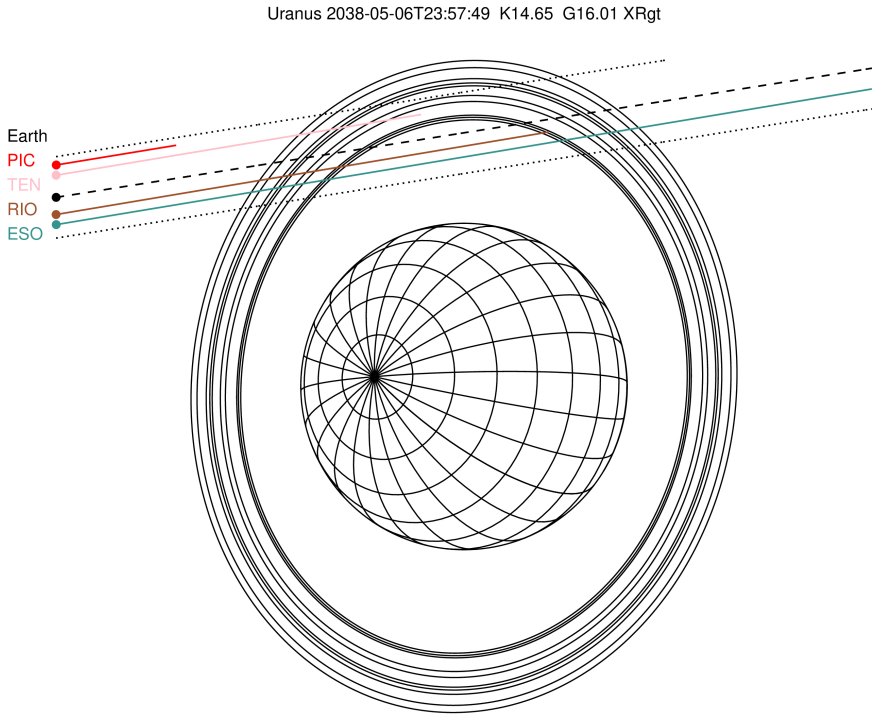
Stellar occultation prediction by rfrench@wellesley.edu Sun Jun 25 02:12:50 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2038-05-06T23:57:49.930
Event type : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Gaia source ID : 866078922585635968
2Mass ID (if available) : 07275485+2223013

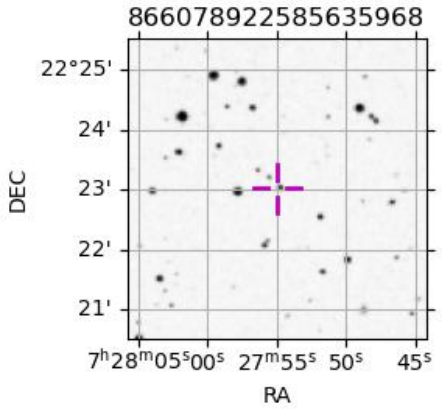
ICRS Star Coord at Epoch: 07h 27m 54.84842s +22:23:01.23566s
RUWE (>1.4 is poor) : 0.93
K magnitude : 14.652
G magnitude : 16.006
RP magnitude : 15.554
BP magnitude : 16.294
DUPflag : 0
Distance (au) : 19.102
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 19.45
Sun-Target sep (deg) : 64.22
Sun-Moon sep (deg) : 35.41
B (ring opening deg) : 56.48
PA of pole (deg) : 83.74

#	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

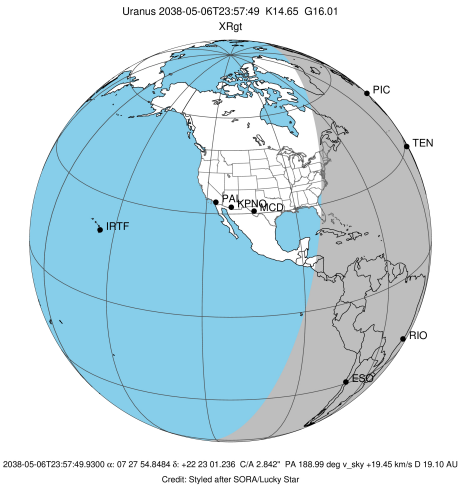


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

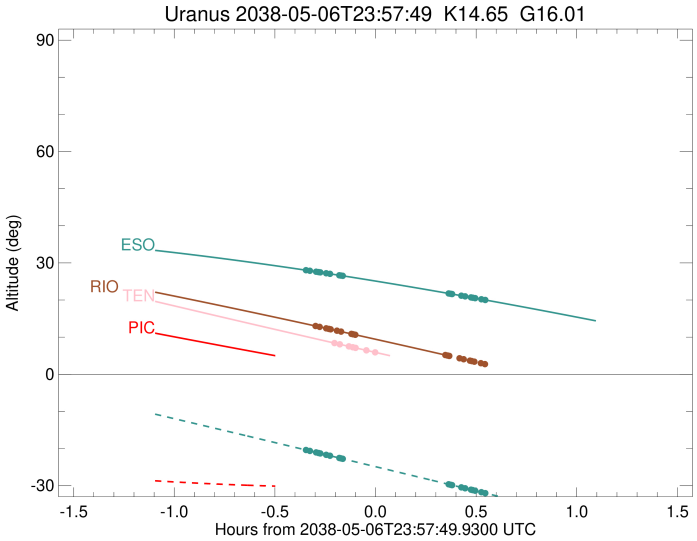
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5	+++++++			MAY 06 23:46 - MAY 06 23:57	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 06 23:40 - MAY 07 00:19	PnnRie
ESO	European Southern Obs	-29.3	289.3	++++++++++		++++++++++	MAY 06 23:37 - MAY 07 00:30	PnnRie
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



Uranus_2038-05-06T23_57_49.9300_TEN.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:27:41 2023



target : Uranus
target radius (km) : 25559.00
C/A epoch : 2038-05-07T00:01:52.220
Event type : XRgt
: No Uranus occs
: 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 : 866078922585635968
2Mass ID (if available) : 07275485+2223013
ICRS Star Coord at Epoch: 07h 27m 54.84842s +22:23:01.23566s
RUWE (>1.4 is poor) : 0.93
K magnitude : 14.652
G magnitude : 16.006
RP magnitude : 15.554
BP magnitude : 16.294
DUPflag : 0
Distance (au) : 19.102
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 19.45
Sun-Target sep (deg) : 64.22
Sun-Moon sep (deg) : 36.08
B (ring opening deg) : 56.48
PA of pole (deg) : 83.74
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.112
C/A sky separation (km) : 43118.3
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

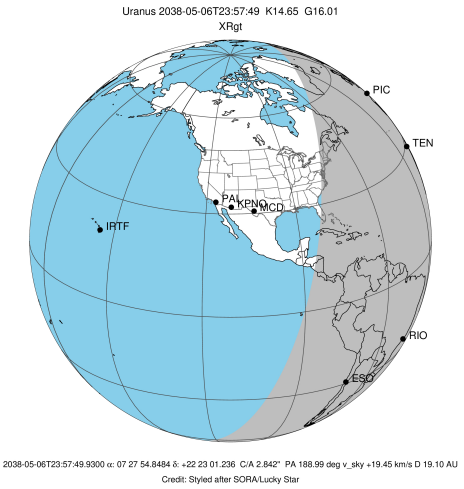
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2038-05-06T23:46:00.220		8.32	-41.42	50872.98	-11.77		
lambda	I	2038-05-06T23:47:13.162		8.07	-41.53	50026.71	-11.31		
delta	I	2038-05-06T23:49:55.576		7.51	-41.77	48300.35	-9.92		
gamma	I	2038-05-06T23:51:05.795		7.27	-41.87	47626.11	-9.27		
eta	I	2038-05-06T23:51:55.571		7.10	-41.95	47176.12	-8.80		
beta	I	2038-05-06T23:55:07.136		6.44	-42.22	45672.47	-6.86		
alpha	I	2038-05-06T23:57:46.946		5.90	-42.43	44717.23	-5.10		

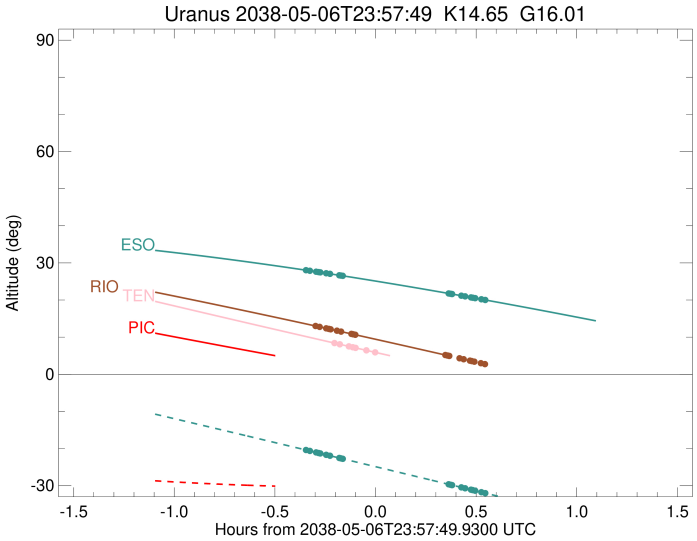
No planet occultations

alpha	E	2038-05-07T00:11:58.836		3.01x	-43.45	44731.95	5.11		
beta	E	2038-05-07T00:14:36.562		2.48x	-43.61	45679.88	6.87		
eta	E	2038-05-07T00:17:46.794		1.84x	-43.80	47176.12	8.83		
gamma	E	2038-05-07T00:18:36.014		1.67x	-43.84	47622.25	9.30		
delta	E	2038-05-07T00:19:46.432		1.44x	-43.91	48300.35	9.95		
lambda	E	2038-05-07T00:22:28.282		0.89x	-44.05	50026.71	11.35		
epsilon	E	2038-05-07T00:23:31.108		0.69x	-44.10	50756.00	11.82		

Uranus_2038-05-06T23_57_49.9300_RIO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:34:01 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2038-05-07T00:02:37.920
Event type : XRgt
: No Uranus occs
: 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 : 866078922585635968
2Mass ID (if available) : 07275485+2223013
ICRS Star Coord at Epoch: 07h 27m 54.84842s +22:23:01.23566s
RUWE (>1.4 is poor) : 0.93
K magnitude : 14.652
G magnitude : 16.006
RP magnitude : 15.554
BP magnitude : 16.294
DUPflag : 0
Distance (au) : 19.102
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 19.45
Sun-Target sep (deg) : 64.22
Sun-Moon sep (deg) : 36.15
B (ring opening deg) : 56.48
PA of pole (deg) : 83.74
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.679
C/A sky separation (km) : 37117.1
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

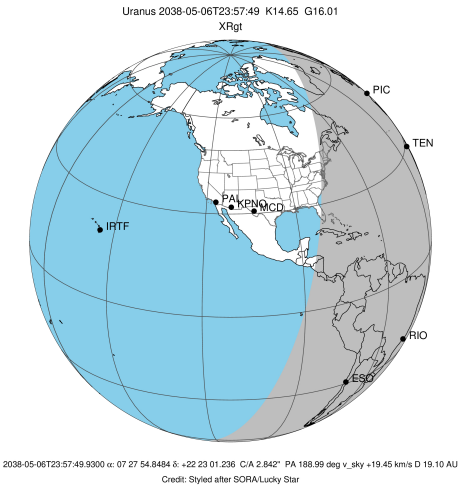
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2038-05-06T23:40:12.261		12.96	-45.26	50938.11	-15.33		
lambda	I	2038-05-06T23:41:11.923		12.76	-45.49	50026.71	-15.10		
delta	I	2038-05-06T23:43:08.977		12.37	-45.94	48300.35	-14.38		
gamma	I	2038-05-06T23:43:56.289		12.22	-46.12	47627.43	-14.06		
eta	I	2038-05-06T23:44:28.634		12.11	-46.25	47176.12	-13.84		
beta	I	2038-05-06T23:46:20.825		11.74	-46.68	45666.94	-13.02		
alpha	I	2038-05-06T23:47:36.595		11.48	-46.97	44705.59	-12.42		
4	I	2038-05-06T23:50:40.839		10.87	-47.68	42568.68	-10.79		
5	I	2038-05-06T23:51:19.295		10.74	-47.82	42163.84	-10.37		
6	I	2038-05-06T23:51:48.700		10.64	-47.94	41840.75	-10.07		

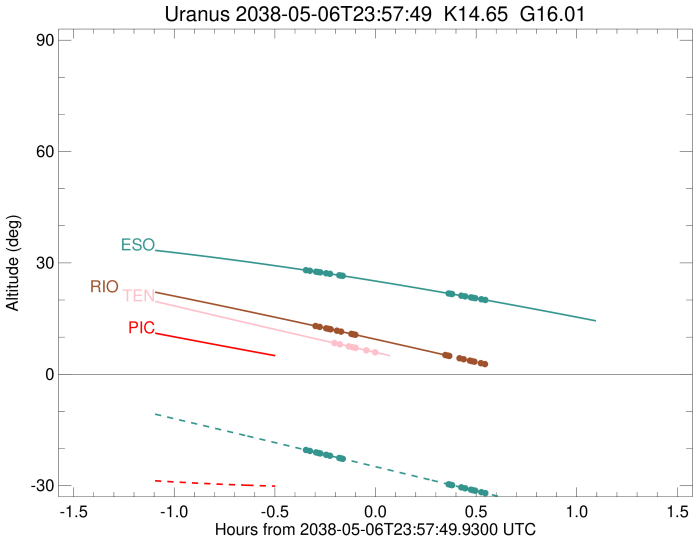
No planet occultations

6	E	2038-05-07T00:18:33.968	5.20	-54.10	41805.90	10.10		
5	E	2038-05-07T00:19:09.956	5.08	-54.24	42163.29	10.41		
4	E	2038-05-07T00:19:51.486	4.93x	-54.40	42607.47	10.82		
alpha	E	2038-05-07T00:22:53.670	4.31x	-55.10	44741.82	12.47		
beta	E	2038-05-07T00:24:07.327	4.05x	-55.38	45681.19	13.08		
eta	E	2038-05-07T00:25:58.126	3.67x	-55.81	47176.12	13.90		
gamma	E	2038-05-07T00:26:29.905	3.56x	-55.93	47621.52	14.13		
delta	E	2038-05-07T00:27:17.412	3.39x	-56.11	48300.35	14.45		
lambda	E	2038-05-07T00:29:13.881	2.99x	-56.56	50026.71	15.18		
epsilon	E	2038-05-07T00:30:03.251	2.82x	-56.75	50783.50	15.41		

Uranus_2038-05-06T23_57_49.9300_ESO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:36:11 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2038-05-07T00:01:21.440
Event type : XRgt
: No Uranus occs
: 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 : 866078922585635968
2Mass ID (if available) : 07275485+2223013
ICRS Star Coord at Epoch: 07h 27m 54.84842s +22:23:01.23566s
RUWE (>1.4 is poor) : 0.93
K magnitude : 14.652
G magnitude : 16.006
RP magnitude : 15.554
BP magnitude : 16.294
DUPflag : 0
Distance (au) : 19.102
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 19.45
Sun-Target sep (deg) : 64.22
Sun-Moon sep (deg) : 36.10
B (ring opening deg) : 56.48
PA of pole (deg) : 83.74
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.560
C/A sky separation (km) : 35459.4
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	2038-05-06T23:37:19.615		28.00	-20.45	50954.49	-16.00		
lambda	I	2038-05-06T23:38:17.727		27.87	-20.66	50026.71	-15.81		
delta	I	2038-05-06T23:40:09.030		27.62	-21.06	48300.35	-15.19		
gamma	I	2038-05-06T23:40:53.688		27.52	-21.22	47627.71	-14.93		
eta	I	2038-05-06T23:41:24.133		27.45	-21.33	47176.12	-14.74		
beta	I	2038-05-06T23:43:08.898		27.21	-21.71	45665.76	-14.05		
alpha	I	2038-05-06T23:44:18.827		27.05	-21.96	44703.58	-13.56		
4	I	2038-05-06T23:47:04.731		26.66	-22.56	42565.20	-12.23		
5	I	2038-05-06T23:47:37.856		26.58	-22.68	42167.03	-11.90		
6	I	2038-05-06T23:48:03.355		26.52	-22.77	41844.26	-11.67		

No planet occultations

6	E	2038-05-07T00:19:33.527		21.78	-29.62	41803.57	11.70		
5	E	2038-05-07T00:20:05.547		21.70	-29.74	42166.48	11.93		
4	E	2038-05-07T00:20:41.812		21.60	-29.87	42609.51	12.27		
alpha	E	2038-05-07T00:23:25.828		21.17	-30.47	44743.41	13.60		
beta	E	2038-05-07T00:24:33.699		20.99	-30.71	45681.23	14.10		
eta	E	2038-05-07T00:26:17.172		20.71	-31.09	47176.12	14.79		
gamma	E	2038-05-07T00:26:47.083		20.63	-31.20	47621.40	14.98		
delta	E	2038-05-07T00:27:31.991		20.51	-31.36	48300.35	15.25		
lambda	E	2038-05-07T00:29:22.848		20.20	-31.77	50026.71	15.88		
epsilon	E	2038-05-07T00:30:10.685		20.07	-31.94	50792.45	16.07		