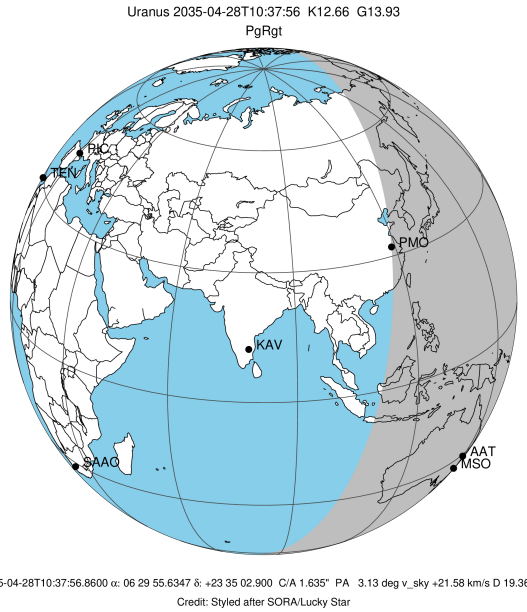
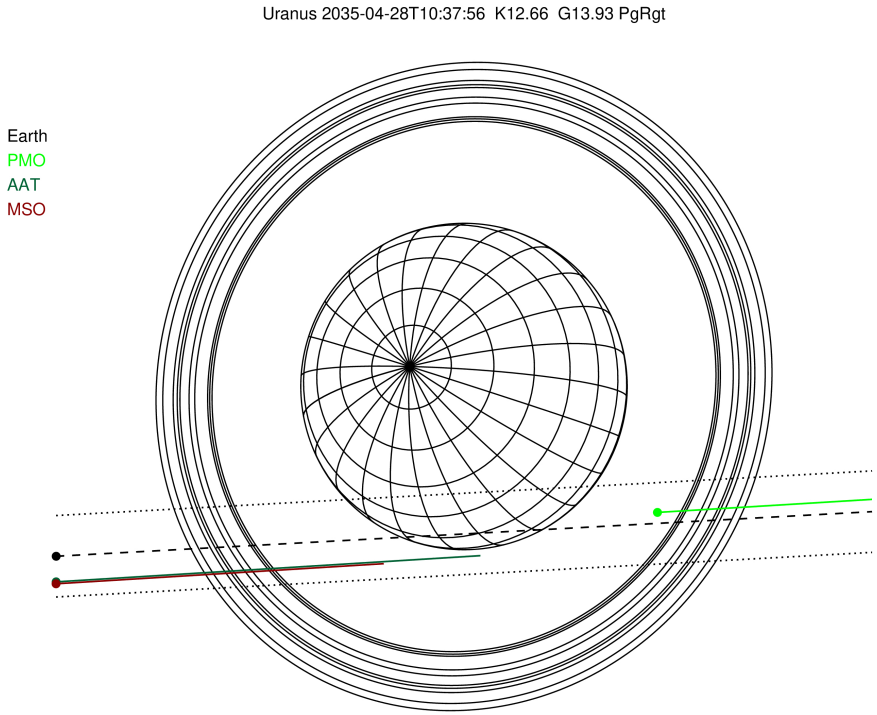
Stellar occultation prediction by rfrench@wellesley.edu Sun Jun 25 01:38:24 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2035-04-28T10:37:56.860
Event type : PgRgt
: Uranus occs: geocentric, not topocentric
: Ring occs: geocentric, topocentric
Gaia source ID : 3382612377139526656
2Mass ID (if available) : 06295564+2335031

ICRS Star Coord at Epoch: 06h 29m 55.63469s +23:35:02.89986s
RUWE (>1.4 is poor) : 1.04
K magnitude : 12.661
G magnitude : 13.929
RP magnitude : 13.476
BP magnitude : 14.220
DUPflag : 0
Distance (au) : 19.362
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 21.58
Sun-Target sep (deg) : 59.35
Sun-Moon sep (deg) : 172.62
B (ring opening deg) : 69.23
PA of pole (deg) : 69.78

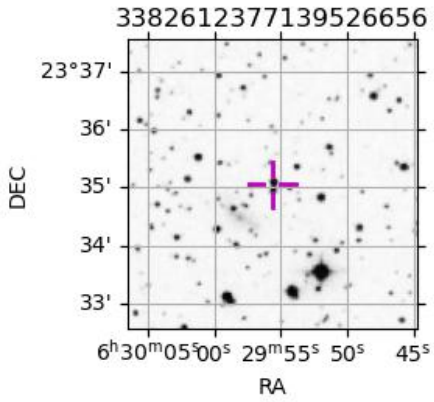
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon





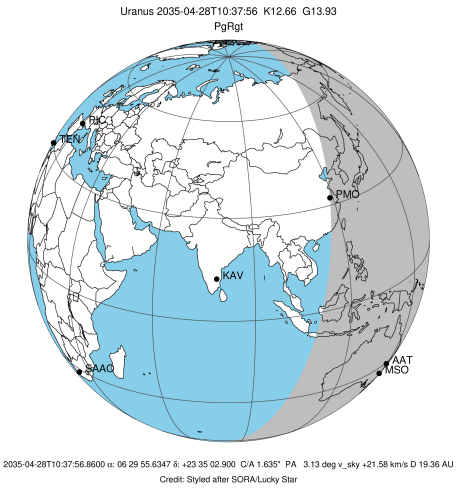
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

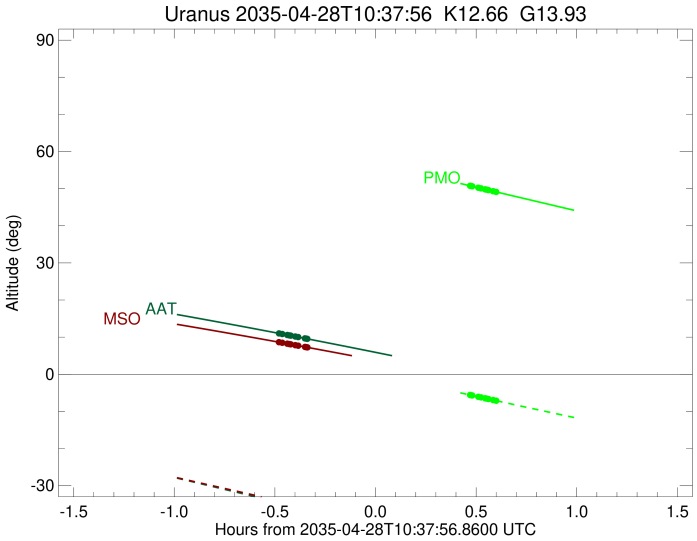
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8		++++++++++		APR 28 11:06 - APR 28 11:13	PnnRne
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald 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 28 10:08 - APR 28 10:17	PnnRin
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	++++++++++			APR 28 10:08 - APR 28 10:17	PnnRin



Uranus_2035-04-28T10_37_56.8600_PMO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:20:50 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2035-04-28T10:40:29.740
Event type : PgRgt
: Uranus occs: geocentric, not topocentric
: Ring occs: geocentric, topocentric
Observer code : PMO
Location : Purple Mtn Obs. Nanking
Latitude (deg) : 32.06667
E. Longitude (deg) : 118.82089
Altitude (km) : 0.364
Gaia source ID : 3382612377139526656
2Mass ID (if available) : 06295564+2335031
ICRS Star Coord at Epoch: 06h 29m 55.63469s +23:35:02.89986s
RUWE (>1.4 is poor) : 1.04
K magnitude : 12.661
G magnitude : 13.929
RP magnitude : 13.476
BP magnitude : 14.220
DUPflag : 0
Distance (au) : 19.362
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 21.58
Sun-Target sep (deg) : 59.35
Sun-Moon sep (deg) : 172.51
B (ring opening deg) : 69.23
PA of pole (deg) : 69.78
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.532
C/A sky separation (km) : 21509.0
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



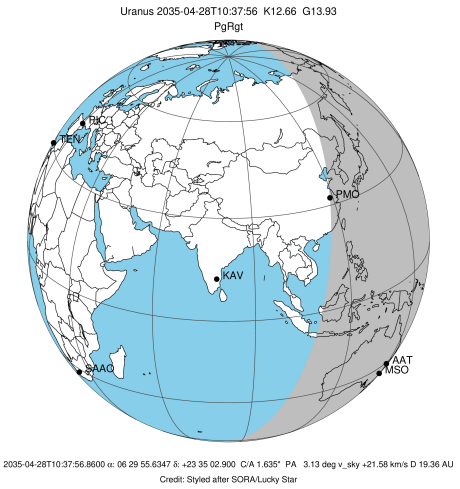


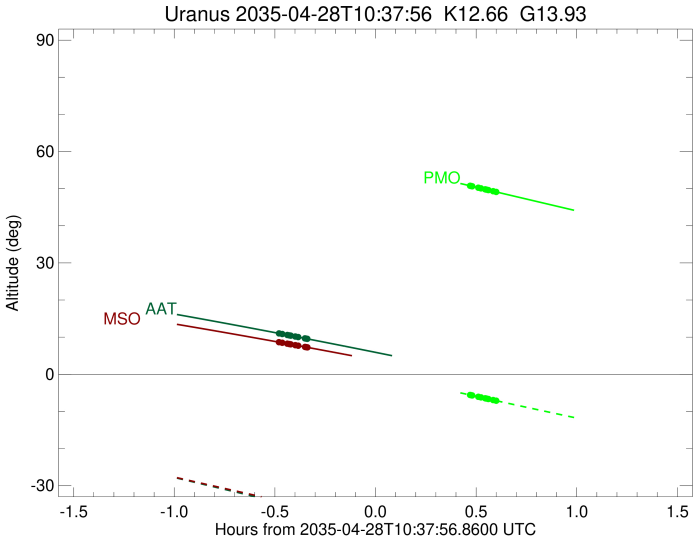
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-04-28T10:05:04.902		63.69	6.84x	51536.80	-20.34		
lambda	I	2035-04-28T10:06:19.292		63.43	6.58x	50026.71	-20.23		
delta	I	2035-04-28T10:07:44.978		63.13	6.28x	48300.35	-20.06		
gamma	I	2035-04-28T10:08:18.832		63.01	6.17x	47622.44	-19.99		
eta	I	2035-04-28T10:08:41.190		62.93	6.09x	47176.12	-19.94		
beta	I	2035-04-28T10:09:57.978		62.67	5.83x	45651.06	-19.76		
alpha	I	2035-04-28T10:10:45.398		62.50	5.66x	44717.19	-19.62		
4	I	2035-04-28T10:12:37.670		62.11	5.28x	42526.08	-19.31		
5	I	2035-04-28T10:12:48.849		62.07	5.24x	42313.47	-19.27		
6	I	2035-04-28T10:13:15.578		61.98	5.15x	41794.75	-19.19		
Uranus	I	2035-04-28T10:29:41.438		58.51	1.77x	25546.10		3.18	3.33
Uranus	E	2035-04-28T10:50:47.955		54.04	-2.51x	25211.47		-16.91	-17.66
6	E	2035-04-28T11:06:08.277		50.78	-5.58	41857.07	19.25		
5	E	2035-04-28T11:06:24.888		50.72	-5.63	42183.31	19.34		
4	E	2035-04-28T11:06:46.726		50.64	-5.71	42589.57	19.37		
alpha	E	2035-04-28T11:08:33.791		50.26	-6.06	44690.39	19.70		
beta	E	2035-04-28T11:09:24.116		50.08	-6.23	45681.21	19.83		
eta	E	2035-04-28T11:10:39.088		49.82	-6.47	47176.12	20.02		
gamma	E	2035-04-28T11:11:01.510		49.74	-6.55	47625.51	20.07		
delta	E	2035-04-28T11:11:35.077		49.62	-6.66	48300.35	20.14		
lambda	E	2035-04-28T11:13:00.411		49.32	-6.94	50026.71	20.32		
epsilon	E	2035-04-28T11:13:38.812		49.18	-7.06	50808.32	20.43		

Uranus_2035-04-28T10_37_56.8600_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 : 2035-04-28T10:42:10.000
Event type : PgRgt
: Uranus occs: geocentric, not topocentric
: 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 : 3382612377139526656
2Mass ID (if available) : 06295564+2335031
ICRS Star Coord at Epoch: 06h 29m 55.63469s +23:35:02.89986s
RUWE (>1.4 is poor) : 1.04
K magnitude : 12.661
G magnitude : 13.929
RP magnitude : 13.476
BP magnitude : 14.220
DUPflag : 0
Distance (au) : 19.362
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 21.58
Sun-Target sep (deg) : 59.35
Sun-Moon sep (deg) : 171.75
B (ring opening deg) : 69.23
PA of pole (deg) : 69.78
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.894
C/A sky separation (km) : 26601.0
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

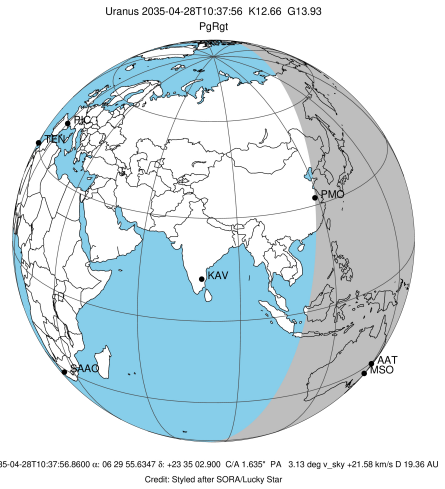
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-04-28T10:08:52.157		11.06	-34.41	51520.10	-19.26		
lambda	I	2035-04-28T10:10:09.984		10.84	-34.69	50026.71	-19.08		
delta	I	2035-04-28T10:11:41.136		10.58	-35.02	48300.35	-18.80		
gamma	I	2035-04-28T10:12:17.342		10.47	-35.14	47622.00	-18.67		
eta	I	2035-04-28T10:12:41.270		10.40	-35.23	47176.12	-18.59		
beta	I	2035-04-28T10:14:03.788		10.16	-35.52	45653.50	-18.29		
alpha	I	2035-04-28T10:14:55.517		10.01	-35.71	44712.50	-18.07		
4	I	2035-04-28T10:16:58.069		9.65	-36.14	42526.04	-17.53		
5	I	2035-04-28T10:17:10.481		9.62	-36.19	42310.03	-17.47		
6	I	2035-04-28T10:17:39.864		9.53	-36.29	41795.31	-17.33		

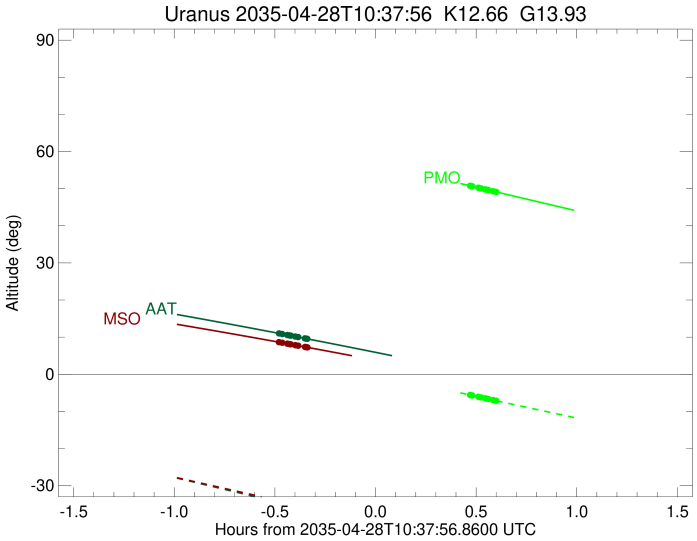
No planet occultations

6	E	2035-04-28T11:04:41.928		0.95x	-46.24	41851.23	17.40		
5	E	2035-04-28T11:05:01.220		0.89x	-46.31	42192.89	17.54		
4	E	2035-04-28T11:05:24.358		0.82x	-46.39	42583.35	17.61		
alpha	E	2035-04-28T11:07:21.548		0.45x	-46.80	44688.08	18.16		
beta	E	2035-04-28T11:08:16.125		0.27x	-46.99	45681.17	18.38		
eta	E	2035-04-28T11:09:36.725		0.02x	-47.27	47176.12	18.69		
gamma	E	2035-04-28T11:10:00.684		-0.06x	-47.35	47624.86	18.77		
delta	E	2035-04-28T11:10:36.550		-0.17x	-47.48	48300.35	18.89		
lambda	E	2035-04-28T11:12:07.212		-0.46x	-47.79	50026.71	19.18		
epsilon	E	2035-04-28T11:12:49.223		-0.59x	-47.94	50835.27	19.37		

Uranus_2035-04-28T10_37_56.8600_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 : 2035-04-28T10:41:59.810
Event type : PgRgt
: Uranus occs: geocentric, not topocentric
: 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 : 3382612377139526656
2Mass ID (if available) : 06295564+2335031
ICRS Star Coord at Epoch: 06h 29m 55.63469s +23:35:02.89986s
RUWE (>1.4 is poor) : 1.04
K magnitude : 12.661
G magnitude : 13.929
RP magnitude : 13.476
BP magnitude : 14.220
DUPflag : 0
Distance (au) : 19.362
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 21.58
Sun-Target sep (deg) : 59.35
Sun-Moon sep (deg) : 171.74
B (ring opening deg) : 69.23
PA of pole (deg) : 69.78
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.917
C/A sky separation (km) : 26923.5
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	2035-04-28T10:08:50.897		8.70	-34.00	51518.90	-19.18		
lambda	I	2035-04-28T10:10:09.001		8.48	-34.26	50026.71	-18.99		
delta	I	2035-04-28T10:11:40.595		8.23	-34.57	48300.35	-18.70		
gamma	I	2035-04-28T10:12:16.991		8.13	-34.69	47621.98	-18.57		
eta	I	2035-04-28T10:12:41.048		8.06	-34.78	47176.12	-18.49		
beta	I	2035-04-28T10:14:04.038		7.84	-35.06	45653.65	-18.18		
alpha	I	2035-04-28T10:14:56.119		7.69	-35.23	44712.20	-17.95		
4	I	2035-04-28T10:16:59.538		7.35	-35.65	42526.08	-17.40		
5	I	2035-04-28T10:17:12.060		7.32	-35.69	42309.75	-17.33		
6	I	2035-04-28T10:17:41.667		7.23	-35.79	41795.38	-17.18		

No planet occultations

6	E	2035-04-28T11:04:18.582	-0.86x	-45.11	41850.80	17.25		
5	E	2035-04-28T11:04:38.106	-0.92x	-45.17	42193.60	17.40		
4	E	2035-04-28T11:05:01.363	-0.99x	-45.25	42582.90	17.47		
alpha	E	2035-04-28T11:06:59.439	-1.35x	-45.64	44687.94	18.03		
beta	E	2035-04-28T11:07:54.383	-1.51x	-45.82	45681.15	18.27		
eta	E	2035-04-28T11:09:15.471	-1.76x	-46.08	47176.12	18.58		
gamma	E	2035-04-28T11:09:39.563	-1.83x	-46.16	47624.82	18.67		
delta	E	2035-04-28T11:10:15.627	-1.94x	-46.28	48300.35	18.79		
lambda	E	2035-04-28T11:11:46.750	-2.21x	-46.57	50026.71	19.09		
epsilon	E	2035-04-28T11:12:29.064	-2.34x	-46.71	50837.28	19.28		