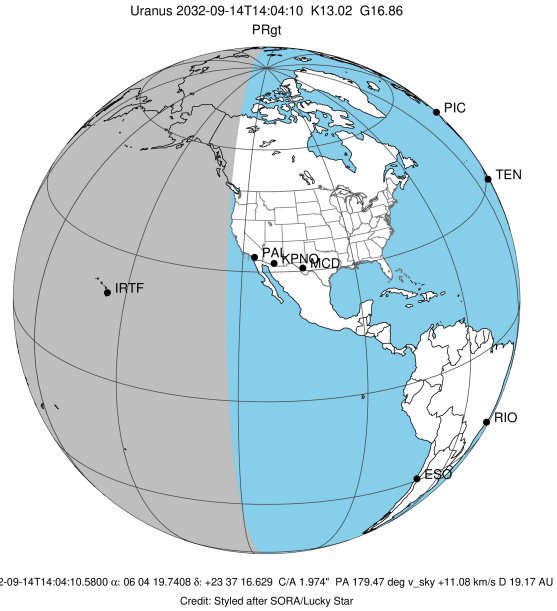
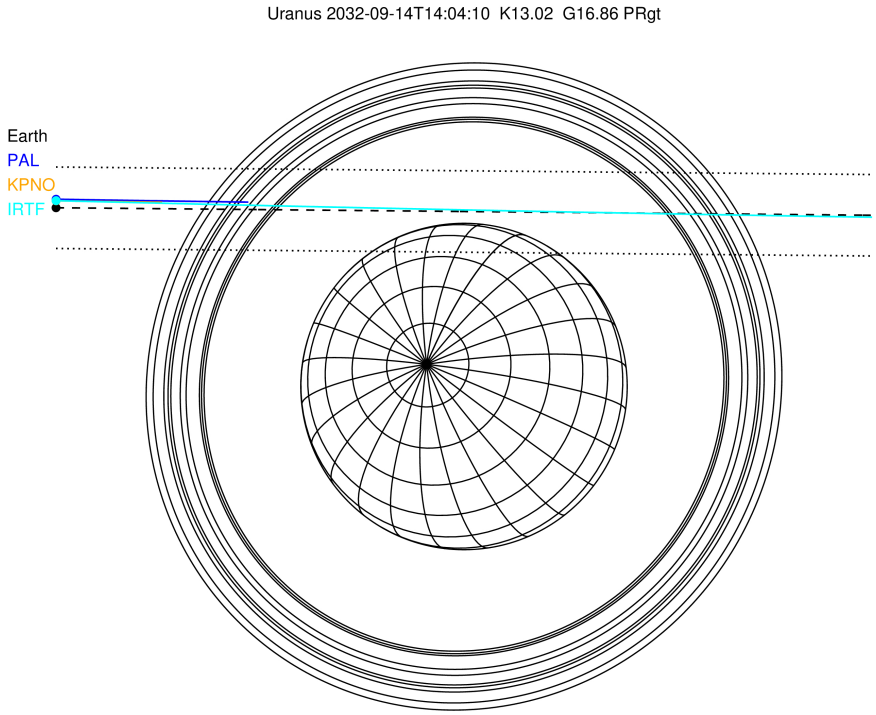
Stellar occultation prediction by rfrench@wellesley.edu Sun Jun 25 00:34:25 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2032-09-14T14:04:10.580
Event type : PRgt
: Uranus occs: not geocentric or topocentric
: Ring occs: geocentric, topocentric
Gaia source ID : 3426136579285147776
2Mass ID (if available) : 06041973+2337169

ICRS Star Coord at Epoch: 06h 04m 19.74076s +23:37:16.62861s
RUWE (>1.4 is poor) : 0.00
K magnitude : 13.023
G magnitude : 16.857
RP magnitude : 15.406
BP magnitude : 17.819
DUPflag : 0
Distance (au) : 19.171
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 11.08
Sun-Target sep (deg) : 80.86
Sun-Moon sep (deg) : 165.18
B (ring opening deg) : 74.52
PA of pole (deg) : 59.42

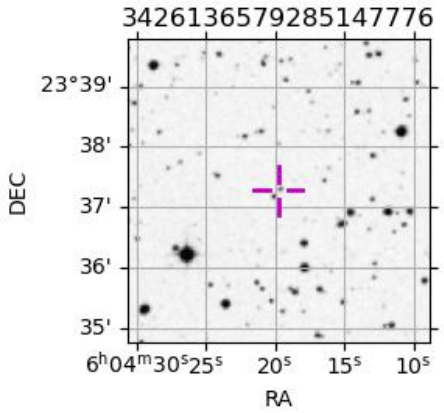
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon





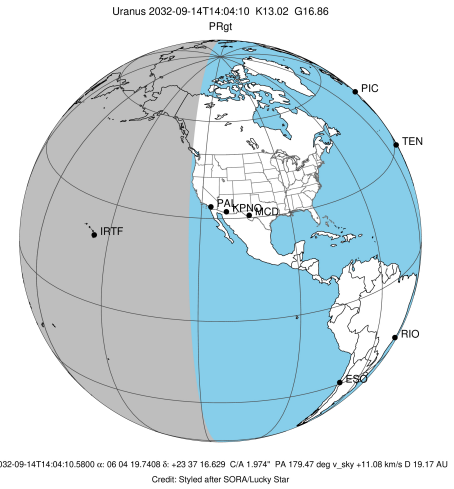
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

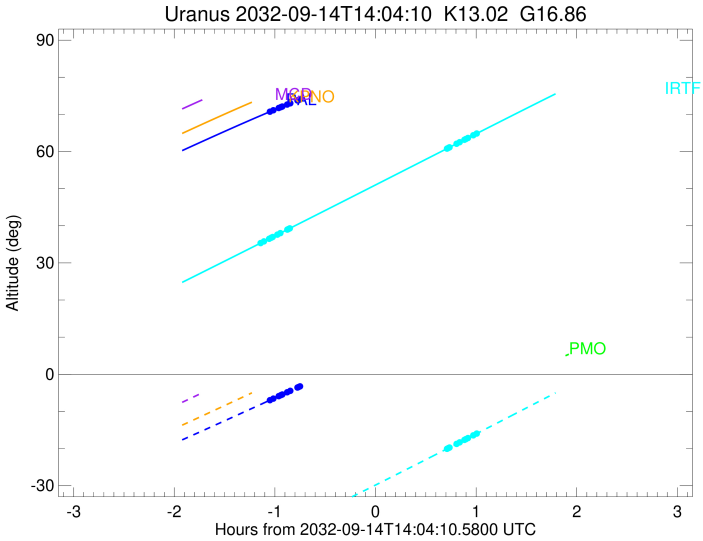
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1	+++++			SEP 14 13:01 - SEP 14 13:08	PnnRin
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	++++++++++		++++++++++	SEP 14 12:56 - SEP 14 15:04	PnnRie
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					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



Uranus_2032-09-14T14_04_10.5800_PAL.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:18:06 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2032-09-14T14:03:45.360
Event type : PRgt
: Uranus occs: not geocentric or topocentric
: Ring occs: geocentric, topocentric
Observer code : PAL
Location : Palomar Mt (200")
Latitude (deg) : 33.35622
E. Longitude (deg) : 243.13601
Altitude (km) : 1.706
Gaia source ID : 3426136579285147776
2Mass ID (if available) : 06041973+2337169
ICRS Star Coord at Epoch: 06h 04m 19.74076s +23:37:16.62861s
RUWE (>1.4 is poor) : 0.00
K magnitude : 13.023
G magnitude : 16.857
RP magnitude : 15.406
BP magnitude : 17.819
DUPflag : 0
Distance (au) : 19.171
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 11.08
Sun-Target sep (deg) : 80.86
Sun-Moon sep (deg) : 165.52
B (ring opening deg) : 74.52
PA of pole (deg) : 59.42
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.048
C/A sky separation (km) : 28470.6
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

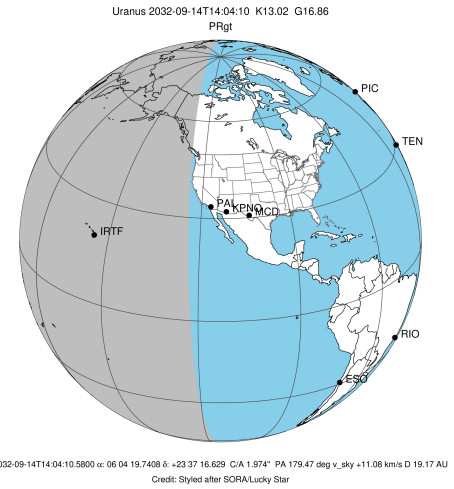
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-09-14T13:01:58.658		70.88	-6.82	50743.52	-9.11		
lambda	I	2032-09-14T13:03:17.617		71.13	-6.55	50026.71	-9.05		
delta	I	2032-09-14T13:06:30.192		71.73	-5.89	48300.35	-8.88		
gamma	I	2032-09-14T13:07:46.062		71.97	-5.62	47629.27	-8.81		
eta	I	2032-09-14T13:08:37.644		72.13	-5.45	47176.12	-8.76		
beta	I	2032-09-14T13:11:30.882		72.66	-4.85x	45674.63	-8.58		
alpha	I	2032-09-14T13:13:20.202		72.99	-4.47x	44740.55	-8.46		
4	I	2032-09-14T13:17:38.399		73.76	-3.57x	42590.91	-8.15		
5	I	2032-09-14T13:18:15.663		73.87	-3.45x	42304.89	-8.09		
6	I	2032-09-14T13:19:16.901		74.05	-3.23x	41806.89	-8.01		

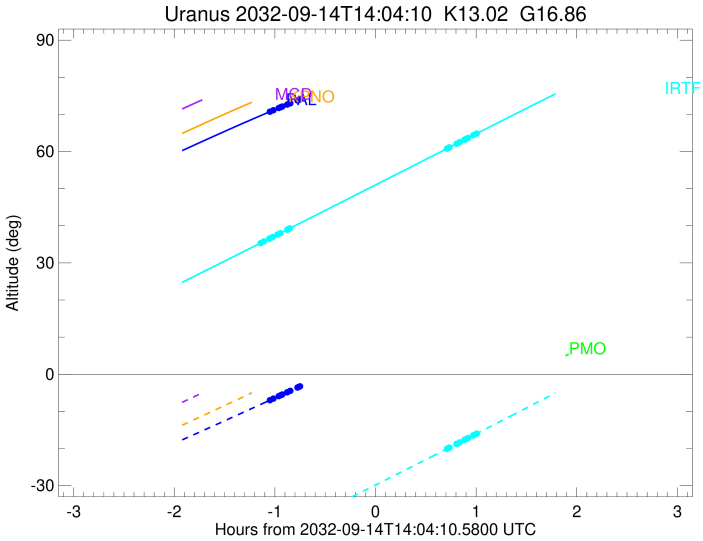
No planet occultations

6	E	2032-09-14T14:51:06.747		77.88	15.93x	41809.18	7.98		
5	E	2032-09-14T14:51:54.689		77.77	16.10x	42190.48	8.06		
4	E	2032-09-14T14:52:46.773		77.66	16.28x	42610.11	8.12		
alpha	E	2032-09-14T14:56:58.155		77.05	17.15x	44689.32	8.42		
beta	E	2032-09-14T14:58:50.543		76.77	17.54x	45643.79	8.54		
eta	E	2032-09-14T15:01:48.102		76.31	18.15x	47176.12	8.72		
gamma	E	2032-09-14T15:02:39.018		76.18	18.32x	47621.24	8.77		
delta	E	2032-09-14T15:03:56.177		75.98	18.59x	48300.35	8.84		
lambda	E	2032-09-14T15:07:09.738		75.45	19.26x	50026.71	9.00		
epsilon	E	2032-09-14T15:09:30.045		75.06	19.74x	51297.00	9.06		

Uranus_2032-09-14T14_04_10.5800_IRTF.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:28:52 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2032-09-14T13:58:27.100
Event type : PRgt
: Uranus occs: not geocentric or topocentric
: Ring occs: geocentric, topocentric
Observer code : IRTF
Location : Mauna Kea/IRTF
Latitude (deg) : 19.82622
E. Longitude (deg) : 204.52800
Altitude (km) : 4.168
Gaia source ID : 3426136579285147776
2Mass ID (if available) : 06041973+2337169
ICRS Star Coord at Epoch: 06h 04m 19.74076s +23:37:16.62861s
RUWE (>1.4 is poor) : 0.00
K magnitude : 13.023
G magnitude : 16.857
RP magnitude : 15.406
BP magnitude : 17.819
DUPflag : 0
Distance (au) : 19.171
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 11.08
Sun-Target sep (deg) : 80.86
Sun-Moon sep (deg) : 165.93
B (ring opening deg) : 74.52
PA of pole (deg) : 59.42
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.989
C/A sky separation (km) : 27652.2
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	2032-09-14T12:56:23.813		35.50	-44.77	50743.51	-9.35		
lambda	I	2032-09-14T12:57:40.686		35.80	-44.50	50026.71	-9.29		
delta	I	2032-09-14T13:00:48.020		36.51	-43.84	48300.35	-9.13		
gamma	I	2032-09-14T13:02:01.750		36.79	-43.58	47629.33	-9.07		
eta	I	2032-09-14T13:02:51.863		36.98	-43.40	47176.12	-9.02		
beta	I	2032-09-14T13:05:39.966		37.61	-42.80	45674.83	-8.85		
alpha	I	2032-09-14T13:07:25.893		38.02	-42.42	44740.93	-8.73		
4	I	2032-09-14T13:11:35.724		38.97	-41.52	42590.23	-8.44		
5	I	2032-09-14T13:12:11.545		39.10	-41.39	42305.56	-8.39		
6	I	2032-09-14T13:13:10.644		39.33	-41.18	41807.41	-8.31		

No planet occultations

6	E	2032-09-14T14:46:43.271		60.77	-20.11	41810.39	8.19		
5	E	2032-09-14T14:47:29.581		60.94	-19.93	42188.05	8.27		
4	E	2032-09-14T14:48:20.612		61.14	-19.73	42609.24	8.32		
alpha	E	2032-09-14T14:52:26.450		62.08	-18.78	44688.75	8.59		
beta	E	2032-09-14T14:54:16.657		62.50	-18.36	45643.46	8.71		
eta	E	2032-09-14T14:57:11.121		63.17	-17.68	47176.12	8.87		
gamma	E	2032-09-14T14:58:01.198		63.36	-17.49	47621.19	8.91		
delta	E	2032-09-14T14:59:17.156		63.65	-17.20	48300.35	8.97		
lambda	E	2032-09-14T15:02:27.953		64.38	-16.46	50026.71	9.12		
epsilon	E	2032-09-14T15:04:47.697		64.91	-15.92	51308.29	9.18		