

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-10-15T22:00:13.970
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 674771458493848576
 2Mass ID (if available) : 07420508+2150034

ICRS Star Coord at Epoch: 07h 42m 05.08470s +21:50:03.18427s

RUWE (>1.4 is poor) : 1.11
 K magnitude : 12.878
 G magnitude : 14.628
 RP magnitude : 14.044
 BP magnitude : 15.052
 DUPflag : 0
 Distance (au) : 18.712
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 7.12
 Sun-Target sep (deg) : 88.80
 Sun-Moon sep (deg) : 177.60
 B (ring opening deg) : 53.25
 PA of pole (deg) : 86.26

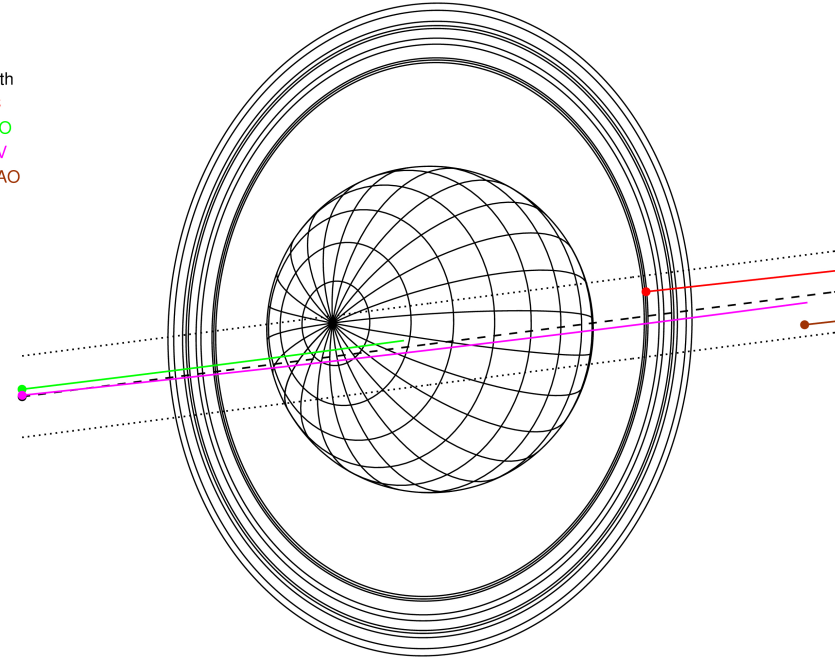
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2037-10-15T22:00:13.9700 a: 07 42 05.0847 s: +21 50 03.184 C/A 0.169° PA 7.35 deg v_sky + 7.12 km/s D 18.71 AU
 Credit: Styled after SORA/Lucky Star

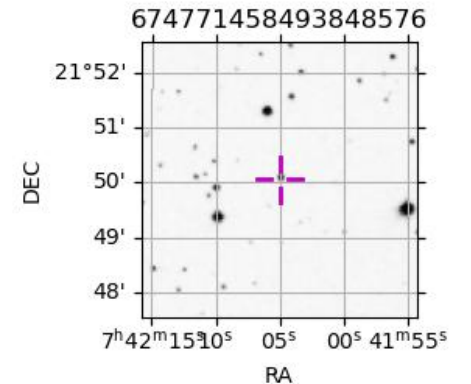
Uranus 2037-10-15T22:00:13 K12.88 G14.63 PgtRgt

Earth
 PIC
 PMO
 KAV
 SAAO

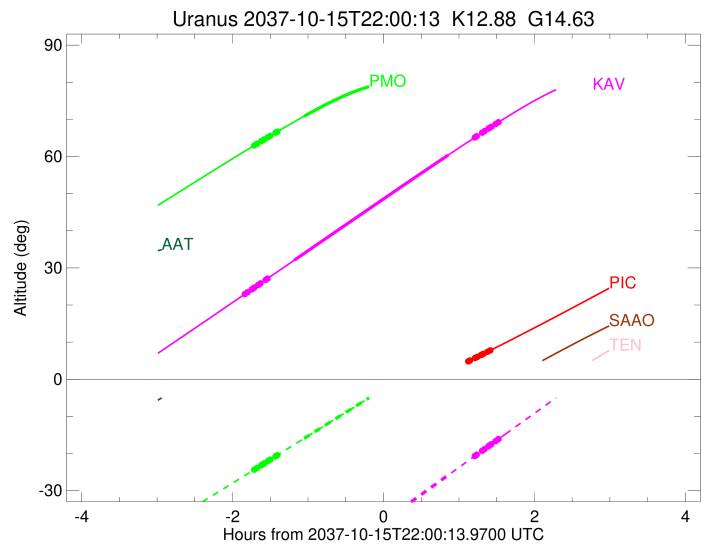
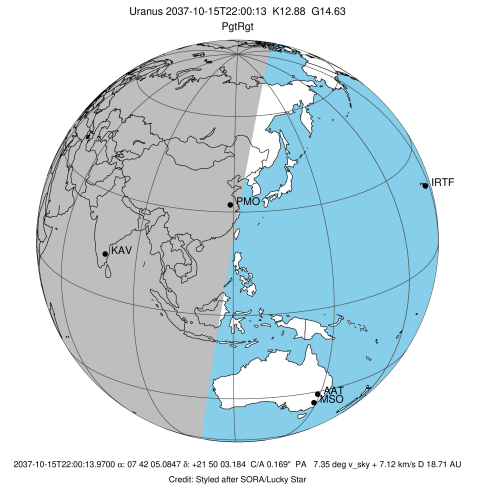


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1			+++++++	OCT 15 23:08 - OCT 15 23:25	PnnRne
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++++	+		OCT 15 20:18 - OCT 15 20:57	PinRin
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	+++++++	+ +	+++++++	OCT 15 20:10 - OCT 15 23:32	PieRie
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

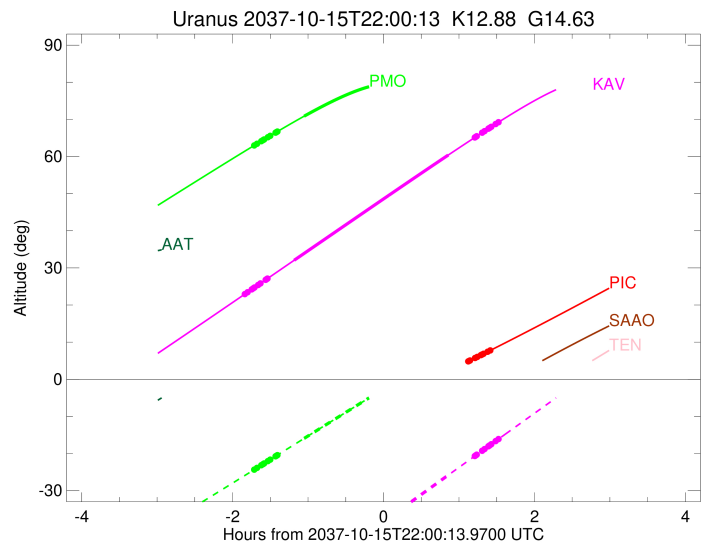
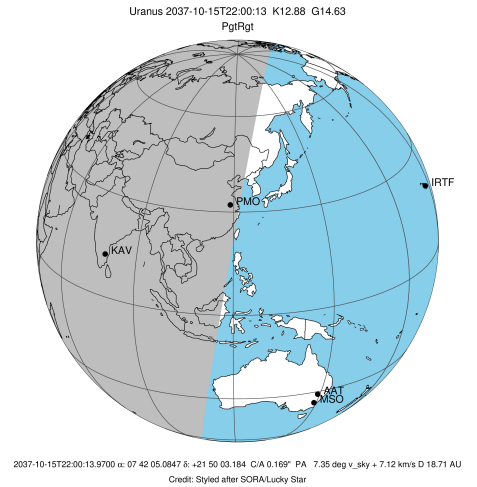


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-10-15T21:49:46.050
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 674771458493848576
 2Mass ID (if available) : 07420508+2150034
 ICRS Star Coord at Epoch: 07h 42m 05.08470s +21:50:03.18427s
 RUWE (>1.4 is poor) : 1.11
 K magnitude : 12.878
 G magnitude : 14.628
 RP magnitude : 14.044
 BP magnitude : 15.052
 DUPflag : 0
 Distance (au) : 18.712
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 7.12
 Sun-Target sep (deg) : 88.80
 Sun-Moon sep (deg) : 177.00
 B (ring opening deg) : 53.25
 PA of pole (deg) : 86.26
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.160
 C/A sky separation (km) : 2168.9
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



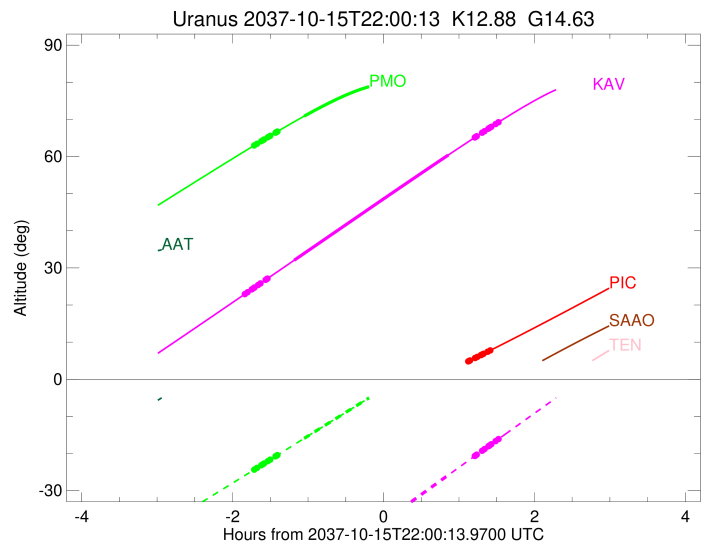
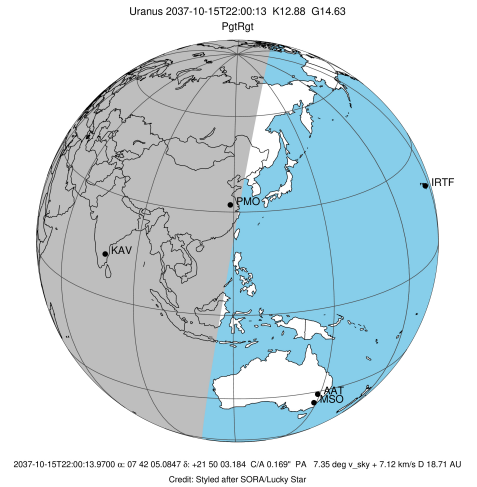
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-10-15T20:17:42.692	-18.62x	-33.59	50761.79	-9.21			
lambda	I	2037-10-15T20:19:02.498	-18.49x	-33.81	50026.71	-9.21			
delta	I	2037-10-15T20:22:10.006	-18.17x	-34.35	48300.35	-9.20			
gamma	I	2037-10-15T20:23:22.785	-18.05x	-34.55	47630.57	-9.20			
eta	I	2037-10-15T20:24:12.176	-17.97x	-34.69	47176.12	-9.20			
beta	I	2037-10-15T20:26:58.742	-17.68x	-35.16	45641.14	-9.19			
alpha	I	2037-10-15T20:28:40.355	-17.50x	-35.45	44705.26	-9.19			
4	I	2037-10-15T20:32:31.142	-17.09x	-36.09	42603.99	-9.19			
5	I	2037-10-15T20:33:11.370	-17.02x	-36.21	42239.72	-9.19			
6	I	2037-10-15T20:33:59.454	-16.93x	-36.34	41795.06	-9.18			
Uranus	I	2037-10-15T20:52:50.014	-14.80x	-39.43	25187.30			36.57	37.84
Uranus	E	2037-10-15T22:47:28.702	1.52x	-53.90	25208.83			-35.30	-36.56
6	E	2037-10-15T23:07:37.232	4.83x	-55.20	41879.73	8.88			
5	E	2037-10-15T23:08:16.600	4.94x	-55.23	42237.81	8.88			
4	E	2037-10-15T23:08:50.880	5.03	-55.26	42535.61	8.88			
alpha	E	2037-10-15T23:13:00.222	5.73	-55.46	44728.82	8.87			
beta	E	2037-10-15T23:14:47.530	6.03	-55.53	45681.23	8.86			
eta	E	2037-10-15T23:17:35.880	6.50	-55.65	47176.12	8.86			
gamma	E	2037-10-15T23:18:26.179	6.64	-55.68	47621.71	8.86			
delta	E	2037-10-15T23:19:42.802	6.85	-55.73	48300.35	8.86			
lambda	E	2037-10-15T23:22:57.820	7.40	-55.83	50026.71	8.85			
epsilon	E	2037-10-15T23:25:47.221	7.88	-55.92	51525.28	8.84			

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-10-15T21:59:19.660
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 674771458493848576
 2Mass ID (if available) : 07420508+2150034
 ICRS Star Coord at Epoch: 07h 42m 05.08470s +21:50:03.18427s
 RUWE (>1.4 is poor) : 1.11
 K magnitude : 12.878
 G magnitude : 14.628
 RP magnitude : 14.044
 BP magnitude : 15.052
 DUPflag : 0
 Distance (au) : 18.712
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 7.12
 Sun-Target sep (deg) : 88.80
 Sun-Moon sep (deg) : 177.62
 B (ring opening deg) : 53.25
 PA of pole (deg) : 86.26
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.086
 C/A sky separation (km) : 1172.9
 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_itrff93_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	2037-10-15T20:18:14.037		63.15	-24.18	50772.69	-8.43		
lambda	I	2037-10-15T20:19:42.522		63.45	-23.87	50026.71	-8.43		
delta	I	2037-10-15T20:23:07.386		64.15	-23.14	48300.35	-8.42		
gamma	I	2037-10-15T20:24:26.870		64.42	-22.86	47630.82	-8.42		
eta	I	2037-10-15T20:25:20.863		64.60	-22.67	47176.12	-8.42		
beta	I	2037-10-15T20:28:22.857		65.22	-22.03	45641.06	-8.42		
alpha	I	2037-10-15T20:30:13.600		65.59	-21.64	44708.13	-8.41		
4	I	2037-10-15T20:34:25.708		66.44	-20.75	42606.80	-8.41		
5	I	2037-10-15T20:35:11.031		66.59	-20.59	42232.10	-8.41		
6	I	2037-10-15T20:36:02.105		66.76	-20.41	41794.76	-8.41		
Uranus	I	2037-10-15T20:57:07.850		70.87	-15.93	25205.69		35.49	36.75
Uranus	E	2037-10-15T23:01:41.595		74.61	10.09x	25193.21		-36.22	-37.49
6	E	2037-10-15T23:22:46.756		70.83	14.33x	41879.61	8.33		
5	E	2037-10-15T23:23:28.547		70.70	14.46x	42233.25	8.33		
4	E	2037-10-15T23:24:05.762		70.58	14.59x	42537.24	8.33		
alpha	E	2037-10-15T23:28:31.475		69.73	15.47x	44730.49	8.33		
beta	E	2037-10-15T23:30:25.476		69.37	15.84x	45681.20	8.33		
eta	E	2037-10-15T23:33:24.603		68.78	16.43x	47176.12	8.33		
gamma	E	2037-10-15T23:34:18.111		68.61	16.60x	47621.84	8.33		
delta	E	2037-10-15T23:35:39.557		68.34	16.87x	48300.35	8.33		
lambda	E	2037-10-15T23:39:06.753		67.66	17.55x	50026.71	8.33		
epsilon	E	2037-10-15T23:42:07.302		67.07	18.13x	51531.36	8.34		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-10-15T21:50:03.390
 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 : 674771458493848576
 2Mass ID (if available) : 07420508+2150034
 ICRS Star Coord at Epoch: 07h 42m 05.08470s +21:50:03.18427s
 RUWE (>1.4 is poor) : 1.11
 K magnitude : 12.878
 G magnitude : 14.628
 RP magnitude : 14.044
 BP magnitude : 15.052
 DUPflag : 0
 Distance (au) : 18.712
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 7.12
 Sun-Target sep (deg) : 88.80
 Sun-Moon sep (deg) : 177.02
 B (ring opening deg) : 53.25
 PA of pole (deg) : 86.26
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.234
 C/A sky separation (km) : 3181.7
 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_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	2037-10-15T20:10:44.866		23.12	-65.06	50776.69	-8.65		
lambda	I	2037-10-15T20:12:11.580		23.45	-64.71	50026.71	-8.65		
delta	I	2037-10-15T20:15:31.361		24.23	-63.90	48300.35	-8.64		
gamma	I	2037-10-15T20:16:48.899		24.53	-63.59	47630.90	-8.63		
eta	I	2037-10-15T20:17:41.594		24.73	-63.38	47176.12	-8.63		
beta	I	2037-10-15T20:20:39.256		25.42	-62.66	45641.06	-8.62		
alpha	I	2037-10-15T20:22:27.325		25.84	-62.22	44709.15	-8.61		
4	I	2037-10-15T20:26:33.694		26.79	-61.22	42607.72	-8.60		
5	I	2037-10-15T20:27:18.477		26.96	-61.04	42229.38	-8.60		
6	I	2037-10-15T20:28:07.917		27.15	-60.84	41794.75	-8.60		
Uranus	I	2037-10-15T20:49:09.219		32.05	-55.71	25217.66		34.78	36.03
Uranus	E	2037-10-15T22:51:48.698		60.42	-25.80	25185.58		-36.67	-37.94
6	E	2037-10-15T23:12:50.617		65.14	-20.68	41879.31	8.25		
5	E	2037-10-15T23:13:32.627		65.29	-20.51	42228.32	8.25		
4	E	2037-10-15T23:14:10.924		65.43	-20.35	42539.13	8.25		
alpha	E	2037-10-15T23:18:39.249		66.42	-19.27	44732.34	8.24		
beta	E	2037-10-15T23:20:34.137		66.84	-18.80	45681.11	8.24		
eta	E	2037-10-15T23:23:35.193		67.50	-18.07	47176.12	8.24		
gamma	E	2037-10-15T23:24:29.312		67.69	-17.85	47622.01	8.24		
delta	E	2037-10-15T23:25:51.652		67.99	-17.52	48300.35	8.24		
lambda	E	2037-10-15T23:29:21.256		68.75	-16.67	50026.71	8.23		
epsilon	E	2037-10-15T23:32:24.824		69.40	-15.92	51538.13	8.23		