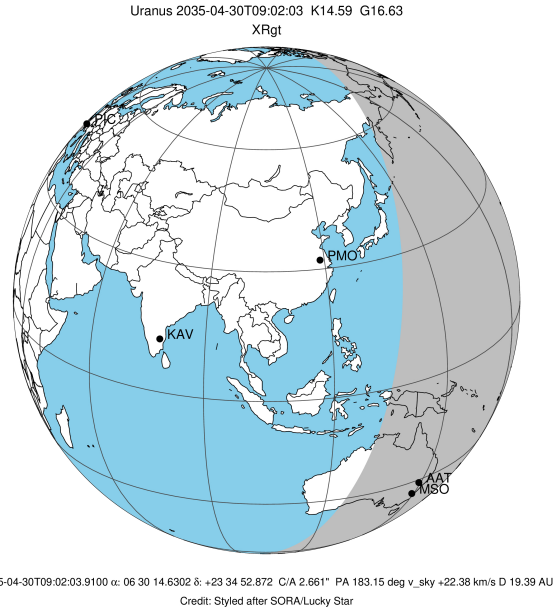
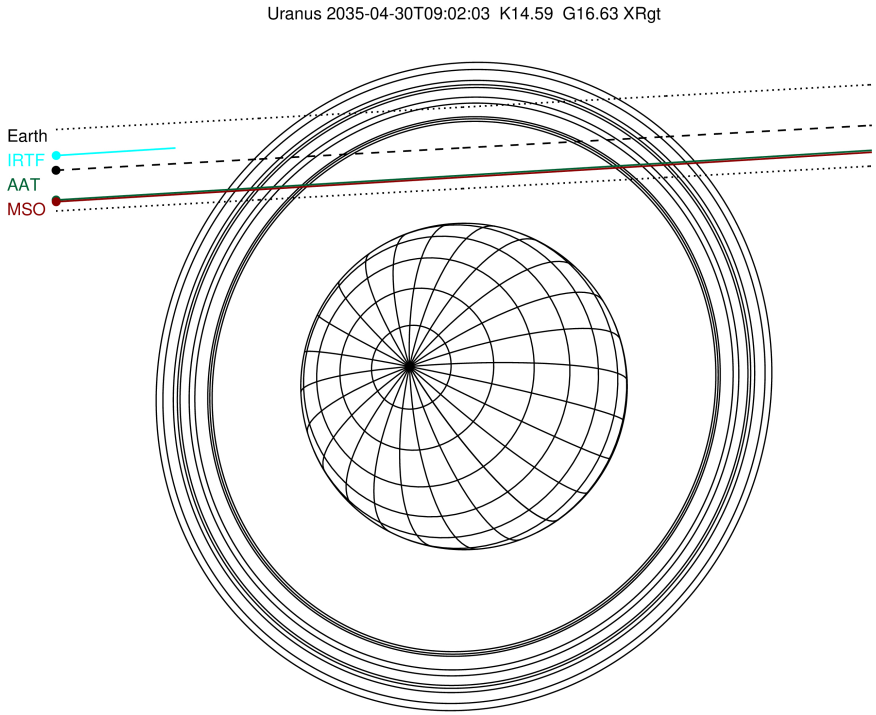
Stellar occultation prediction by rfrench@wellesley.edu Sun Jun 25 01:38:46 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2035-04-30T09:02:03.910
Event type : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Gaia source ID : 3382609624062079488
2Mass ID (if available) : 06301462+2334529

ICRS Star Coord at Epoch: 06h 30m 14.63015s +23:34:52.87162s
RUWE (>1.4 is poor) : 1.06
K magnitude : 14.590
G magnitude : 16.628
RP magnitude : 15.970
BP magnitude : 17.075
DUPflag : 0
Distance (au) : 19.390
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 22.38
Sun-Target sep (deg) : 57.54
Sun-Moon sep (deg) : 151.04
B (ring opening deg) : 69.16
PA of pole (deg) : 69.89

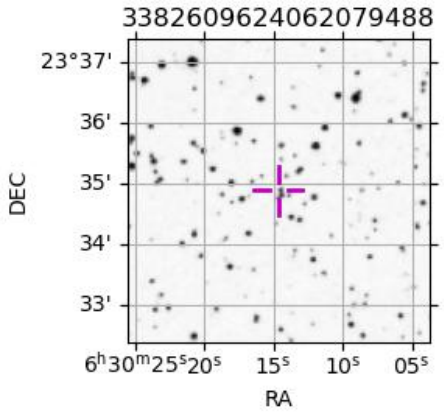
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon





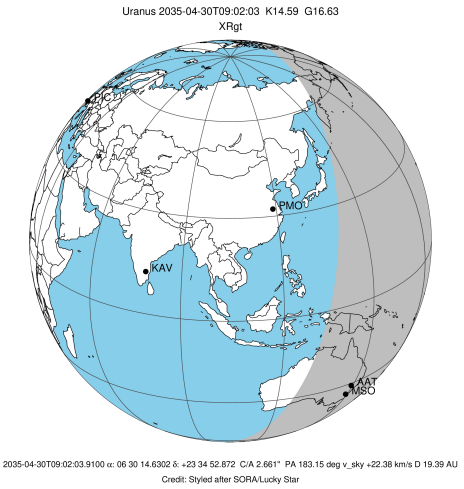
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

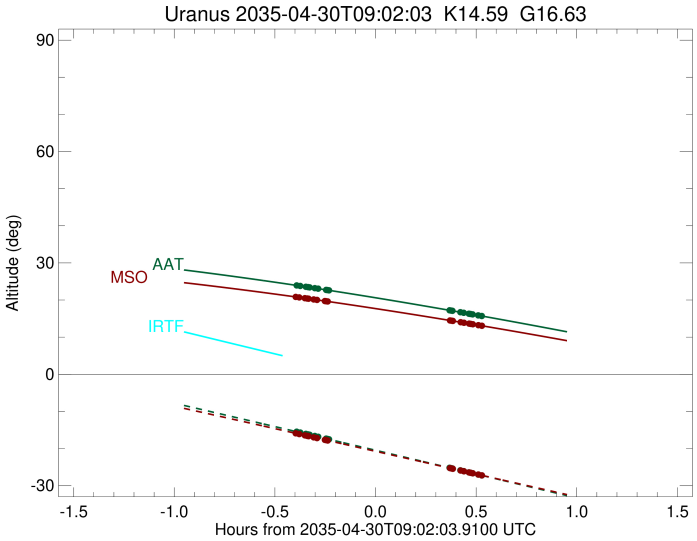
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide 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					PnnRnn
ESO	European Southern Obs	-29.3	289.3					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1	++++++++++	++++++++++	++++++++++	APR 30 08:38 - APR 30 09:33	PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	++++++++++	++++++++++	++++++++++	APR 30 08:38 - APR 30 09:33	PnnRie



Uranus_2035-04-30T09_02_03.9100_AAT.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:38:02 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2035-04-30T09:05:00.450
Event type : XRgt
: No Uranus occs
: 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 : 3382609624062079488
2Mass ID (if available) : 06301462+2334529
ICRS Star Coord at Epoch: 06h 30m 14.63015s +23:34:52.87162s
RUWE (>1.4 is poor) : 1.06
K magnitude : 14.590
G magnitude : 16.628
RP magnitude : 15.970
BP magnitude : 17.075
DUPflag : 0
Distance (au) : 19.390
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 22.38
Sun-Target sep (deg) : 57.54
Sun-Moon sep (deg) : 150.62
B (ring opening deg) : 69.16
PA of pole (deg) : 69.89
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.347
C/A sky separation (km) : 33008.8
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

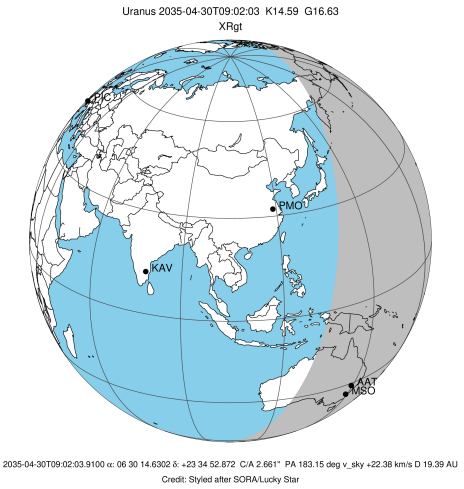
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-04-30T08:38:20.482		23.96	-15.43	51404.00	-17.69		
lambda	I	2035-04-30T08:39:38.721		23.79	-15.70	50026.71	-17.42		
delta	I	2035-04-30T08:41:19.287		23.56	-16.06	48300.35	-16.90		
gamma	I	2035-04-30T08:41:59.268		23.47	-16.20	47628.83	-16.69		
eta	I	2035-04-30T08:42:26.527		23.41	-16.30	47176.12	-16.53		
beta	I	2035-04-30T08:44:00.896		23.19	-16.63	45642.20	-15.96		
alpha	I	2035-04-30T08:44:57.610		23.06	-16.83	44751.84	-15.59		
4	I	2035-04-30T08:47:21.839		22.73	-17.34	42572.74	-14.54		
5	I	2035-04-30T08:47:44.925		22.67	-17.43	42254.11	-14.31		
6	I	2035-04-30T08:48:14.035		22.60	-17.53	41836.47	-14.12		

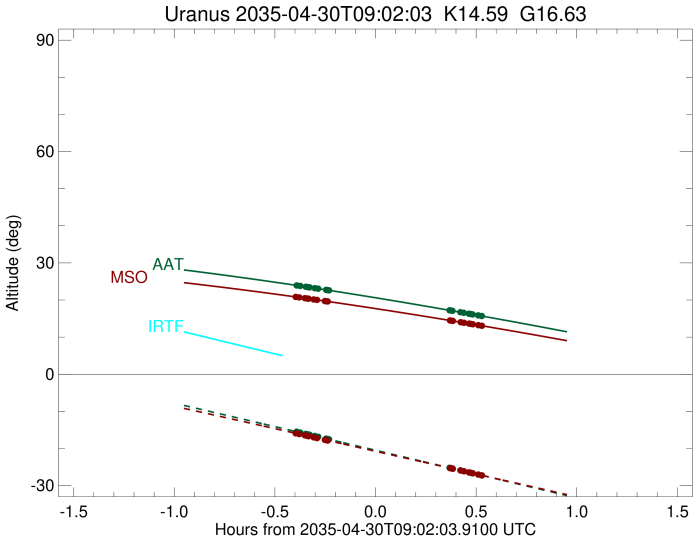
No planet occultations

6	E	2035-04-30T09:24:10.910	17.23	-25.20	41877.96	14.16		
5	E	2035-04-30T09:24:30.901	17.17	-25.27	42164.36	14.35		
4	E	2035-04-30T09:25:02.067	17.09	-25.38	42615.71	14.58		
alpha	E	2035-04-30T09:27:21.751	16.72	-25.88	44728.46	15.63		
beta	E	2035-04-30T09:28:21.011	16.56	-26.09	45666.53	16.01		
eta	E	2035-04-30T09:29:53.567	16.31	-26.42	47176.12	16.59		
gamma	E	2035-04-30T09:30:20.856	16.24	-26.52	47630.87	16.74		
delta	E	2035-04-30T09:31:00.578	16.13	-26.66	48300.35	16.96		
lambda	E	2035-04-30T09:32:40.781	15.87	-27.02	50026.71	17.48		
epsilon	E	2035-04-30T09:33:24.714	15.75	-27.17	50799.51	17.76		

Uranus_2035-04-30T09_02_03.9100_MSO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:42:18 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2035-04-30T09:04:53.570
Event type : XRgt
: No Uranus occs
: 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 : 3382609624062079488
2Mass ID (if available) : 06301462+2334529
ICRS Star Coord at Epoch: 06h 30m 14.63015s +23:34:52.87162s
RUWE (>1.4 is poor) : 1.06
K magnitude : 14.590
G magnitude : 16.628
RP magnitude : 15.970
BP magnitude : 17.075
DUPflag : 0
Distance (au) : 19.390
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 22.38
Sun-Target sep (deg) : 57.54
Sun-Moon sep (deg) : 150.61
B (ring opening deg) : 69.16
PA of pole (deg) : 69.89
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.327
C/A sky separation (km) : 32722.2
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	2035-04-30T08:38:03.252		20.86	-15.86	51406.27	-17.81		
lambda	I	2035-04-30T08:39:21.061		20.70	-16.12	50026.71	-17.55		
delta	I	2035-04-30T08:41:00.832		20.49	-16.46	48300.35	-17.05		
gamma	I	2035-04-30T08:41:40.471		20.41	-16.59	47628.79	-16.83		
eta	I	2035-04-30T08:42:07.484		20.35	-16.68	47176.12	-16.68		
beta	I	2035-04-30T08:43:40.939		20.15	-17.00	45642.14	-16.12		
alpha	I	2035-04-30T08:44:37.041		20.03	-17.19	44751.78	-15.76		
4	I	2035-04-30T08:46:59.483		19.72	-17.67	42572.26	-14.75		
5	I	2035-04-30T08:47:22.154		19.67	-17.75	42254.95	-14.53		
6	I	2035-04-30T08:47:50.913		19.61	-17.85	41836.00	-14.34		

No planet occultations

6	E	2035-04-30T09:24:18.915		14.49	-25.29	41878.10	14.38		
5	E	2035-04-30T09:24:38.563		14.44	-25.36	42163.93	14.56		
4	E	2035-04-30T09:25:09.321		14.37	-25.47	42615.81	14.79		
alpha	E	2035-04-30T09:27:27.231		14.02	-25.94	44728.14	15.81		
beta	E	2035-04-30T09:28:25.889		13.88	-26.14	45666.71	16.17		
eta	E	2035-04-30T09:29:57.543		13.64	-26.45	47176.12	16.74		
gamma	E	2035-04-30T09:30:24.589		13.58	-26.54	47630.84	16.89		
delta	E	2035-04-30T09:31:03.975		13.48	-26.68	48300.35	17.11		
lambda	E	2035-04-30T09:32:43.397		13.22	-27.01	50026.71	17.61		
epsilon	E	2035-04-30T09:33:26.927		13.11	-27.16	50797.93	17.88		