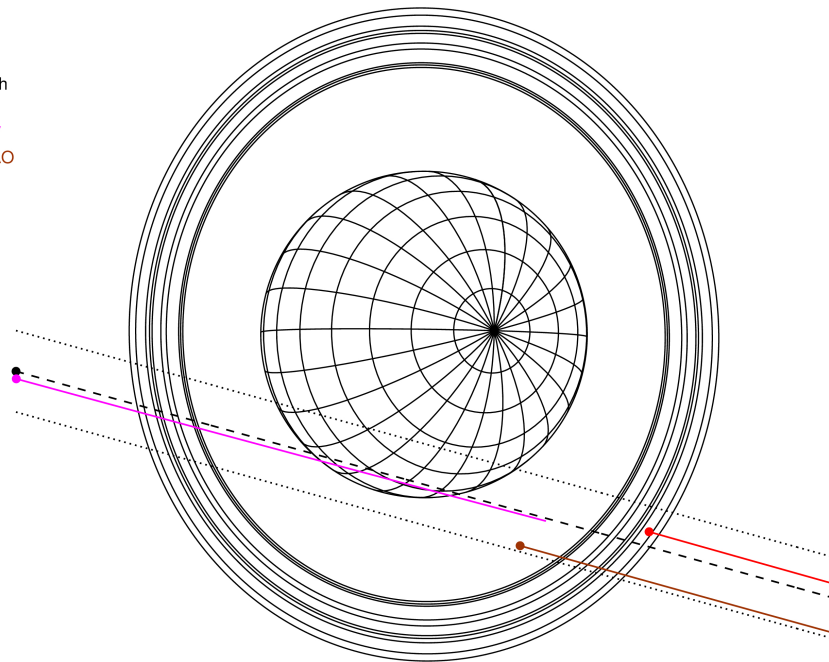
RUWE (>1.4 is poor) : 2.59
 K magnitude : 14.811
 G magnitude : 18.146
 RP magnitude : 17.086
 BP magnitude : 18.971
 DUPflag : 0
 Distance (au) : 19.723
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 12.44
 Sun-Target sep (deg) : 78.18
 Sun-Moon sep (deg) : 133.62
 B (ring opening deg) : 64.47
 PA of pole (deg) : -86.90

Uranus 2025-02-23T17:05:43 K14.81 G18.15
 PgtRgt



2025-02-23T17:05:43.7900 ex: 03 23 19.9311 s: +18 20 03.783 C/A 1.581" PA 344.50 deg v_sky +12.44 km/s D 19.72 AU
 Credit: Styled after SORA/Lucky Star

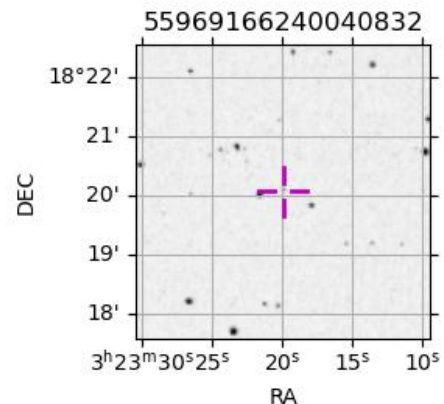
Earth
 PIC
 KAV
 SAAO



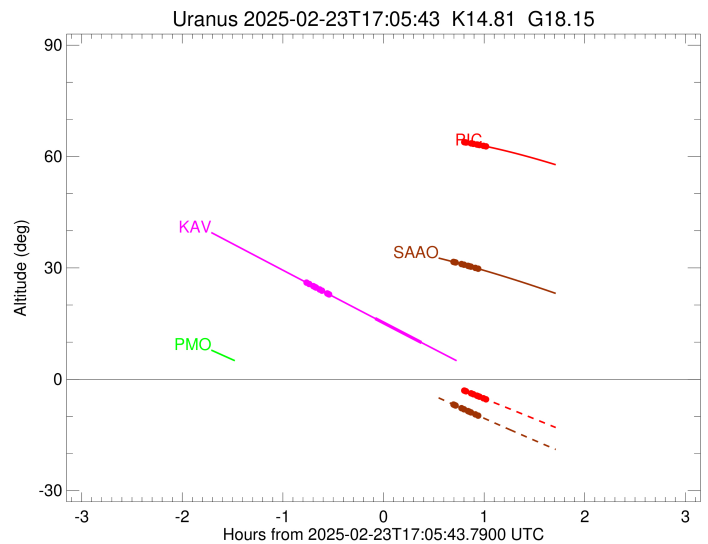
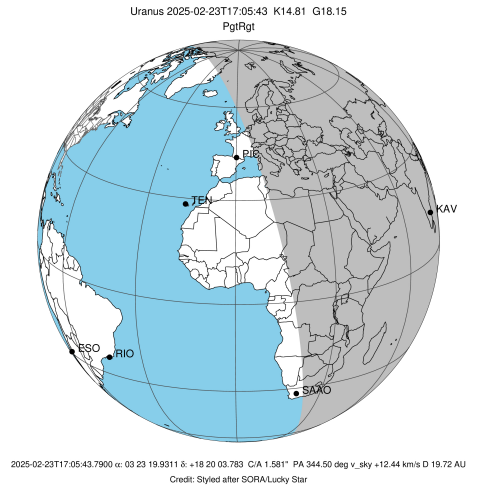
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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	OEncode
PIC	Pic du Midi	42.9	0.1			++	FEB 23 18:05 - FEB 23 18:06	PnnRne
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	+++++	+ +		FEB 23 16:19 - FEB 23 17:28	PieRin
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 23 17:47 - FEB 23 18:01	PnnRne
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



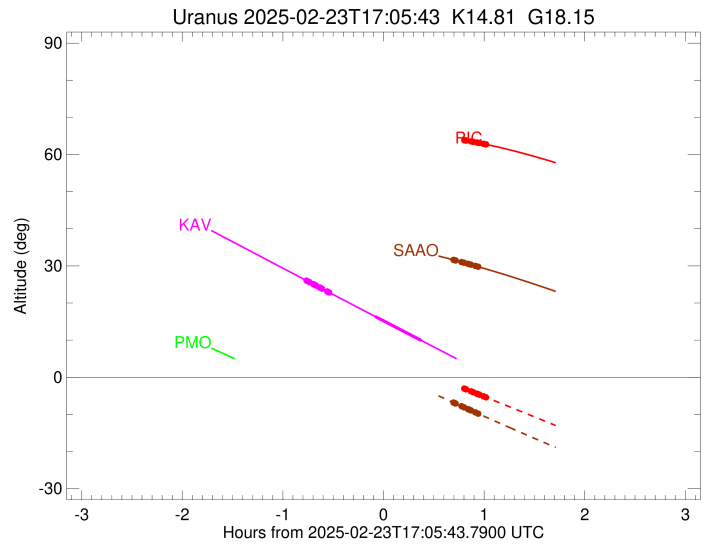
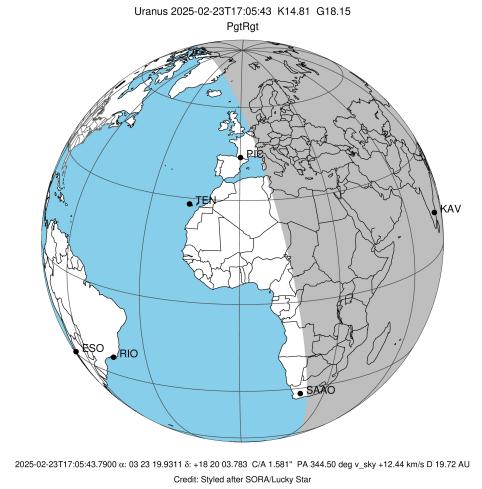
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2025-02-23T17:06:23.660
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 55969166240040832
 2Mass ID (if available) : 03231993+1820036
 ICRS Star Coord at Epoch: 03h 23m 19.93112s +18:20:03.78280s
 RUWE (>1.4 is poor) : 2.59
 K magnitude : 14.811
 G magnitude : 18.146
 RP magnitude : 17.086
 BP magnitude : 18.971
 DUPflag : 0
 Distance (au) : 19.723
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 12.44
 Sun-Target sep (deg) : 78.18
 Sun-Moon sep (deg) : 134.14
 B (ring opening deg) : 64.47
 PA of pole (deg) : -86.90
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.404
 C/A sky separation (km) : 20087.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl1.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	2025-02-23T16:08:40.922		62.53	15.08x	51459.33	-12.17		
lambda	I	2025-02-23T16:10:38.668		62.72	14.76x	50026.71	-12.13		
delta	I	2025-02-23T16:13:01.455		62.95	14.38x	48300.35	-12.05		
gamma	I	2025-02-23T16:13:57.917		63.04	14.23x	47621.27	-12.01		
eta	I	2025-02-23T16:14:35.027		63.09	14.13x	47176.12	-11.98		
beta	I	2025-02-23T16:16:43.327		63.28	13.78x	45646.22	-11.89		
alpha	I	2025-02-23T16:18:00.459		63.39	13.57x	44729.17	-11.83		
4	I	2025-02-23T16:21:05.276		63.65	13.06x	42559.27	-11.66		
5	I	2025-02-23T16:21:38.613		63.70	12.97x	42169.39	-11.64		
6	I	2025-02-23T16:22:02.105		63.73	12.91x	41879.74	-11.61		
Uranus	I	2025-02-23T16:45:22.819		65.18	9.00x	25226.80		-21.00	-21.90
Uranus	E	2025-02-23T17:28:01.964		65.34	1.58x	25507.01		8.08	8.46
6	E	2025-02-23T17:53:49.647		63.87	-3.04x	41815.17	11.63		
5	E	2025-02-23T17:54:31.139		63.82	-3.17x	42309.19	11.67		
4	E	2025-02-23T17:54:51.366		63.79	-3.23x	42541.03	11.68		
alpha	E	2025-02-23T17:57:58.351		63.54	-3.79x	44738.28	11.86		
beta	E	2025-02-23T17:59:17.805		63.42	-4.03x	45680.88	11.92		
eta	E	2025-02-23T18:01:22.900		63.24	-4.41x	47176.12	12.01		
gamma	E	2025-02-23T18:02:00.492		63.19	-4.52x	47628.05	12.03		
delta	E	2025-02-23T18:02:56.267		63.10	-4.69x	48300.35	12.07		
lambda	E	2025-02-23T18:05:18.731		62.88	-5.12	50026.71	12.16		
epsilon	E	2025-02-23T18:06:17.822		62.79	-5.30	50746.38	12.20		

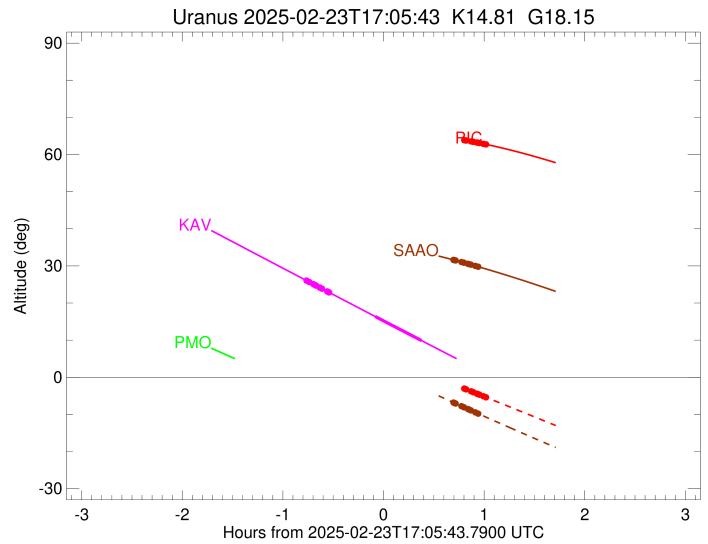
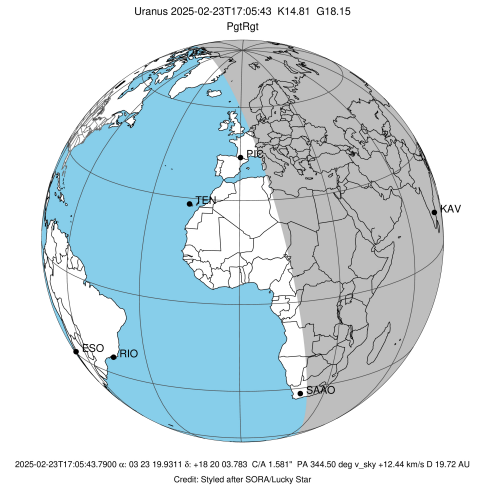
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2025-02-23T17:14:17.330
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KAV
 Location : Kavalur Observatory
 Latitude (deg) : 12.57556
 E. Longitude (deg) : 78.83167
 Altitude (km) : 0.722
 Gaia source ID : 55969166240040832
 2Mass ID (if available) : 03231993+1820036
 ICRS Star Coord at Epoch: 03h 23m 19.93112s +18:20:03.78280s
 RUWE (>1.4 is poor) : 2.59
 K magnitude : 14.811
 G magnitude : 18.146
 RP magnitude : 17.086
 BP magnitude : 18.971
 DUPflag : 0
 Distance (au) : 19.723
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 12.44
 Sun-Target sep (deg) : 78.18
 Sun-Moon sep (deg) : 133.19
 B (ring opening deg) : 64.47
 PA of pole (deg) : -86.90
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.630
 C/A sky separation (km) : 23322.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.bsp
 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	2025-02-23T16:19:28.411		26.13	-51.04	51435.82	-11.88		
lambda	I	2025-02-23T16:21:27.145		25.66	-51.53	50026.71	-11.82		
delta	I	2025-02-23T16:23:53.874		25.08	-52.12	48300.35	-11.71		
gamma	I	2025-02-23T16:24:52.025		24.85	-52.36	47621.13	-11.65		
eta	I	2025-02-23T16:25:30.264		24.70	-52.51	47176.12	-11.62		
beta	I	2025-02-23T16:27:42.649		24.18	-53.05	45647.58	-11.49		
alpha	I	2025-02-23T16:29:02.343		23.86	-53.38	44732.28	-11.41		
4	I	2025-02-23T16:32:15.149		23.10	-54.16	42554.79	-11.18		
5	I	2025-02-23T16:32:49.010		22.97	-54.30	42174.58	-11.15		
6	I	2025-02-23T16:33:14.160		22.87	-54.40	41879.55	-11.10		
Uranus	I	2025-02-23T17:00:50.234		16.36	-61.13	25349.61		-16.47	-17.21
Uranus	E	2025-02-23T17:28:23.702		9.89	-67.84	25553.50		2.62	2.74
6	E	2025-02-23T17:58:24.384		2.88x	-75.10	41817.98	11.28		
5	E	2025-02-23T17:59:06.791		2.72x	-75.27	42306.71	11.33		
4	E	2025-02-23T17:59:27.604		2.64x	-75.36	42538.63	11.36		
alpha	E	2025-02-23T18:02:39.557		1.89x	-76.12	44740.10	11.61		
beta	E	2025-02-23T18:04:00.404		1.58x	-76.45	45680.59	11.70		
eta	E	2025-02-23T18:06:07.562		1.09x	-76.95	47176.12	11.84		
gamma	E	2025-02-23T18:06:45.651		0.94x	-77.10	47627.74	11.88		
delta	E	2025-02-23T18:07:42.154		0.72x	-77.33	48300.35	11.93		
lambda	E	2025-02-23T18:10:06.041		0.17x	-77.90	50026.71	12.06		
epsilon	E	2025-02-23T18:11:05.845		-0.06x	-78.14	50749.63	12.12		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2025-02-23T17:06:13.450
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : 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 : 55969166240040832
 2Mass ID (if available) : 03231993+1820036
 ICRS Star Coord at Epoch: 03h 23m 19.93112s +18:20:03.78280s
 RUWE (>1.4 is poor) : 2.59
 K magnitude : 14.811
 G magnitude : 18.146
 RP magnitude : 17.086
 BP magnitude : 18.971
 DUPflag : 0
 Distance (au) : 19.723
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 12.44
 Sun-Target sep (deg) : 78.18
 Sun-Moon sep (deg) : 134.02
 B (ring opening deg) : 64.47
 PA of pole (deg) : -86.90
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.941
 C/A sky separation (km) : 27771.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl1.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_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	2025-02-23T16:14:08.824		38.93	12.63x	51408.96	-11.01		
lambda	I	2025-02-23T16:16:14.557		38.86	12.18x	50026.71	-10.93		
delta	I	2025-02-23T16:18:53.862		38.77	11.62x	48300.35	-10.74		
gamma	I	2025-02-23T16:19:57.323		38.73	11.40x	47621.02	-10.66		
eta	I	2025-02-23T16:20:39.144		38.70	11.25x	47176.12	-10.61		
beta	I	2025-02-23T16:23:04.494		38.61	10.74x	45649.25	-10.42		
alpha	I	2025-02-23T16:24:32.484		38.55	10.43x	44735.63	-10.29		
4	I	2025-02-23T16:28:08.740		38.39	9.67x	42549.82	-9.92		
5	I	2025-02-23T16:28:45.662		38.36	9.54x	42181.47	-9.87		
6	I	2025-02-23T16:29:15.088		38.33	9.44x	41878.73	-9.80		

No planet occultations

6	E	2025-02-23T17:47:25.035		31.62	-6.81	41823.84	9.85		
5	E	2025-02-23T17:48:12.568		31.53	-6.97	42300.63	9.93		
4	E	2025-02-23T17:48:36.432		31.48	-7.05	42534.39	9.97		
alpha	E	2025-02-23T17:52:14.017		31.04	-7.79	44743.45	10.35		
beta	E	2025-02-23T17:53:44.094		30.86	-8.09	45679.75	10.48		
eta	E	2025-02-23T17:56:05.567		30.56	-8.57	47176.12	10.68		
gamma	E	2025-02-23T17:56:47.676		30.47	-8.71	47627.09	10.74		
delta	E	2025-02-23T17:57:50.144		30.34	-8.92	48300.35	10.82		
lambda	E	2025-02-23T18:00:28.336		30.00	-9.45	50026.71	11.01		
epsilon	E	2025-02-23T18:01:34.769		29.86	-9.68	50760.31	11.10		