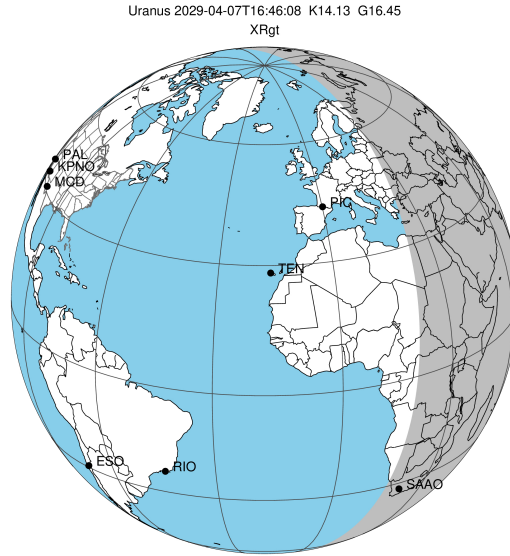


target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2029-04-07T16:46:08.110  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 144915804340182784  
 2Mass ID (if available) : 04370876+2203522

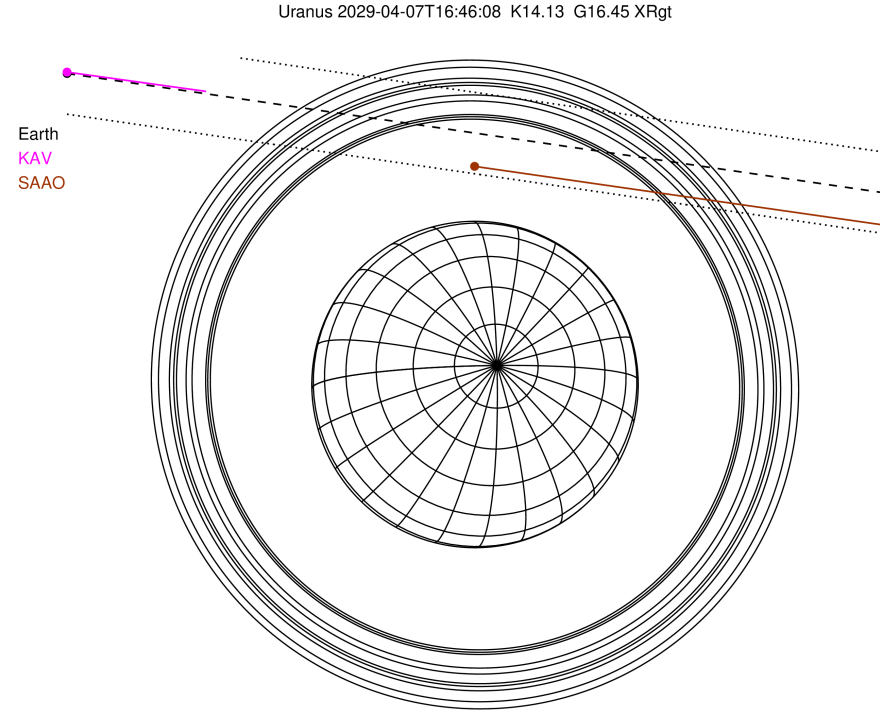
ICRS Star Coord at Epoch: 04h 37m 08.77694s +22:03:52.19009s

RUWE (>1.4 is poor) : 11.33  
 K magnitude : 14.134  
 G magnitude : 16.446  
 RP magnitude : 15.581  
 BP magnitude : 16.862  
 DUPflag : 0  
 Distance (au) : 19.855  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 24.19  
 Sun-Target sep (deg) : 53.12  
 Sun-Moon sep (deg) : 121.32  
 B (ring opening deg) : 79.74  
 PA of pole (deg) : -49.17

#	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

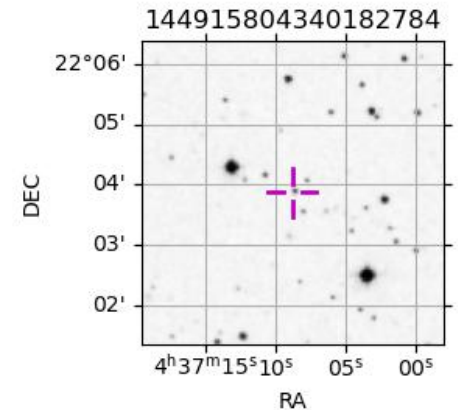


2029-04-07T16:46:08.1100 cc: 04 37 08.7769 s: +22 03 52.190 C/A 2.710" PA 171.69 deg v\_sky +24.19 km/s D 19.85 AU  
 Credit: Styled after SORA/Lucky Star

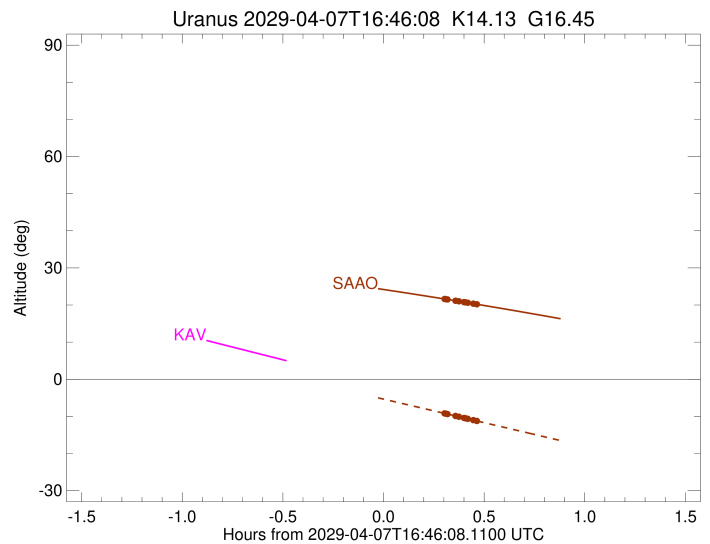
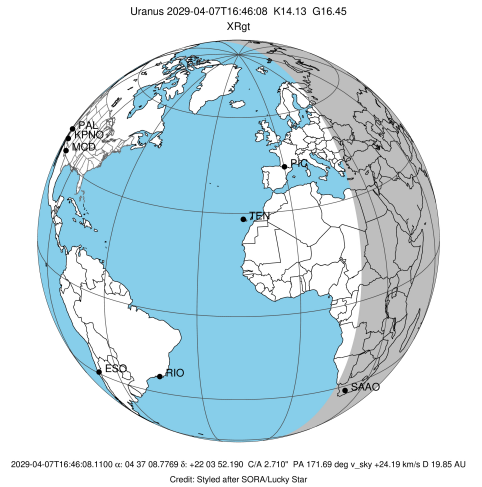


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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					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					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8			+++++	APR 07 17:04 - APR 07 17:14	PnnRne
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2029-04-07T16:47:57.400  
 Event type : XRgt  
 : No Uranus occs  
 : 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 : 144915804340182784  
 2Mass ID (if available) : 04370876+2203522  
 ICRS Star Coord at Epoch: 04h 37m 08.77694s +22:03:52.19009s  
 RUWE (>1.4 is poor) : 11.33  
 K magnitude : 14.134  
 G magnitude : 16.446  
 RP magnitude : 15.581  
 BP magnitude : 16.862  
 DUPflag : 0  
 Distance (au) : 19.855  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 24.19  
 Sun-Target sep (deg) : 53.12  
 Sun-Moon sep (deg) : 121.42  
 B (ring opening deg) : 79.74  
 PA of pole (deg) : -49.17  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 2.348  
 C/A sky separation (km) : 33806.8  
 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\_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	2029-04-07T16:21:08.465		27.36	-0.09x	51177.60	-18.02		
lambda	I	2029-04-07T16:22:13.384		27.24	-0.32x	50026.71	-17.56		
delta	I	2029-04-07T16:23:53.284		27.03	-0.67x	48300.35	-16.99		
gamma	I	2029-04-07T16:24:32.944		26.95	-0.81x	47631.13	-16.75		
eta	I	2029-04-07T16:25:00.245		26.90	-0.90x	47176.12	-16.58		
beta	I	2029-04-07T16:26:32.213		26.71	-1.22x	45679.24	-15.96		
alpha	I	2029-04-07T16:27:35.348		26.58	-1.44x	44685.60	-15.51		
4	I	2029-04-07T16:29:56.120		26.29	-1.94x	42581.20	-14.38		
5	I	2029-04-07T16:30:18.996		26.24	-2.02x	42254.70	-14.20		
6	I	2029-04-07T16:30:48.484		26.18	-2.12x	41842.43	-13.91		

No planet occultations

6	E	2029-04-07T17:04:22.220		21.62	-9.20	41878.79	13.94		
5	E	2029-04-07T17:04:54.287		21.54	-9.31	42315.12	14.23		
4	E	2029-04-07T17:05:14.647		21.50	-9.38	42616.47	14.41		
alpha	E	2029-04-07T17:07:35.307		21.15	-9.88	44721.05	15.54		
beta	E	2029-04-07T17:08:34.390		21.01	-10.09	45654.58	16.00		
eta	E	2029-04-07T17:10:07.650		20.78	-10.42	47176.12	16.62		
gamma	E	2029-04-07T17:10:34.475		20.71	-10.51	47624.27	16.79		
delta	E	2029-04-07T17:11:14.445		20.61	-10.65	48300.35	17.04		
lambda	E	2029-04-07T17:12:54.083		20.36	-11.00	50026.71	17.61		
epsilon	E	2029-04-07T17:14:19.374		20.15	-11.30	51547.49	18.07		