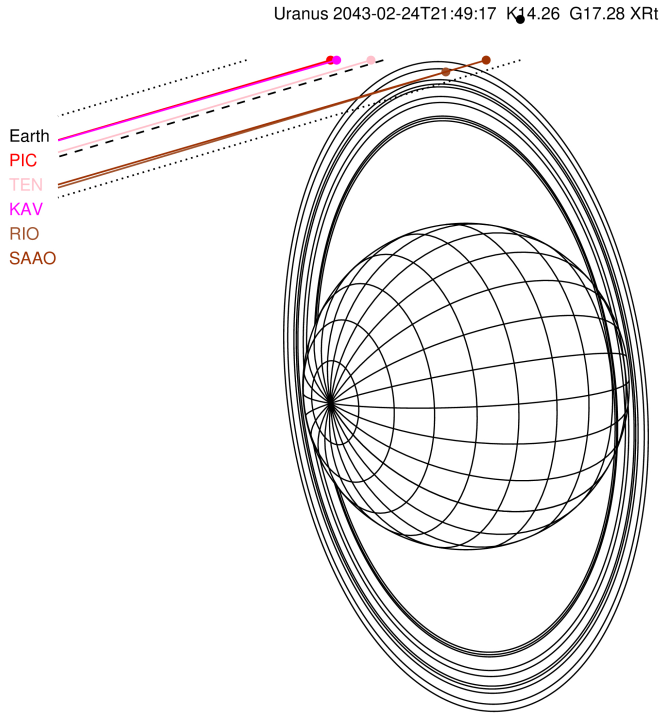
Stellar occultation prediction by rfrench@wellesley.edu Sun Jun 25 02:36:10 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2043-02-24T21:49:17.920
Event type : XRt
: No Uranus occs
: Ring occs: topocentric, not geoecetric
Gaia source ID : 611239134019360896
2Mass ID (if available) : 09062401+1719577

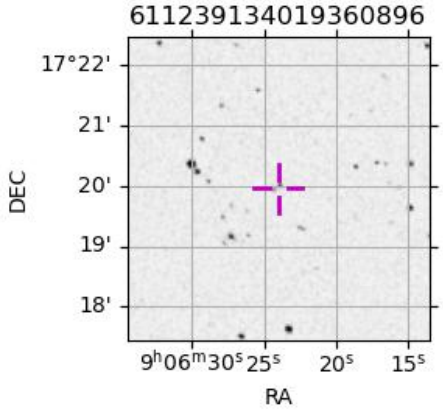
ICRS Star Coord at Epoch: 09h 06m 24.04717s +17:19:56.68958s
RUWE (>1.4 is poor) : 0.98
K magnitude : 14.260
G magnitude : 17.278
RP magnitude : 16.310
BP magnitude : 18.304
DUPflag : 0
Distance (au) : 17.514
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : -21.04
Sun-Target sep (deg) : 158.33
Sun-Moon sep (deg) : 33.19
B (ring opening deg) : 33.26
PA of pole (deg) : 97.08

#	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



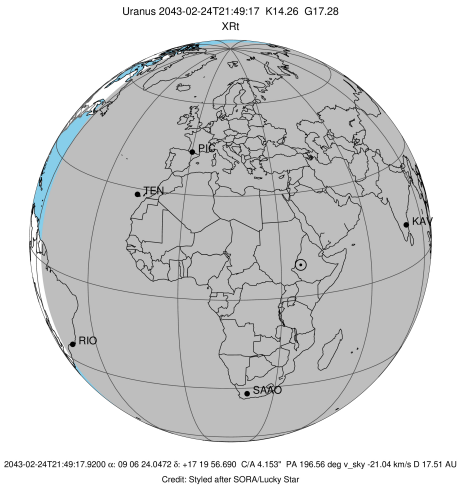
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

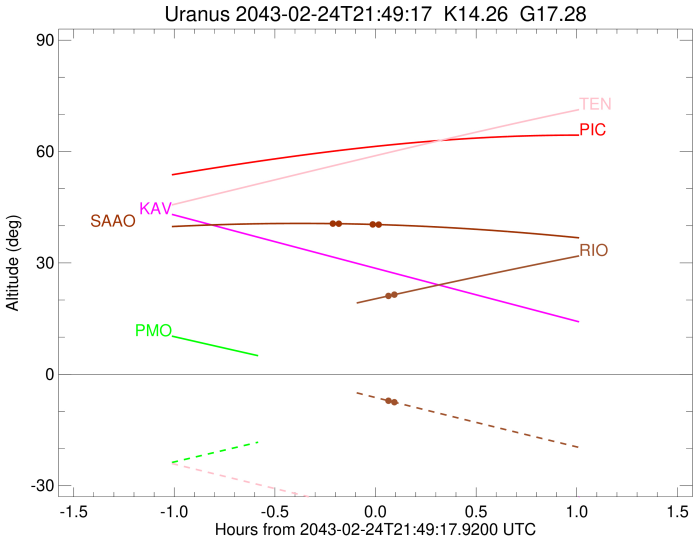
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide 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			++	FEB 24 21:53 - FEB 24 21:55	PnnRne
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	++		++	FEB 24 21:36 - FEB 24 21:50	PnnRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



Uranus_2043-02-24T21_49_17.9200_RIO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:34:14 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2043-02-24T21:52:22.880
Event type : XRt
: No Uranus occs
: Ring occs: topocentric, not geoecetric
Observer code : RIO
Location : Rio de Janeiro
Latitude (deg) : -22.89506
E. Longitude (deg) : 316.77708
Altitude (km) : 0.033
Gaia source ID : 611239134019360896
2Mass ID (if available) : 09062401+1719577
ICRS Star Coord at Epoch: 09h 06m 24.04717s +17:19:56.68958s
RUWE (>1.4 is poor) : 0.98
K magnitude : 14.260
G magnitude : 17.278
RP magnitude : 16.310
BP magnitude : 18.304
DUPflag : 0
Distance (au) : 17.514
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : -21.04
Sun-Target sep (deg) : 158.33
Sun-Moon sep (deg) : 33.86
B (ring opening deg) : 33.26
PA of pole (deg) : 97.08
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.787
C/A sky separation (km) : 48103.7
NAIF SPICE kernels : RAJobs_U111+rgf15.spk
URKALLv1.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





b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

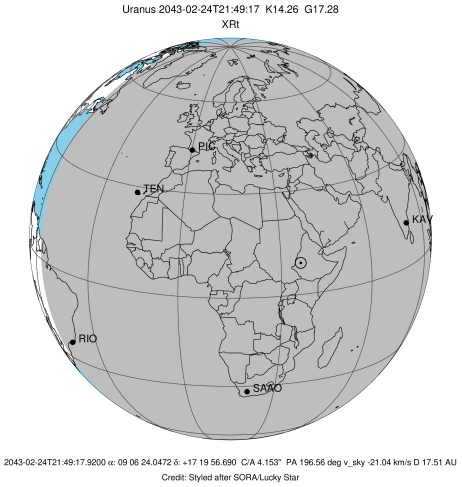
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-02-24T21:40:44.881		18.60	-4.34x	51372.02	-12.71		
lambda	I	2043-02-24T21:42:49.092		19.02	-4.80x	50026.71	-9.14		

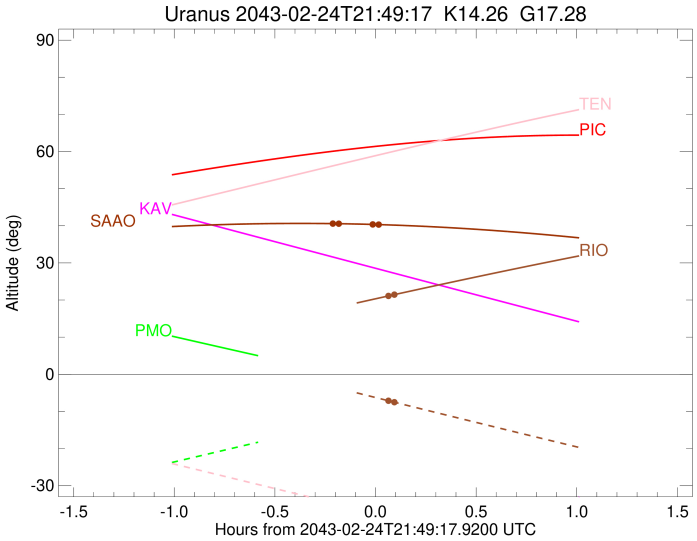
No planet occultations

lambda	E	2043-02-24T21:53:08.200		21.10	-7.13	50026.71	9.15		
epsilon	E	2043-02-24T21:55:25.203		21.55	-7.64	51535.19	12.73		

Uranus_2043-02-24T21_49_17.9200_SAAO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:40:44 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2043-02-24T21:47:36.480
Event type : XRt
: No Uranus occs
: Ring occs: topocentric, not geoecetric
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 : 611239134019360896
2Mass ID (if available) : 09062401+1719577
ICRS Star Coord at Epoch: 09h 06m 24.04717s +17:19:56.68958s
RUWE (>1.4 is poor) : 0.98
K magnitude : 14.260
G magnitude : 17.278
RP magnitude : 16.310
BP magnitude : 18.304
DUPflag : 0
Distance (au) : 17.514
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : -21.04
Sun-Target sep (deg) : 158.33
Sun-Moon sep (deg) : 33.32
B (ring opening deg) : 33.26
PA of pole (deg) : 97.08
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.794
C/A sky separation (km) : 48194.2
NAIF SPICE kernels : RAJobs_U111+rgf15.spk
URKALLv1.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





b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-02-24T21:36:18.118		40.58	-44.99	51371.63	-12.70		
lambda	I	2043-02-24T21:38:22.917		40.56	-45.18	50026.71	-9.05		

No planet occultations

lambda	E	2043-02-24T21:48:27.199		40.37	-46.04	50026.71	9.05		
epsilon	E	2043-02-24T21:50:44.907		40.30	-46.22	51534.29	12.70		