

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-05-17T23:26:44.370
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3368279207980352128
 2Mass ID (if available) : 07105904+2251507

ICRS Star Coord at Epoch: 07h 10m 59.02846s +22:51:50.85869s

RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.765
 G magnitude : 17.279
 RP magnitude : 16.537
 BP magnitude : 17.928
 DUPflag : 0
 Distance (au) : 19.385
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.84
 Sun-Target sep (deg) : 49.44
 Sun-Moon sep (deg) : 16.28
 B (ring opening deg) : 60.28
 PA of pole (deg) : 80.46

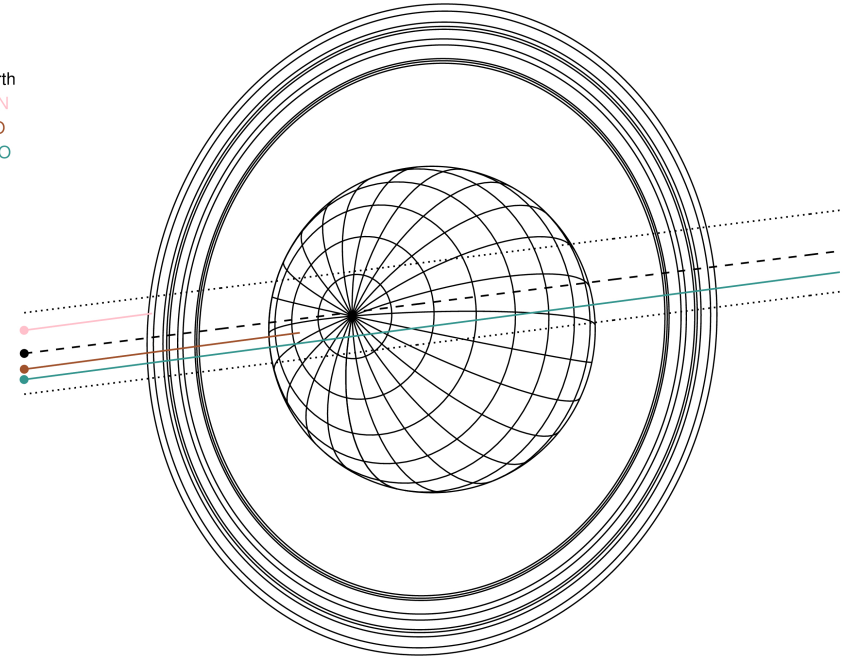
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2037-05-17T23:26:44.3700 ex: 07 10 59.0285 s: +22 51 50.859 C/A 0.309° PA 187.16 deg v_sky +25.84 km/s D 19.38 AU
 Credit: Styled after SORA/Lucky Star

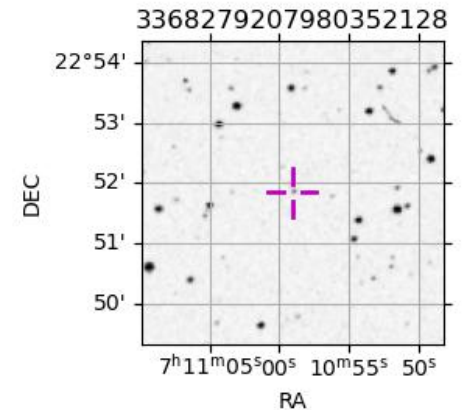
Uranus 2037-05-17T23:26:44 K14.77 G17.28 PgtRgt

Earth
 TEN
 RIO
 ESO

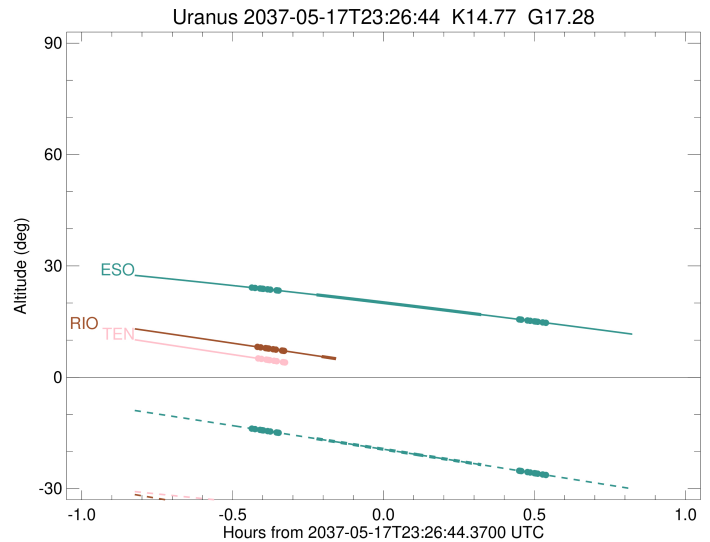
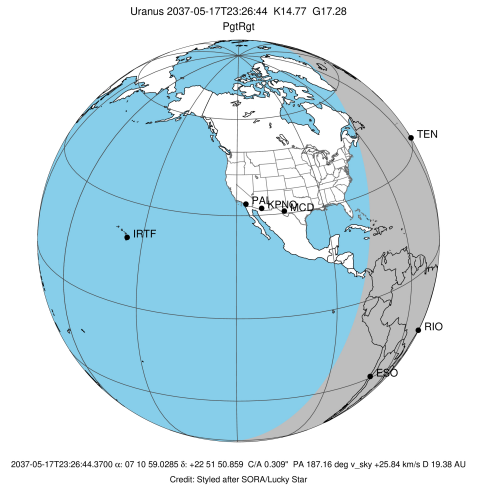


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+			MAY 17 23:01 - MAY 17 23:01	PnnRin
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	+++++	+		MAY 17 23:01 - MAY 17 23:14	PinRin
ESO	European Southern Obs	-29.3	289.3	+++++	+ +	+++++	MAY 17 23:00 - MAY 17 23:58	PieRie
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

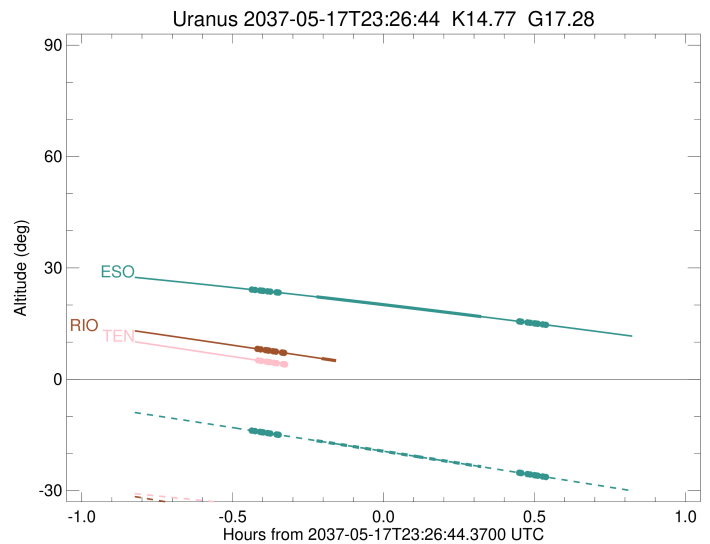
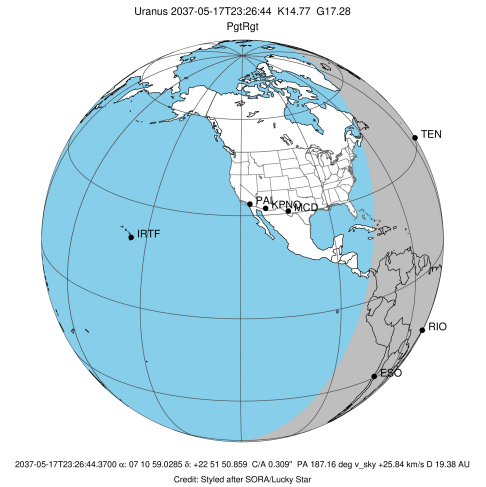


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-05-17T23:29:55.950
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 3368279207980352128
 2Mass ID (if available) : 07105904+2251507
 ICRS Star Coord at Epoch: 07h 10m 59.02846s +22:51:50.85869s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.765
 G magnitude : 17.279
 RP magnitude : 16.537
 BP magnitude : 17.928
 DUPflag : 0
 Distance (au) : 19.385
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.84
 Sun-Target sep (deg) : 49.44
 Sun-Moon sep (deg) : 17.10
 B (ring opening deg) : 60.28
 PA of pole (deg) : 80.46
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.583
 C/A sky separation (km) : 8197.0
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



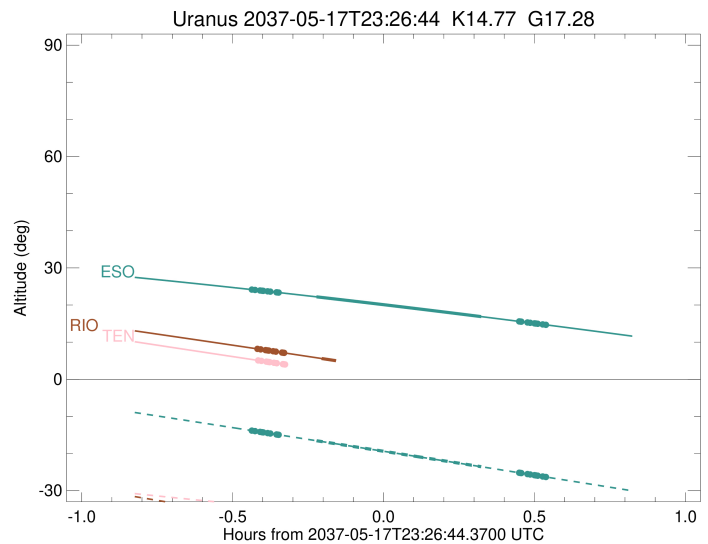
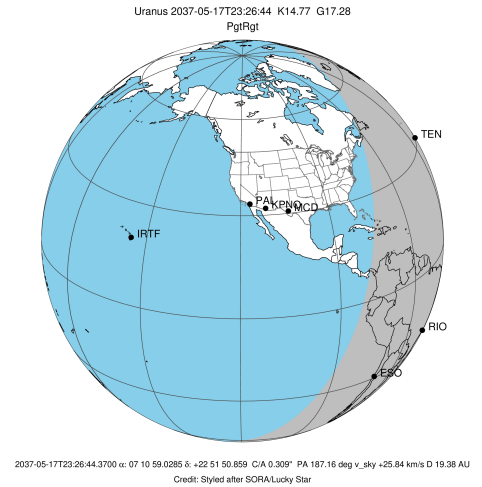
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-05-17T23:01:39.692		5.11	-34.08	51460.62	-29.14		
lambda	I	2037-05-17T23:02:28.959		4.94x	-34.19	50026.71	-29.09		
delta	I	2037-05-17T23:03:28.325		4.74x	-34.31	48300.35	-29.07		
gamma	I	2037-05-17T23:03:51.653		4.66x	-34.36	47622.47	-29.05		
eta	I	2037-05-17T23:04:07.018		4.61x	-34.39	47176.12	-29.04		
beta	I	2037-05-17T23:04:59.468		4.44x	-34.50	45652.10	-29.02		
alpha	I	2037-05-17T23:05:32.673		4.32x	-34.57	44689.83	-28.99		
4	I	2037-05-17T23:06:44.484		4.08x	-34.71	42614.68	-28.95		
5	I	2037-05-17T23:06:58.926		4.03x	-34.74	42189.32	-28.94		
6	I	2037-05-17T23:07:13.123		3.98x	-34.77	41807.03	-28.93		
Uranus	I	2037-05-17T23:14:40.793		2.48x	-35.66	25118.83		29.70	30.85
Uranus	E	2037-05-17T23:45:16.100		-3.57x	-38.78	25267.44		-23.67	-24.66
6	E	2037-05-17T23:53:22.455		-5.14x	-39.46	41853.49	29.04		
5	E	2037-05-17T23:53:38.454		-5.20x	-39.48	42302.40	29.05		
4	E	2037-05-17T23:53:46.073		-5.22x	-39.49	42526.16	29.05		
alpha	E	2037-05-17T23:55:02.382		-5.46x	-39.59	44738.68	29.10		
beta	E	2037-05-17T23:55:34.652		-5.57x	-39.63	45675.96	29.13		
eta	E	2037-05-17T23:56:26.101		-5.73x	-39.70	47176.12	29.16		
gamma	E	2037-05-17T23:56:41.613		-5.78x	-39.72	47628.56	29.17		
delta	E	2037-05-17T23:57:04.636		-5.86x	-39.75	48300.35	29.19		
lambda	E	2037-05-17T23:58:03.752		-6.05x	-39.82	50026.71	29.22		
epsilon	E	2037-05-17T23:58:34.767		-6.14x	-39.86	50933.22	29.27		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-05-17T23:30:37.530
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 3368279207980352128
 2Mass ID (if available) : 07105904+2251507
 ICRS Star Coord at Epoch: 07h 10m 59.02846s +22:51:50.85869s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.765
 G magnitude : 17.279
 RP magnitude : 16.537
 BP magnitude : 17.928
 DUPflag : 0
 Distance (au) : 19.385
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.84
 Sun-Target sep (deg) : 49.44
 Sun-Moon sep (deg) : 17.10
 B (ring opening deg) : 60.28
 PA of pole (deg) : 80.46
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.157
 C/A sky separation (km) : 2214.3
 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	2037-05-17T23:01:32.159		8.22	-37.13	51427.22	-29.26		
lambda	I	2037-05-17T23:02:20.038		8.05	-37.31	50026.71	-29.25		
delta	I	2037-05-17T23:03:19.057		7.85	-37.53	48300.35	-29.25		
gamma	I	2037-05-17T23:03:42.215		7.78	-37.62	47622.98	-29.25		
eta	I	2037-05-17T23:03:57.493		7.72	-37.68	47176.12	-29.25		
beta	I	2037-05-17T23:04:49.638		7.55	-37.88	45649.78	-29.25		
alpha	I	2037-05-17T23:05:22.415		7.44	-38.00	44692.57	-29.25		
4	I	2037-05-17T23:06:33.615		7.20	-38.27	42616.09	-29.25		
5	I	2037-05-17T23:06:48.322		7.15	-38.33	42180.25	-29.25		
6	I	2037-05-17T23:07:01.754		7.10	-38.38	41811.73	-29.26		
Uranus	I	2037-05-17T23:14:25.302		5.59	-40.07	25136.95		29.00	30.14
Uranus	E	2037-05-17T23:46:50.124		-1.14x	-47.51	25179.40		-27.34	-28.43
6	E	2037-05-17T23:54:24.334		-2.74x	-49.25	41858.98	29.37		
5	E	2037-05-17T23:54:39.909		-2.80x	-49.31	42295.50	29.36		
4	E	2037-05-17T23:54:47.611		-2.83x	-49.34	42525.97	29.37		
alpha	E	2037-05-17T23:56:03.292		-3.09x	-49.63	44742.17	29.37		
beta	E	2037-05-17T23:56:35.084		-3.20x	-49.75	45674.05	29.37		
eta	E	2037-05-17T23:57:26.188		-3.39x	-49.94	47176.12	29.38		
gamma	E	2037-05-17T23:57:41.608		-3.44x	-50.00	47629.15	29.38		
delta	E	2037-05-17T23:58:04.453		-3.52x	-50.09	48300.35	29.38		
lambda	E	2037-05-17T23:59:03.204		-3.73x	-50.32	50026.71	29.39		
epsilon	E	2037-05-17T23:59:32.729		-3.83x	-50.43	50894.40	29.40		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-05-17T23:29:47.780
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : ESO
 Location : European Southern Obs. (3.6m)
 Latitude (deg) : -29.26097
 E. Longitude (deg) : 289.26831
 Altitude (km) : 2.400
 Gaia source ID : 3368279207980352128
 2Mass ID (if available) : 07105904+2251507
 ICRS Star Coord at Epoch: 07h 10m 59.02846s +22:51:50.85869s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.765
 G magnitude : 17.279
 RP magnitude : 16.537
 BP magnitude : 17.928
 DUPflag : 0
 Distance (au) : 19.385
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.84
 Sun-Target sep (deg) : 49.44
 Sun-Moon sep (deg) : 16.96
 B (ring opening deg) : 60.28
 PA of pole (deg) : 80.46
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.039
 C/A sky separation (km) : 552.2
 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	2037-05-17T23:00:25.337		24.18	-13.80	51417.60	-29.10		
lambda	I	2037-05-17T23:01:13.136		24.06	-13.97	50026.71	-29.10		
delta	I	2037-05-17T23:02:12.463		23.91	-14.18	48300.35	-29.10		
gamma	I	2037-05-17T23:02:35.735		23.85	-14.26	47623.13	-29.10		
eta	I	2037-05-17T23:02:51.096		23.82	-14.32	47176.12	-29.10		
beta	I	2037-05-17T23:03:43.532		23.68	-14.50	45649.19	-29.10		
alpha	I	2037-05-17T23:04:16.432		23.60	-14.62	44693.39	-29.10		
4	I	2037-05-17T23:05:28.014		23.42	-14.87	42616.31	-29.11		
5	I	2037-05-17T23:05:42.895		23.38	-14.92	42178.01	-29.10		
6	I	2037-05-17T23:05:56.227		23.35	-14.97	41813.09	-29.12		
Uranus	I	2037-05-17T23:13:25.017		22.21	-16.55	25150.08		28.49	29.62
Uranus	E	2037-05-17T23:46:09.918		16.88	-23.56	25160.72		-28.08	-29.19
6	E	2037-05-17T23:53:41.812		15.59	-25.18	41860.45	29.21		
5	E	2037-05-17T23:53:57.399		15.55	-25.23	42293.32	29.19		
4	E	2037-05-17T23:54:05.207		15.52	-25.26	42526.08	29.20		
alpha	E	2037-05-17T23:55:21.355		15.30	-25.54	44743.08	29.20		
beta	E	2037-05-17T23:55:53.279		15.21	-25.65	45673.46	29.20		
eta	E	2037-05-17T23:56:44.708		15.06	-25.84	47176.12	29.20		
gamma	E	2037-05-17T23:57:00.227		15.02	-25.89	47629.31	29.20		
delta	E	2037-05-17T23:57:23.206		14.95	-25.97	48300.35	29.20		
lambda	E	2037-05-17T23:58:22.320		14.78	-26.19	50026.71	29.21		
epsilon	E	2037-05-17T23:58:51.673		14.69	-26.29	50884.01	29.21		