

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-04-20T14:27:39.870
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3404541548141818880
 2Mass ID (if available) : 05330695+2327169

Uranus 2032-04-20T14:27:39 K14.30 G16.74 PgtRgt

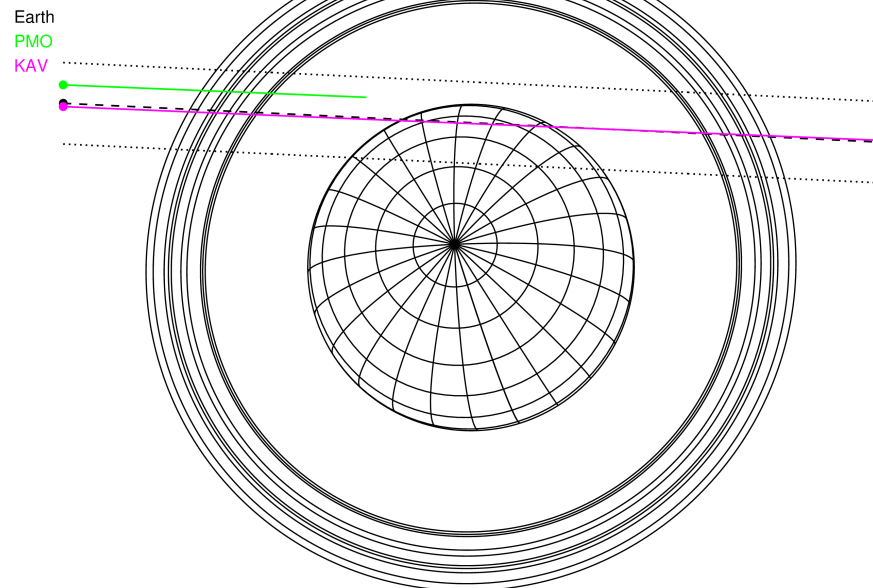
ICRS Star Coord at Epoch: 05h 33m 06.95490s +23:27:16.73131s

RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.305
 G magnitude : 16.744
 RP magnitude : 15.958
 BP magnitude : 17.392
 DUPflag : 0
 Distance (au) : 19.648
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 24.18
 Sun-Target sep (deg) : 53.22
 Sun-Moon sep (deg) : 69.21
 B (ring opening deg) : 79.99
 PA of pole (deg) : 35.26

#	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

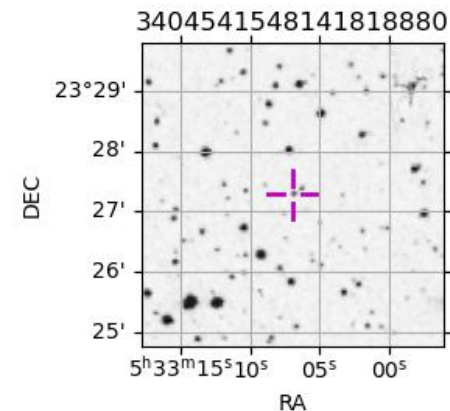


2032-04-20T14:27:39.8700 ex: 05 33 06.9549 s: +23 27 16.731 C/A 1.595° PA 177.28 deg v_sky +24.18 km/s D 19.65 AU
 Credit: Styled after SORA/Lucky Star

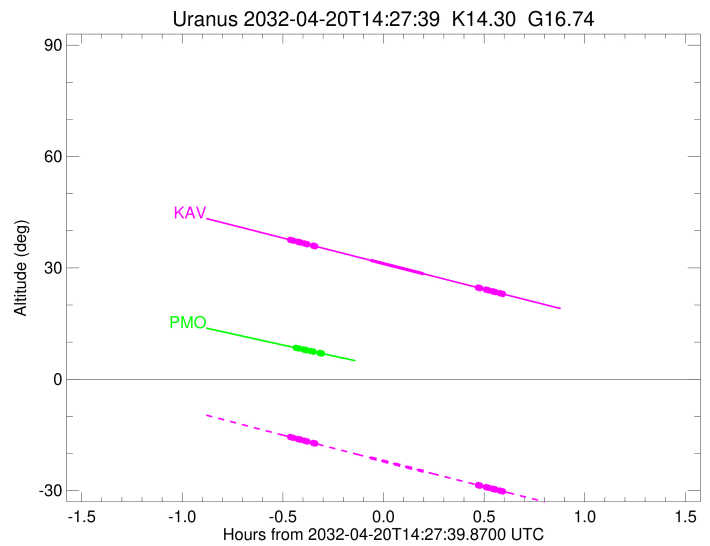
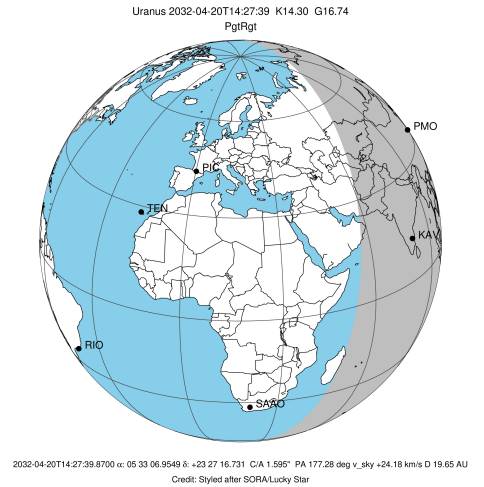


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	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	+++++			APR 20 14:01 - APR 20 14:09	PnnRin
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	+++++	+ +	+++++	APR 20 13:59 - APR 20 15:03	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 : 2032-04-20T14:31:17.920
 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 : 3404541548141818880
 2Mass ID (if available) : 05330695+2327169
 ICRS Star Coord at Epoch: 05h 33m 06.95490s +23:27:16.73131s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.305
 G magnitude : 16.744
 RP magnitude : 15.958
 BP magnitude : 17.392
 DUPflag : 0
 Distance (au) : 19.648
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 24.18
 Sun-Target sep (deg) : 53.22
 Sun-Moon sep (deg) : 69.00
 B (ring opening deg) : 79.99
 PA of pole (deg) : 35.26
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.822
 C/A sky separation (km) : 25958.0
 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

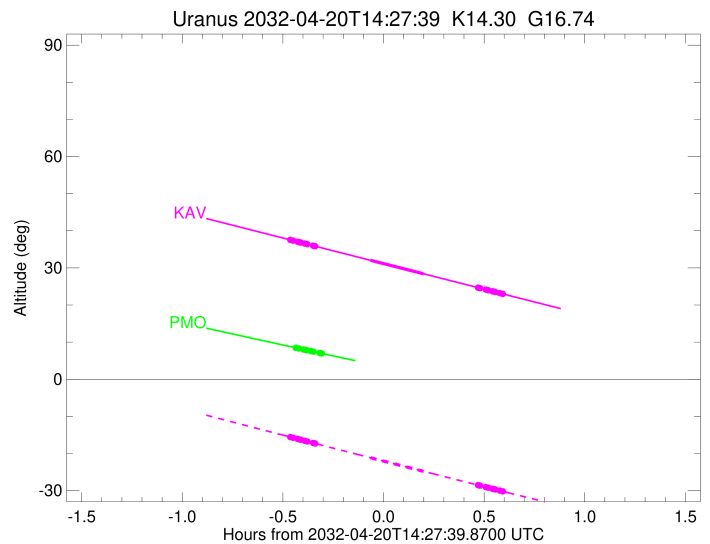
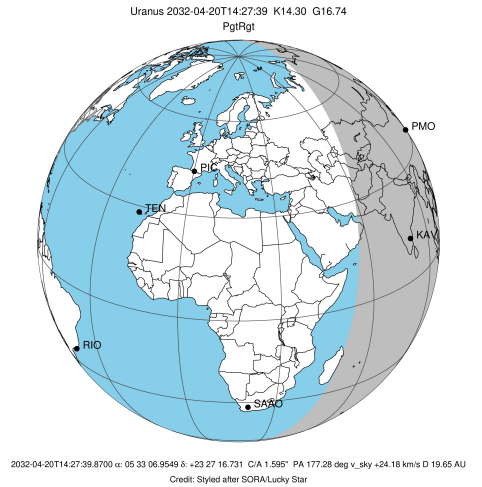


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-04-20T14:01:14.502		8.53	-37.38	51515.72	-20.99		
lambda	I	2032-04-20T14:02:25.966		8.29	-37.54	50026.71	-20.72		
delta	I	2032-04-20T14:03:49.838		8.02	-37.72	48300.35	-20.44		
gamma	I	2032-04-20T14:04:23.150		7.91	-37.80	47621.54	-20.31		
eta	I	2032-04-20T14:04:45.120		7.84	-37.84	47176.12	-20.23		
beta	I	2032-04-20T14:06:00.826		7.59	-38.01	45656.28	-19.92		
alpha	I	2032-04-20T14:06:47.802		7.44	-38.11	44722.76	-19.71		
4	I	2032-04-20T14:08:38.417		7.08	-38.34	42569.69	-19.19		
5	I	2032-04-20T14:08:52.249		7.03	-38.37	42314.22	-19.11		
6	I	2032-04-20T14:09:16.672		6.95	-38.42	41841.96	-18.96		

No planet occultations

6	E	2032-04-20T14:53:46.164	-1.54x	-43.18	41794.98	19.03
5	E	2032-04-20T14:54:08.895	-1.61x	-43.21	42228.96	19.18
4	E	2032-04-20T14:54:29.022	-1.68x	-43.24	42615.54	19.26
alpha	E	2032-04-20T14:56:14.994	-2.00x	-43.39	44685.24	19.79
beta	E	2032-04-20T14:57:03.201	-2.15x	-43.45	45644.48	20.00
eta	E	2032-04-20T14:58:19.155	-2.39x	-43.56	47176.12	20.32
gamma	E	2032-04-20T14:58:41.244	-2.45x	-43.59	47625.92	20.40
delta	E	2032-04-20T14:59:14.194	-2.56x	-43.63	48300.35	20.53
lambda	E	2032-04-20T15:00:37.682	-2.81x	-43.74	50026.71	20.82
epsilon	E	2032-04-20T15:01:30.109	-2.97x	-43.81	51122.78	21.09

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-04-20T14:31:21.660
 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 : 3404541548141818880
 2Mass ID (if available) : 05330695+2327169
 ICRS Star Coord at Epoch: 05h 33m 06.95490s +23:27:16.73131s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.305
 G magnitude : 16.744
 RP magnitude : 15.958
 BP magnitude : 17.392
 DUPflag : 0
 Distance (au) : 19.648
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 24.18
 Sun-Target sep (deg) : 53.22
 Sun-Moon sep (deg) : 69.38
 B (ring opening deg) : 79.99
 PA of pole (deg) : 35.26
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.580
 C/A sky separation (km) : 22517.8
 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	2032-04-20T13:59:36.761		37.61	-15.50	51501.27	-21.61		
lambda	I	2032-04-20T14:00:45.379		37.34	-15.77	50026.71	-21.41		
delta	I	2032-04-20T14:02:06.386		37.03	-16.09	48300.35	-21.21		
gamma	I	2032-04-20T14:02:38.447		36.91	-16.21	47621.76	-21.12		
eta	I	2032-04-20T14:02:59.575		36.83	-16.30	47176.12	-21.06		
beta	I	2032-04-20T14:04:12.029		36.55	-16.58	45658.05	-20.84		
alpha	I	2032-04-20T14:04:56.788		36.38	-16.75	44725.85	-20.69		
4	I	2032-04-20T14:06:42.026		35.98	-17.16	42565.21	-20.34		
5	I	2032-04-20T14:06:54.942		35.93	-17.21	42312.53	-20.29		
6	I	2032-04-20T14:07:17.665		35.84	-17.30	41846.25	-20.17		
Uranus	I	2032-04-20T14:23:47.016		32.05	-21.14	25013.97		9.80	10.25
Uranus	E	2032-04-20T14:39:37.056		28.41	-24.80	25458.03		4.14	4.34
6	E	2032-04-20T14:55:48.171		24.69	-28.50	41795.66	20.26		
5	E	2032-04-20T14:56:09.129		24.61	-28.58	42220.93	20.37		
4	E	2032-04-20T14:56:28.475		24.54	-28.66	42614.37	20.42		
alpha	E	2032-04-20T14:58:08.987		24.16	-29.04	44685.99	20.79		
beta	E	2032-04-20T14:58:54.967		23.98	-29.21	45645.56	20.94		
eta	E	2032-04-20T15:00:07.660		23.70	-29.49	47176.12	21.16		
gamma	E	2032-04-20T15:00:28.904		23.62	-29.57	47626.37	21.22		
delta	E	2032-04-20T15:01:00.592		23.50	-29.69	48300.35	21.31		
lambda	E	2032-04-20T15:02:21.192		23.19	-29.99	50026.71	21.52		
epsilon	E	2032-04-20T15:03:10.543		23.00	-30.18	51091.72	21.72		