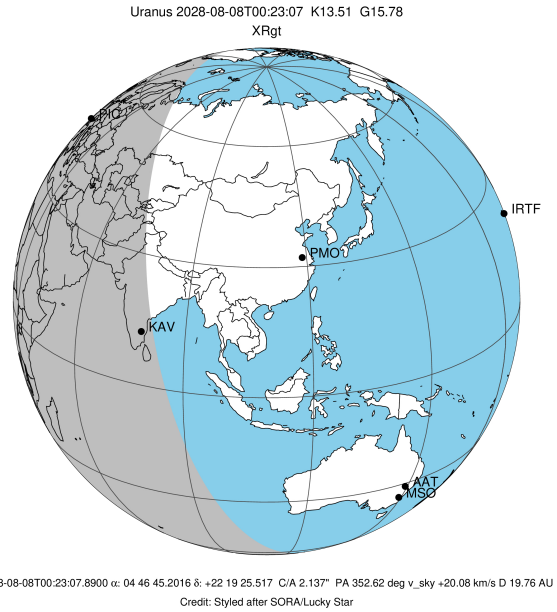
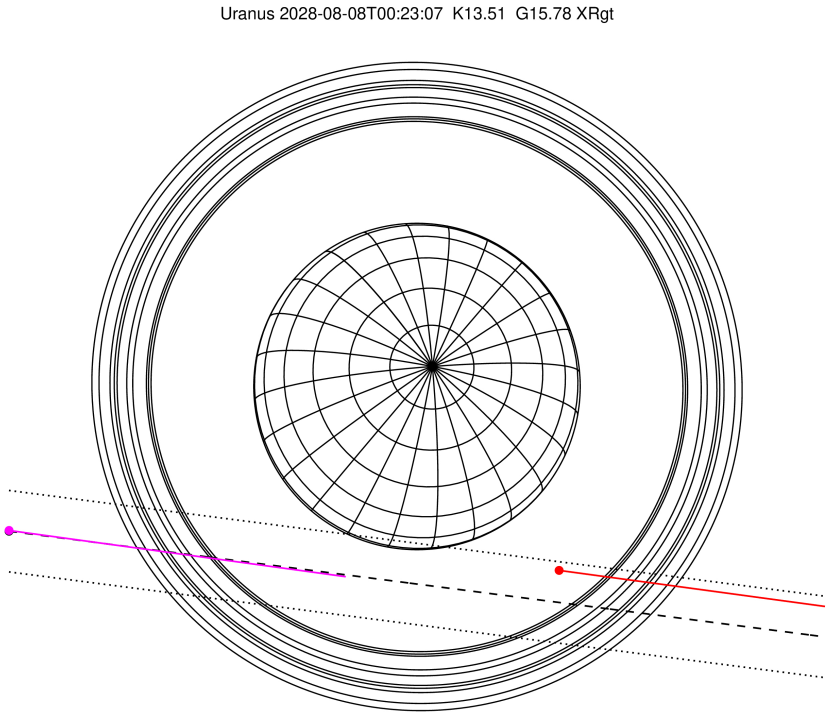
Stellar occultation prediction by rfrench@wellesley.edu Sat Jun 24 23:32:54 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2028-08-08T00:23:07.890
Event type : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Gaia source ID : 3413045209726460288
2Mass ID (if available) : 04464519+2219255

ICRS Star Coord at Epoch: 04h 46m 45.20159s +22:19:25.51746s
RUWE (>1.4 is poor) : 1.71
K magnitude : 13.514
G magnitude : 15.783
RP magnitude : 15.029
BP magnitude : 16.347
DUPflag : 0
Distance (au) : 19.763
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 20.08
Sun-Target sep (deg) : 62.50
Sun-Moon sep (deg) : 88.15
B (ring opening deg) : 81.09
PA of pole (deg) : -37.63

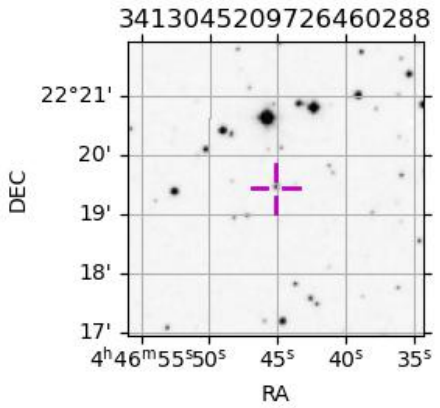
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon





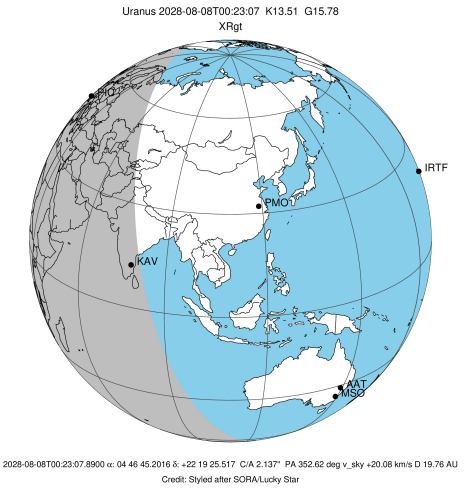
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

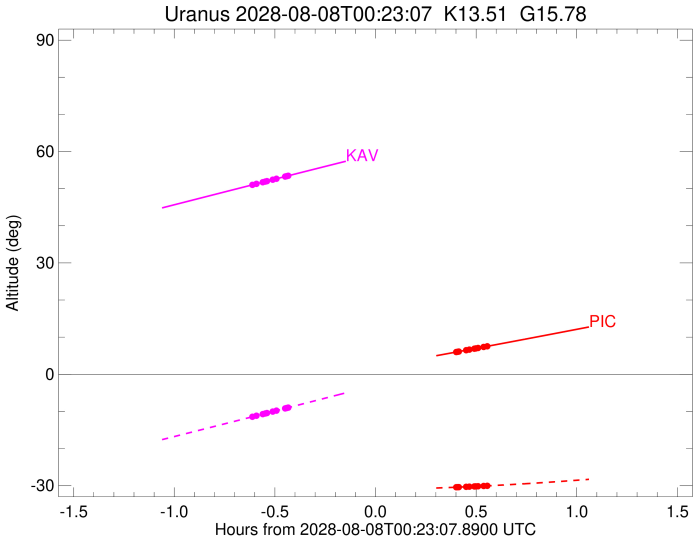
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	|	|	++++++++++	AUG 08 00:47 - AUG 08 00:56	PnnRne
PAL	Palomar Mt (200")	33.4	243.1	|	|	|		PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8	|	|	|		PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	|	|	|		PnnRnn
MCD	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	++++++++++ |	|	|	AUG 07 23:46 - AUG 07 23:57	PnnRin
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_2028-08-08T00_23_07.8900_PIC.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:15:26 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2028-08-08T00:19:52.760
Event type : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code : PIC
Location : Pic du Midi
Latitude (deg) : 42.93656
E. Longitude (deg) : 0.14231
Altitude (km) : 2.890
Gaia source ID : 3413045209726460288
2Mass ID (if available) : 04464519+2219255
ICRS Star Coord at Epoch: 04h 46m 45.20159s +22:19:25.51746s
RUWE (>1.4 is poor) : 1.71
K magnitude : 13.514
G magnitude : 15.783
RP magnitude : 15.029
BP magnitude : 16.347
DUPflag : 0
Distance (au) : 19.763
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 20.08
Sun-Target sep (deg) : 62.50
Sun-Moon sep (deg) : 88.17
B (ring opening deg) : 81.09
PA of pole (deg) : -37.63
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.783
C/A sky separation (km) : 25561.0
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

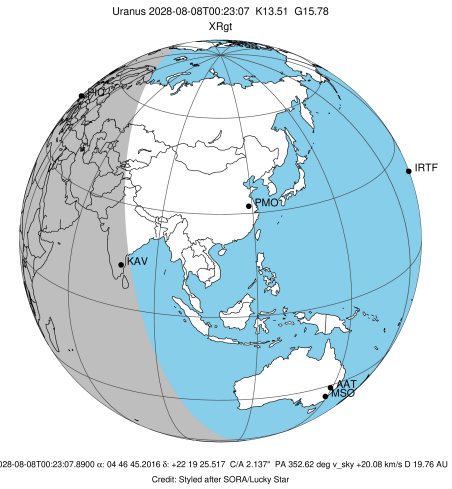
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2028-08-07T23:44:06.676		-4.02x	-31.01	50895.46	-17.46		
lambda	I	2028-08-07T23:44:56.397		-3.90x	-31.03	50026.71	-17.42		
delta	I	2028-08-07T23:46:36.169		-3.65x	-31.06	48300.35	-17.18		
gamma	I	2028-08-07T23:47:15.662		-3.55x	-31.07	47623.65	-17.08		
eta	I	2028-08-07T23:47:41.910		-3.48x	-31.08	47176.12	-17.02		
beta	I	2028-08-07T23:49:12.777		-3.25x	-31.10	45641.33	-16.76		
alpha	I	2028-08-07T23:50:07.206		-3.12x	-31.11	44734.85	-16.59		
4	I	2028-08-07T23:52:18.454		-2.79x	-31.14	42580.63	-16.15		
5	I	2028-08-07T23:52:40.222		-2.73x	-31.14	42227.57	-16.06		
6	I	2028-08-07T23:53:06.714		-2.66x	-31.15	41812.45	-15.98		

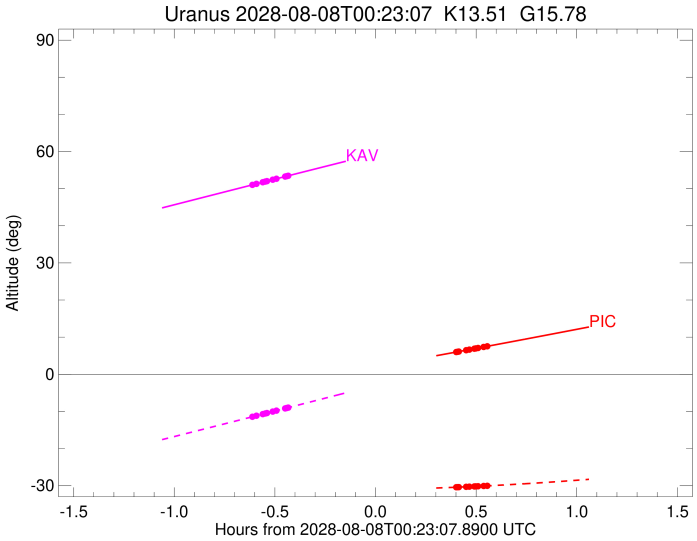
No planet occultations

6	E	2028-08-08T00:47:09.402		5.98	-30.43	41809.50	15.90		
5	E	2028-08-08T00:47:31.251		6.04	-30.42	42159.50	15.98		
4	E	2028-08-08T00:47:54.174		6.10	-30.41	42526.00	16.07		
alpha	E	2028-08-08T00:50:06.644		6.47	-30.32	44685.07	16.51		
beta	E	2028-08-08T00:51:06.076		6.64	-30.28	45671.36	16.68		
eta	E	2028-08-08T00:52:35.614		6.89	-30.22	47176.12	16.92		
gamma	E	2028-08-08T00:53:01.974		6.96	-30.20	47623.14	16.99		
delta	E	2028-08-08T00:53:41.716		7.07	-30.17	48300.35	17.09		
lambda	E	2028-08-08T00:55:22.060		7.35	-30.10	50026.71	17.32		
epsilon	E	2028-08-08T00:56:17.543		7.51	-30.06	50990.73	17.36		

Uranus_2028-08-08T00_23_07.8900_KAV.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:30:25 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2028-08-08T00:20:13.100
Event type : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code : KAV
Location : Kavalur Observatory
Latitude (deg) : 12.57556
E. Longitude (deg) : 78.83167
Altitude (km) : 0.722
Gaia source ID : 3413045209726460288
2Mass ID (if available) : 04464519+2219255
ICRS Star Coord at Epoch: 04h 46m 45.20159s +22:19:25.51746s
RUWE (>1.4 is poor) : 1.71
K magnitude : 13.514
G magnitude : 15.783
RP magnitude : 15.029
BP magnitude : 16.347
DUPflag : 0
Distance (au) : 19.763
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 20.08
Sun-Target sep (deg) : 62.50
Sun-Moon sep (deg) : 88.92
B (ring opening deg) : 81.09
PA of pole (deg) : -37.63
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.164
C/A sky separation (km) : 31025.0
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	2028-08-07T23:46:45.307		51.10	-11.37	50856.96	-15.54		
lambda	I	2028-08-07T23:47:38.780		51.30	-11.17	50026.71	-15.44		
delta	I	2028-08-07T23:49:31.884		51.73	-10.74	48300.35	-15.08		
gamma	I	2028-08-07T23:50:17.050		51.91	-10.56	47623.02	-14.92		
eta	I	2028-08-07T23:50:47.119		52.02	-10.45	47176.12	-14.81		
beta	I	2028-08-07T23:52:32.140		52.42	-10.04	45642.07	-14.40		
alpha	I	2028-08-07T23:53:36.193		52.67	-9.80	44729.96	-14.12		
4	I	2028-08-07T23:56:12.448		53.26	-9.20	42572.85	-13.39		
5	I	2028-08-07T23:56:39.309		53.37	-9.09	42213.69	-13.24		
6	I	2028-08-07T23:57:10.821		53.49	-8.97	41806.69	-13.10		

No planet occultations

6	E	2028-08-08T00:43:51.274		64.00	1.90x	41804.12	13.05		
5	E	2028-08-08T00:44:17.851		64.10	2.01x	42155.89	13.19		
4	E	2028-08-08T00:44:45.937		64.20	2.12x	42526.26	13.34		
alpha	E	2028-08-08T00:47:23.420		64.78	2.73x	44686.41	14.07		
beta	E	2028-08-08T00:48:32.558		65.03	3.00x	45668.54	14.34		
eta	E	2028-08-08T00:50:16.161		65.41	3.41x	47176.12	14.74		
gamma	E	2028-08-08T00:50:46.328		65.52	3.53x	47622.54	14.85		
delta	E	2028-08-08T00:51:31.725		65.68	3.70x	48300.35	15.01		
lambda	E	2028-08-08T00:53:25.351		66.10	4.15x	50026.71	15.37		
epsilon	E	2028-08-08T00:54:24.615		66.31	4.38x	50942.95	15.46		