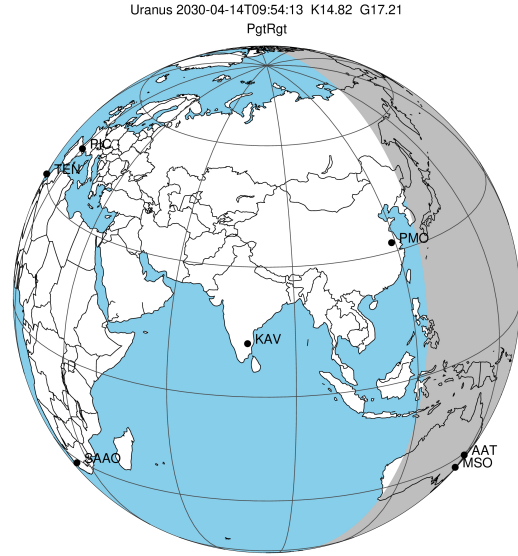


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-04-14T09:54:13.870
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3412554995044152448
 2Mass ID (if available) : 04555491+2240085

ICRS Star Coord at Epoch: 04h 55m 54.92414s +22:40:08.48996s

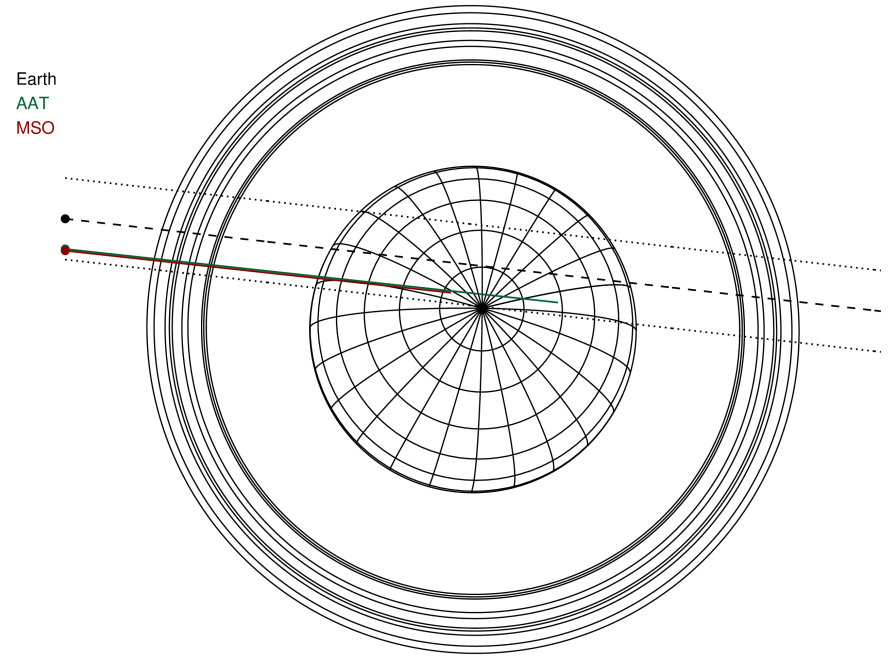
RUWE (>1.4 is poor) : 1.09
 K magnitude : 14.820
 G magnitude : 17.205
 RP magnitude : 16.396
 BP magnitude : 17.854
 DUPflag : 0
 Distance (au) : 19.814
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.01
 Sun-Target sep (deg) : 51.16
 Sun-Moon sep (deg) : 78.40
 B (ring opening deg) : 81.87
 PA of pole (deg) : -23.38

#	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



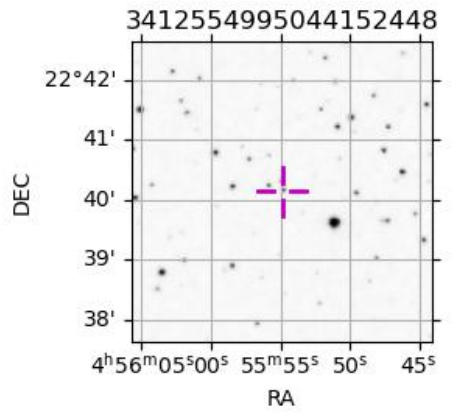
2030-04-14T09:54:13.8700 ex: 04 55 54.9241 s: +22 40 08.4899 C/A 0.703° PA 173.54 deg v_sky +25.01 km/s D 19.81 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2030-04-14T09:54:13 K14.82 G17.21 PgtRgt

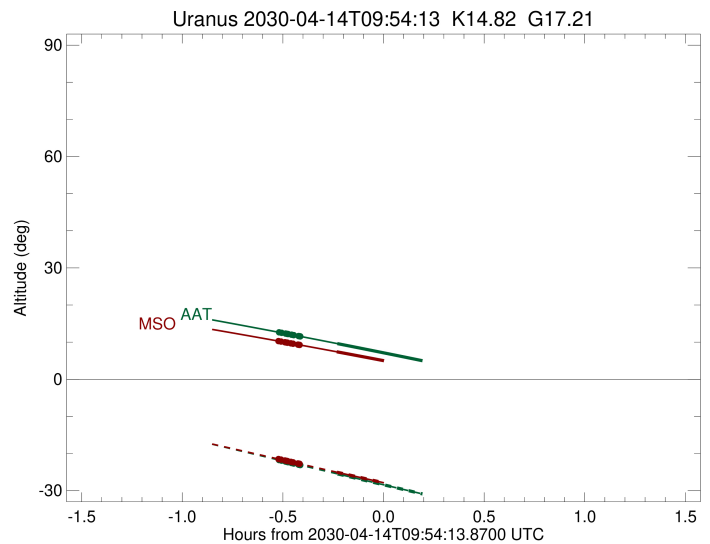
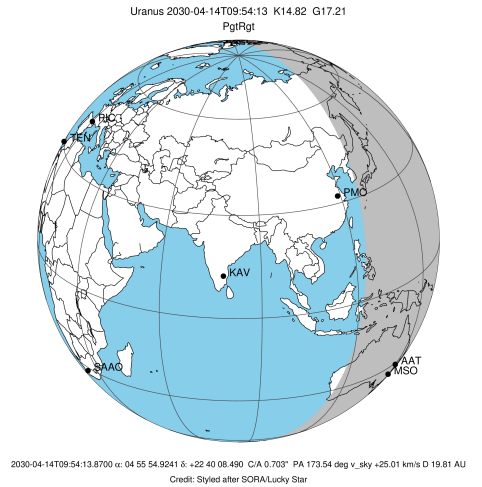


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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					PnnRnn
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	+++++	+		APR 14 09:22 - APR 14 09:40	PinRin
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++	+		APR 14 09:22 - APR 14 09:40	PinRin

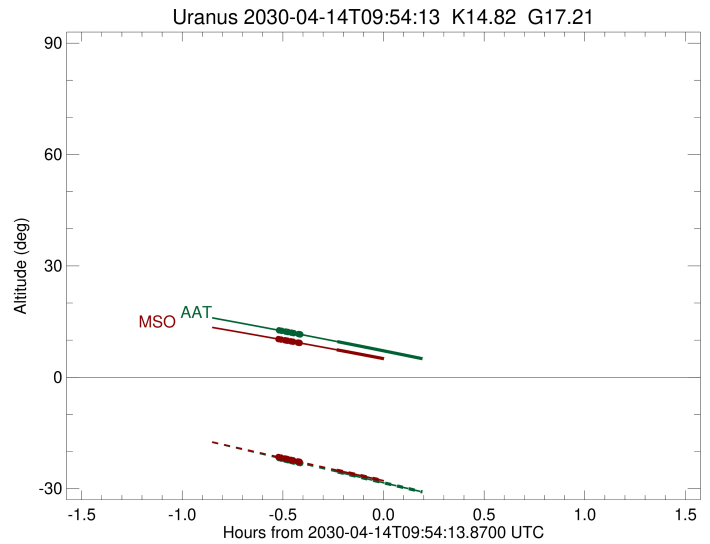
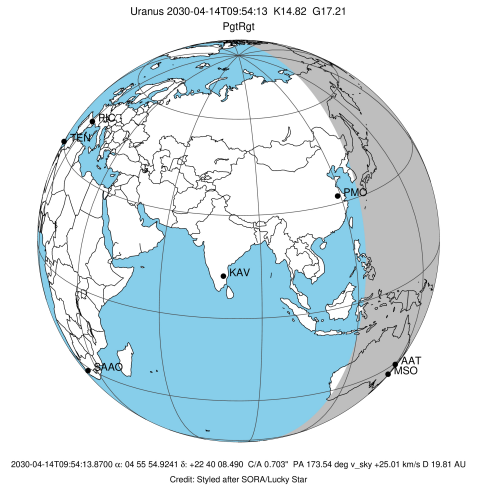


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-04-14T09:57:14.810
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 3412554995044152448
 2Mass ID (if available) : 04555491+2240085
 ICRS Star Coord at Epoch: 04h 55m 54.92414s +22:40:08.48996s
 RUWE (>1.4 is poor) : 1.09
 K magnitude : 14.820
 G magnitude : 17.205
 RP magnitude : 16.396
 BP magnitude : 17.854
 DUPflag : 0
 Distance (au) : 19.814
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.01
 Sun-Target sep (deg) : 51.16
 Sun-Moon sep (deg) : 78.37
 B (ring opening deg) : 81.87
 PA of pole (deg) : -23.38
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.392
 C/A sky separation (km) : 5633.9
 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_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	2030-04-14T09:22:51.855		12.69	-21.71	51515.10	-24.63		
lambda	I	2030-04-14T09:23:52.273		12.51	-21.93	50026.71	-24.63		
delta	I	2030-04-14T09:25:02.377		12.31	-22.18	48300.35	-24.62		
gamma	I	2030-04-14T09:25:29.738		12.23	-22.28	47626.78	-24.62		
eta	I	2030-04-14T09:25:48.047		12.18	-22.34	47176.12	-24.61		
beta	I	2030-04-14T09:26:48.837		12.00	-22.56	45680.11	-24.60		
alpha	I	2030-04-14T09:27:28.540		11.89	-22.70	44703.32	-24.60		
4	I	2030-04-14T09:28:56.258		11.63	-23.01	42546.76	-24.57		
5	I	2030-04-14T09:29:11.851		11.59	-23.07	42164.85	-24.57		
6	I	2030-04-14T09:29:26.854		11.55	-23.12	41794.82	-24.57		
Uranus	I	2030-04-14T09:40:30.552		9.60	-25.49	25555.43		-0.63	-0.66
Uranus	E	2030-04-14T10:13:51.907		3.50x	-32.58	25411.66		4.06	4.25
6	E	2030-04-14T10:25:00.107		1.40x	-34.93	41877.45	24.67		
5	E	2030-04-14T10:25:16.812		1.35x	-34.99	42292.25	24.67		
4	E	2030-04-14T10:25:28.767		1.31x	-35.03	42584.73	24.67		
alpha	E	2030-04-14T10:26:56.099		1.03x	-35.34	44740.82	24.70		
beta	E	2030-04-14T10:27:32.521		0.92x	-35.47	45641.13	24.71		
eta	E	2030-04-14T10:28:34.610		0.72x	-35.69	47176.12	24.73		
gamma	E	2030-04-14T10:28:52.844		0.66x	-35.75	47627.02	24.73		
delta	E	2030-04-14T10:29:20.066		0.58x	-35.84	48300.35	24.74		
lambda	E	2030-04-14T10:30:29.834		0.36x	-36.09	50026.71	24.75		
epsilon	E	2030-04-14T10:30:59.190		0.26x	-36.19	50753.41	24.75		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-04-14T09:57:04.420
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MSO
 Location : Mt. Stromlo Observatory
 Latitude (deg) : -35.32000
 E. Longitude (deg) : 149.00833
 Altitude (km) : 0.770
 Gaia source ID : 3412554995044152448
 2Mass ID (if available) : 04555491+2240085
 ICRS Star Coord at Epoch: 04h 55m 54.92414s +22:40:08.48996s
 RUWE (>1.4 is poor) : 1.09
 K magnitude : 14.820
 G magnitude : 17.205
 RP magnitude : 16.396
 BP magnitude : 17.854
 DUPflag : 0
 Distance (au) : 19.814
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.01
 Sun-Target sep (deg) : 51.16
 Sun-Moon sep (deg) : 78.34
 B (ring opening deg) : 81.87
 PA of pole (deg) : -23.38
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.372
 C/A sky separation (km) : 5350.0
 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	2030-04-14T09:22:40.926		10.32	-21.44	51516.05	-24.65		
lambda	I	2030-04-14T09:23:41.323		10.16	-21.65	50026.71	-24.66		
delta	I	2030-04-14T09:24:51.354		9.97	-21.88	48300.35	-24.65		
gamma	I	2030-04-14T09:25:18.687		9.89	-21.98	47626.75	-24.64		
eta	I	2030-04-14T09:25:36.974		9.84	-22.04	47176.12	-24.64		
beta	I	2030-04-14T09:26:37.695		9.68	-22.25	45680.16	-24.63		
alpha	I	2030-04-14T09:27:17.361		9.57	-22.38	44703.13	-24.62		
4	I	2030-04-14T09:28:44.955		9.33	-22.68	42547.01	-24.60		
5	I	2030-04-14T09:29:00.530		9.29	-22.73	42165.11	-24.60		
6	I	2030-04-14T09:29:15.521		9.24	-22.78	41794.84	-24.60		
Uranus	I	2030-04-14T09:40:17.999		7.40	-25.03	25554.33		-0.72	-0.75
Uranus	E	2030-04-14T10:13:44.026		1.59x	-31.79	25417.56		3.97	4.16
6	E	2030-04-14T10:24:50.921		-0.41x	-34.01	41877.55	24.69		
5	E	2030-04-14T10:25:07.621		-0.46x	-34.07	42292.65	24.70		
4	E	2030-04-14T10:25:19.558		-0.49x	-34.11	42585.04	24.70		
alpha	E	2030-04-14T10:26:46.779		-0.76x	-34.40	44740.65	24.73		
beta	E	2030-04-14T10:27:23.173		-0.87x	-34.52	45641.14	24.74		
eta	E	2030-04-14T10:28:25.203		-1.06x	-34.72	47176.12	24.75		
gamma	E	2030-04-14T10:28:43.418		-1.11x	-34.78	47626.99	24.75		
delta	E	2030-04-14T10:29:10.618		-1.19x	-34.87	48300.35	24.76		
lambda	E	2030-04-14T10:30:20.326		-1.41x	-35.10	50026.71	24.77		
epsilon	E	2030-04-14T10:30:49.680		-1.50x	-35.20	50753.94	24.77		